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Current Account Imbalances: Exploring Role of Domestic and External Factors for Large Emerging Markets

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Abstract

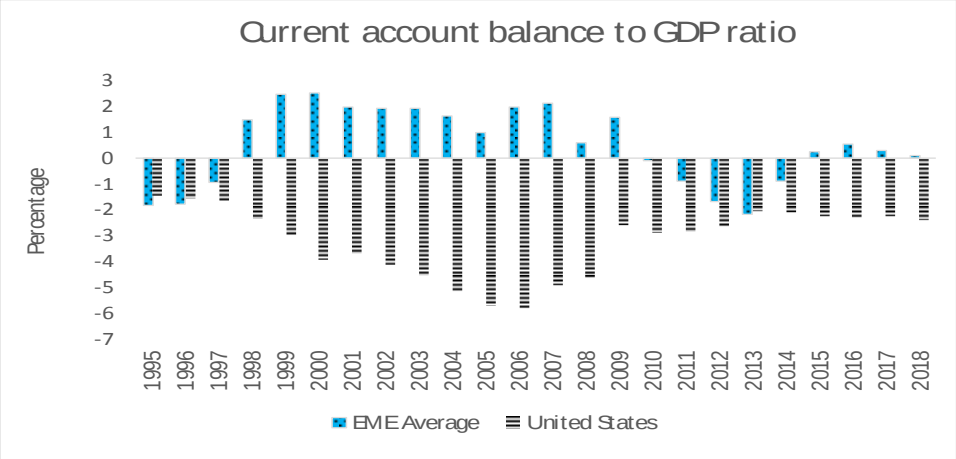
Global trade imbalances have been a focal point of discussion in international economics literature but opinions remain highly divided with respect to its origin. This paper studies the impact of relative financial development and governance institutions of key large emerging market economies (EMEs) on their current account balances (CAB) defined as surpluses vis-a-vis impact from uncertainty in foreign capital flows over 1995-2018. Changing dynamics of global imbalances, that underwent significant structural changes around the years 2000 and 2008 (Global Financial Crisis), is also studied. Panel instrumental variable (Anderson–Hsiao, 1981) estimation is used to account for endogeneity from institutions. Results show that EMEs with higher financial development as well as better governance institutions accumulate significantly lesser surpluses. This supports the hypothesis of excess precautionary savings from lack of institutions. Democratic accountability emerges as a dominant factor throughout the entire period of analysis and also yielded the highest impact on CAB during pre-2008 years. Government stability and anti-corruption measures along with financial development influenced CAB only after 2000. While surpluses are reduced with better institutions, they are, however, increased significantly with higher uncertainty in the external sector as well as with higher independence from natural resource exports. EME surpluses were increased significantly with increased volatility in net flows in overall and portfolio equity capital respectively in 2001-08 and post-2008 period, the latter showing the higher impact on portfolio flows to EMEs during unconventional monetary policy years. Results indicate that during post-2008 years significant rebalancing in EME surpluses occurred due to less intervention accompanied with lower growth and developing institutions. Policy implications follow: EMEs institutions are important instruments in correcting global imbalances, while AE policies should also take into account repercussions on EMEs through the financial and external sectors.

Keywords: Current Account, Global Imbalances, Governance, Capital Flows, Precautionary Savings, Uncertainty, Anderson–Hsiao method.

JEL Code: F42, F14, F32

I. Introduction

The decade after the 1997-98 Asian Financial Crisis saw rising trade surpluses in major emerging market economies (EMEs), especially East Asian countries like China, Thailand etc. that were accompanied with large trade deficits in several advanced economies (AEs) like United States, a phenomenon termed as 'global imbalances'. The dominant view is that these trade imbalances were detrimental to global macroeconomic stability (Blanchard and Milesi-Ferretti 2011) and fueled the 2008 Global Financial Crisis (GFC) (Obstfeld and Rogoff 2009) and thus warranted rebalancing. Bergsten (2013) showed that trade deficits in United States could be reduced by $ 200 – 500 billion a year if major surplus economies rebalanced. Data on the major EMEs show that their surpluses, however, declined considerably after 2010 (Figure 1). They have tended to rise again in recent years after 2015.



Note: Data from World Bank. EMEs include Brazil, China, Indonesia, India, Mexico, Russia, Thailand, Turkey

Fig 1. CAB/GDP: EME average against United States

Sources of global imbalances continue to generate interest to understand where the onus of rebalancing lies. All the factors affecting savings, investment and their gap as well as exchange rates affect current account balances (CAB). The literature, however, remains highly divided with respect to factors originating on both sides. On one hand, there are views related to EMEs e.g. mercantilist under-valuation to improve external competitiveness (Obstfeld and Rogoff 2009), high reserves accumulation, especially in the 2000s (Nayak and Baig 2019), high savings (Bernanke 2005) ensuing from low levels of domestic financial reforms, while

there are counter-arguments that AE factors were operational too e.g. disproportionately strong currency that supports provision of financial assets to the rest of the world (Wang 2012), high investment opportunities (Dooley *et al.* 2005), low savings rate (Gruber and Kamin 2007; Cooper 2007[1]), over-leverage and growing budget deficits (Cline 2005).

To explain high EME savings not in lines with domestic investment needs, an important strand of the literature focused on problems in the financial sector of developing countries (DCs) that encouraged precautionary savings leading to global imbalances. Pioneering research on the role of financial development (FD) has been done by Gruber and Kamin (2007), Chinn and Ito (2007), Chinn *et al.* (2014). In similar lines, Tan *et al.* (2015) study the role of less developed capital markets, Saadaoui (2015) finds significant role of financial openness in aggravating imbalances, Wang (2020) explore the role of financial repression in current account imbalances. However, the role of more generalized institutions e.g. governance remains under-explored with no study looking into major governance indicators at a disaggregated level.

Another important gap is that the literature doesn't account for external influence originating from foreign policies, which if accounted provides a balanced view to a polarized debate. If we study some of the largest emerging markets, we find that despite similar and stable increases in FD, only a few (e.g. China and Russia) show current account (CA) surpluses consistently across the three decades 1990-00, 2000-08 and 2008-18 while others like Brazil, India, Mexico, Turkey register deficits (Figure 2). This shows the possibility of other factors, which we contend are domestic structural lacunae in governance institutions, as well as foreign spillovers in the form of uncertainty in capital flows both of which can induce precautionary savings.

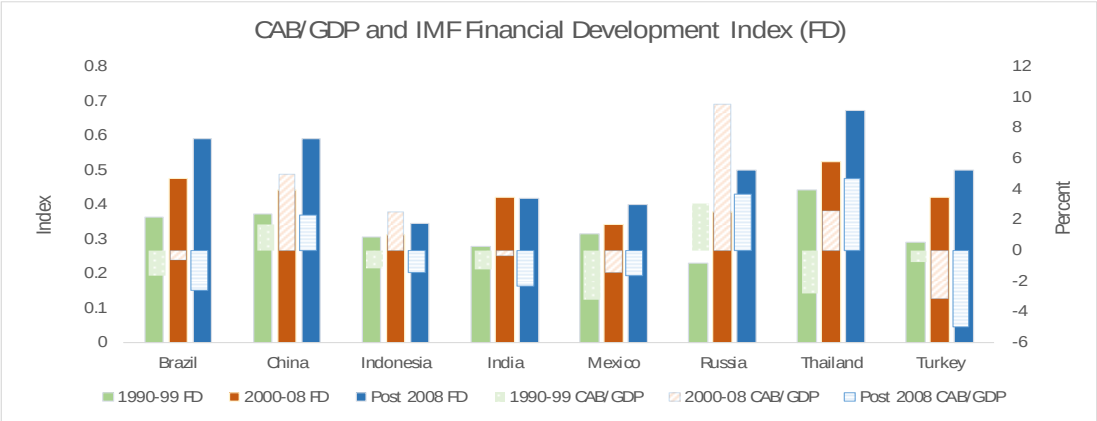


Fig 2. Average CAB/GDP ratio and FD across last three decades

1 Cooper (2007) argues that although US savings rate was low compared to developing economies, it is understated. Allowance should be made for educational expenditure, expenditure on research and development or training and product branding that would create future returns.

The role of good institutions has been underlined by Wang (2020) who argue that they help to attract more FDI, increase productivity and hence exports. We hypothesize that since institutions, particularly governance, help to reduce transaction costs and provide a level playing field for entrepreneurship, production and free markets, they enhance future expectations of incomes as well as directly create present incomes both of which impact savings and consequently CAB[2]. Earlier Chinn *et al.* (2014), Wang (2020) include as controls aggregate level factorial measures capturing governance. They do not go into the micro-assessment of institutions, however. The focus of these papers is more on the financial side and also the data is limited to the pre-GFC period[3]. Since there is some reservation regarding factorial measures, we believe greater insight on the role of governance is possible by doing a detailed study of different governance measures separately. We study five indicators e.g. anti-corruption measures, bureaucratic efficiency, democratic accountability, government stability and judiciary vis-à-vis FD. We use a measure of FD that has not been used before e.g. the IMF index.

We also contribute by studying the role of capital flows uncertainty in CAB. Variability has been discussed in trade literature, for example, the negative impact of real exchange rate volatility on trade is well established (Arize *et al.* 2020). However, the role of macro-economic uncertainty is relatively new. It has been studied in Fogli and Perri (2014) who show a positive relationship holding between volatility in growth and external balances for 20 OECD economies over 1970 to 2012 and the mechanism is found to be through increase in precautionary savings. In the post–GFC economic environment, there is now an increased need to acknowledge the influence of uncertainty in capital flows on EME precautionary savings. In that sense, this paper also relates to the literature exploring influence of capital account on current account e.g. Yan (2005), Sarisoy-Guerin (2012), Bayraktar-and Yalta (2015) who find causality from capital flows to current account, especially in DCs. However, our focus is on a different perspective of capital flows e.g. its variability.

Quantitative easing (QE) programmes of several AEs in the post-GFC years led to excessive monetary creation which impacted EME assets disproportionately and increased volatile capital flows to EMEs (Chen *et al.* 2014). Often EME policies are distorted particularly when EMEs mop up the excess inflows in the form of reserves. Choi and Lee (2010) show that global monetary conditions significantly increased international reserves holdings for 20 Asian countries over 1980-2008. Yang (2016) finds that sterilization operations in China were dominated by the more variable components of capital flows, especially in the pre-crisis years indicating there is an important role of volatility in capital flows in EME monetary policy. Recently Dhar (2021) provides evidence of enormous fluctuations in capital flows characterized by 'surges'

2 From the basic Keynesian income determination, CAB is equivalent to the net savings of a nation.
3 Chinn *et al.* (2014) studies 1970-2008, Wang (2020) studies 1981-2005.

and 'flights' in a sample of emerging markets. In this context, the literature on CA imbalances is yet to study the role of uncertainty in capital flows, which we measure through estimates of conditional volatility in total and portfolio equity capital flows.

The measure of FD we use is different from the usual proxy *i.e.* private credit-GDP ratio which is a *post-facto* measure, and does not directly address the structural issues of the financial sector. We use the IMF FD index developed by Svirydzenka (2016) that brings together information on six important aspects e.g. depth, access and efficiency for each of financial institutions and financial markets. In presence of liberalized capital markets and increased foreign financing in domestic activities, we believe there is a need to use a more directed measure for FD.

In order to address endogeneity, we apply an instrumental variable (IV) method. The data we study comprises large EMEs comparable to China, the major surplus economy. A long time span over 1995-2018 also enables us to study the changing dynamics of CAB. EME surpluses, on average, peaked in the years before the GFC (Figure 1). Hence we study CAB across the three sub-periods e.g. pre-2000, 2001-08 and post-2008 years[4]. To the best of our knowledge, such a break-augmented estimation over the post-liberalization years has not been attempted earlier. We find that incorporation of breaks helped to bring out some interesting insights into the sources of imbalances. We find significant role for at least three governance indicators e.g. anti-corruption measures, government stability and democratic accountability. While the former two are at par with FD in terms of impact on CAB, the latter yields a higher impact by at least 2 to 3 percentage points. Both FD and governance reduced CAB in EMEs. Portfolio flows had become more prominent in CAB in the post-2008 period, which is also the period of unconventional monetary policies. Another novel factor we include in the analysis e.g. independence from raw resources exports show that higher surpluses are significantly associated with lesser raw materials exports. Several other interesting insights, especially on factors behind rebalancing and on different behavior of Asia-Pacific nations, are found in the analysis which are discussed later.

The rest of the paper proceeds as follows. We discuss the theoretical background and empirical literature in Section II. Section III describes the data, variables and estimation. Baseline results are laid out in Section IV with interpretations. Section V does several robustness checks aimed at better intuitive understanding of the channels of influence. Section VI concludes discussing broad implications of the study.

4 An endogenous test of structural breaks supports significant breaks around 2000 and 2008.

II. Literature

II.I. Theoretical background

There are several approaches to the determination of CAB e.g. elasticity, monetary, Keynesian, or intertemporal, although these approaches are not intrinsically different since they explain the same phenomenon in different ways (Kim 2009). While the first two approaches relate CAB to the real exchange rate and argues improvement in trade balance takes place because of devaluation (equation 2), the latter approaches are mainly concerned with structural factors e.g. savings behavior of economic agents. The Keynesian absorption approach argues that since CAB is determined as the sum of net private savings (NPS) and net Government savings (NGS) through the real sector of an economy (equation 1), it is more important to study factors driving savings. The intertemporal approach is more micro-founded and posits that countries accumulate different levels of surpluses or deficits due to differential rates of time preference with more patient countries accumulating surpluses at the cost of impatient ones (Wang 2020).

Real sector

Income: $Y = C(Y-T) + I + G + NX(e)$

or, CA = $NX(e) = Y - C(Y-T) - I - G = [S - I] + [T - G] = NPS + NGS$ *(1)*

External sector

BOP under exchange rate flexibility: $NX(e) + KA(e) = 0$ *(2)*

Under both the monetary approach as well as Keynesian approach, CAB surpluses can persist. Under the monetary approach, ideally the capital account (KA) should balance the CA through exchange rate adjustment mechanism making the balance of payments identical to 0 (equation 2). Excess foreign exchange from surpluses should create appreciation and this should increase imports wiping out the initial surplus. Any deviations from this equilibrium are primarily due to a hampering of the exchange rate mechanism, for example, managing 'e' through reserves accumulation in order insure against volatile capital flows/speculative attacks (the precautionary motive) (Obstfeld and Rogoff, 2009). The Keynesian approach is of a more structural nature tracing current account imbalances to savings-investment gap. Pioneering papers like Mendoza *et al.* (2007), Caballero *et al.* (2008) showed that countries in the absence of developed

financial sector face increased borrowing costs, and have less supply of safe financial assets, both creating high precautionary savings. Domestic interest rates depress excess savings, according to the loanable funds theory, and hence also create depreciation. The Keynesian approach has been the staple for many papers like Chinn and Ito (2007), Chinn *et al.* (2014), Saadaoui (2015), Wang (2020). We provide a common ground between Keynesian and monetary approaches by including the role of instability in external sector that hampers independent monetary policy (Sarisoy-Guerin 2012). To achieve financial stability, monetary authority may engage in reserves accumulation which may increase domestic savings. The net impact in our study is a combination of these different influences.

II.II. Empirical literature

The papers following the Keynesian absorption approach mostly employ panel regressions with fixed effects (Gruber and Kamin 2007, Chinn *et al.* 2014). Some account for endogeneity in the context of financial institutions e.g. Tan *et al.* (2015) apply two-stage least squares method, Wang (2020), Saadaoiu (2015) apply GMM.

Chinn and Prasad (2003) pioneered the empirical literature by studying the role of financial structure in CAB over the period 1971-1995. They find that financial deepening and terms of trade volatility can improve CAB in DCs. Amongst controls, government budget balance, initial net foreign assets are significant while relative dependency ratios or average GDP growth cannot explain CAB. Gruber and Kamin (2007), following in similar lines, estimate CAB for mix of AEs and DCs over 1982-2003. They mainly contribute by including banking capital exhaustion as a proxy for systematic banking crisis. They find that preceding East Asian financial crisis could explain CAB surpluses in the post-2000 period, contingent on the fact that the DCs had a high degree of trade openness. Amongst institutions, regulatory burden and rule of law are found to significantly worsen CAB, while FD is insignificant.

Gruber and Kamin (2009) study the role of FD for 84 countries over 1982-2006. However, they find little role of FD, while more important factors are windfall gains from oil exports, financial crises. Chinn *et al.* (2014) estimate CAB over 1970-2008 on factors like FD and capital account openness. They use a mix of AEs and DCs, but estimate separate models as well. They also pioneer by introducing a factorial measure of governance institutions in the CAB. They find that FD significantly reduces CAB of EMEs, while governance indicators and financial openness can influence CAB only through their interaction with FD. Both further worsen the CAB.

Saadaoui (2015) study the impact of financial openness on CAB over 1980–2003 for 18 AEs and 21 EMEs in a framework similar to Chinn *et al.* (2014). Using the Chinn-Ito index of financial openness as *de jure* measure and change in gross foreign assets as a *de facto* measure, they find that financial openness could

increase surpluses in AEs, while opposite effect was found for EMEs, in general. The channel is mainly capital flows. Tan *et al.* (2015) explores the role of financial structure. They find that when domestic capital markets are less developed relative to banking sector, firms are forced to save and surpluses can increase. However, they do not take the post-crisis period. Wang (2020) study how financial repression captured through interest rate controls, a regulated banking sector and capital account controls, can impact CAB. Their study over 1981-2005 for 66 countries finds financial repression significantly increases CAB.

Majority of these studies address determination of CAB in the pre-2008 period. Few papers have studied the role of governance institutions on CAB in a full-fledged manner.

While financial development directly affects financial savings, governance are higher-order institutions that have impact in a broader context (Acemoglu and Johnson 2005, Acemoglu *et al.* 2008), by ensuring implementation of contracts, adoption of good practices and hence providing a broad-based environment to foster growth. They increase current income by ensuring efficient functioning of economy as well as increase future expected incomes both of which impact savings/investment. Interestingly while the first channel increases savings, the second effect might offset savings according to the Life Cycle Hypothesis (Modigliani 1966) and hence it is to be seen which impact dominates. They also help build confidence in the economy and thus attract foreign capital (Wang 2020). Kolstad and Wiig (2013) find that investor sentiments are, on a macro-level, influenced by country institutions.

The five dimensions of governance institutions explored in our study are anti-corruption measures, bureaucratic quality, democratic accountability, government stability and legal. There is a huge literature on how these institutions affect growth, which is not directly related to the objective of this study. However, we take note of some important papers. Mauro (1995), Papyrakis and Gerlagh (2004), Pellegrini and Gerlagh (2004), Akkoyunlu and Ramella (2020) find anti-corruption measures are helpful to growth. Positive role of bureaucratic quality and judicial system on investment rates and growth is found in Mauro (1995). Political stability has been found to boost growth rates (Alesina *et al.* 1992). Aisen & Veiga (2013) show that uncertainty in government continuation may shorten the policy perspectives and deny the economy to grow. The role of democracy has been studied in Kim and Heshmati (2017) for 144 countries over 1980-2014 who find that democracy can induce growth, especially through credit guarantee and FDI inflows. Stasavage (2002) also find that political institutions that are autocratic may hinder investment, while movement towards democracy has the opposite effect. To the best of our knowledge, a study on the role of these individual governance indicators in CAB is a novel attempt. The nearest studies are Wang (2020) who use as a control a composite measure encompassing various dimensions of political risk and Chinn *et al.* (2014) who use a factorial measure.

III. Data and Methodology

III.I. Specification and data

We model the baseline specification:

$$CAB/GDP_{it} = \alpha_0 + \alpha_1 \; CAB/GDP_{i,t-1} + X' \; \alpha \; + u_{i,t} \quad (3)$$

The dependent variable is current account balance-GDP ratio[5], X' is matrix of controls. These are: institution (INST), gross government debt-to-GDP ratio (GDEBT_GDP), initial wealth captured through lagged net foreign assets NFA-to-GDP ratio[6] (LAG_NFA_GDP), growth in per capita income relative to US (G_RPCI) that captures level of development, squared growth $(G\_RPCI)^2$ aimed at capturing non-linear effect, TOT volatility[7] (VOL_TOT), growth (G_RAW) in raw materials ratio (RAW) which is calculated as a ratio of imports to exports in agricultural raw materials that excludes crude oil, growth in relative dependency ratio (old and young combined) where dependency ratio is defined as number of dependents (< 15 or > 64 years age) per 100 working-age (15 to 64) population (G_RDR). α_0 is the time and cross-section invariant constant term capturing an overall average, $u_{i,t}$ is the error (iid). Variables like institutions, volatility are measured relative to the EME average[8].

The specification is similar to Chinn and Ito (2007) except certain modifications to suit the objectives of the study. We include persistence in CAB (as in Saadaoui 2015) and a new variable G_RAW to capture the independence from natural resource exports. Since the 'resource curse' hypothesis shows that countries having more natural resources generally have lesser development of good institutions, we believe it is a valid

5 Defined as surpluses e.g. exports minus imports.

6 We take the NFA ratio lagged by one period similar to Gruber and Kamin (2007) and Wang (2020) who argue that current NFA might be correlated with CAB/GDP.

7 Five-yearly standard deviation in net barter terms of trade measured using the relative price of exports to imports (2000 = 100).

8 Such normalization is similar to Fogli and Perri (2015). Since the data are in different indices, the relative measure helps to standardize the series.

control. A higher RAW implies more imports of raw materials than exports, and capture the extent of independence from raw materials for growth.

To save on degrees of freedom, we keep different institutions (discussed below) in separate regressions with same controls:

1) Financial development (FD) is proxied by index from IMF.

2) Five governance institutions are sourced from the International Country Risk Guide (ICRG) (ICRG) database. Higher the value, the more developed the institution. 1) Anti-corruption measures (ANTICOR) which should help growth by removing distrust and helping in efficient functioning in an economy. 2) Bureaucratic efficiency (BUR_EFF) captures how resilient and independent the bureaucracy is to political changes and interferences. 3) Democratic accountability (DEMO) captures the extent of democracy in a nation. Lower values correspond to autarky, while highest point indicates a democratic government which has not remained in power for more than two terms as well an active opposition. 4) Government stability (GOVSTABY) measures the lack of cohesion to retain the incumbent Government as well as legislative strength. 5) LEGAL captures the strength and justice in the judiciary system as well as adherence to law by citizens. All other macro variables have been sourced from the World Bank.

Annual data from eight largest EMEs, e.g. Brazil, China, Indonesia, India, Mexico, Russia, Thailand and Turkey over 1995-2018[9] is used. These are the largest in term of both absolute and per capita GDPs and account for a major share of inflows to developing economies[10]. Descriptive statistics of the variables are presented in Table 1 below with a comparative picture between the entire sample and Asian nations as well as major surplus economies like China and Russia taken together.

	Entire sample			Asian@			Surplus@@		
Variable	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.
CAB/GDP	0.51	-0.49	4.27	1.33	1.17	3.92	4.50	3.14	3.75
FD_EME	100.00	100.11	20.33	103.13	105.22	22.74	99.79	105.05	19.45
ANTICOR	100.00	96.11	24.97	99.11	95.40	24.81	83.00	86.11	16.67
BUR_EFF	100.00	94.12	26.94	106.65	94.12	20.61	72.22	80.99	23.09
DEMO	100.00	107.99	36.80	95.02	104.42	42.55	51.65	47.26	23.88
GOV_STABY	100.00	99.91	15.27	100.46	98.69	15.76	116.87	118.73	11.57
LEGAL	100.00	102.13	28.17	110.58	117.15	26.17	118.30	120.58	15.47
GDEBT_GDP	47.49	43.75	20.66	46.87	42.13	19.59	31.11	25.90	20.54
LAG_NFA_GDP	15.23	11.77	14.81	21.33	16.40	15.84	28.15	26.75	14.25

9 The start year is restricted to 1995 due to non-availability of several variables for China and Russia.

10 The choice of the panel was led by an earlier paper e.g. Banerjee and Goyal (2020) which find considerable presence of mercantilist efforts even in the long run in the same sample of emerging markets.

G_RPCI	2.64	4.12	15.44	4.20	4.92	13.51	5.90	7.91	16.80
SQ_G_PCI	244.14	61.37	643.06	198.24	45.60	792.77	311.29	111.43	450.84
VOL_TOT	83.85	25.00	189.47	36.90	23.08	49.87	215.77	21.46	338.66
G_RAW	-0.29	1.23	19.01	-0.92	1.34	20.64	4.14	1.42	16.10
G_RDR	0.02	-0.02	0.95	0.02	0.22	0.94	0.50	0.53	1.52

Note: @: These include China, Indonesia, India and Thailand. @@: The economies which show huge surplus on average for the entire period e.g. China and Russia. Sample period is 1995-2018. Governance institutions for 2018 have been extrapolated using last five years' average. All variables are in percentage terms. Since institutions are computed as deviations from sample mean, the sample average is 100 for each of them.

Table 1. Descriptive statistics

Some interesting trends can be noted. Both the surplus economies of China and Russia were considerably lower than the average in respect to institutions like anti-corruption measures, democratic accountability and bureaucratic efficiency, while they had relatively higher levels of both government stability and legal institutions. Asian nations of China, Indonesia, India and Thailand had higher than average levels of FD, bureaucratic efficiency and legal institutions.

In comparison to the entire sample, both the surplus economies had much lower government debt levels, higher initial wealth, higher development in terms of relative PCI growth and higher G_RAW implying that they had highest independence from raw materials exports. However, they also experienced much higher TOT volatility than the average. Asian nations had the lowest raw resource independence, but also enjoyed much lower TOT volatility than the average.

Variable signs

According to the life-cycle hypothesis (LCH), factors likely to impact savings negatively are expected future income, initial wealth and dependency ratio while current earnings should yield a positive impact[11]. Hence, the coefficient signs should be negative for initial wealth and dependency ratio and positive for G_RPCI capturing current income. Expected future income is proxied by average GDP growth in Chinn *et al.* (2014), however, they do not find it to be significant in their regressions. This is in line with Athukorala and Sen (2004) who argue that in DCs with large proportion of people living near subsistence levels, current income is more important in determining savings rather than expected earnings. We also get similar results and hence we do not include it.

11 This follows from consumption smoothing over the entire life span while earnings are limited only to working years. If an individual, with an average life-span T years from now, plans to work for another L years (earns Yt in current period, expects to earn Yet in L-1 future periods), and if her initial endowment is W, she shall consume her lifetime earnings (LE) in T equal installments. Her savings (St) in t^{th} period is then given by:

$St = Yt - LE/T = (1- T -1)\ Yt - (L-1)\ T -1\ Ye - T -1\ W \quad (A)$

From equation (2), it can be seen that $\Delta St / \Delta Yt > 0$, $\Delta St / \Delta Ye$ and $\Delta St / \Delta Yt\ W < 0$.

We believe government debt to GDP ratio is a better variable than budgetary balance, since there is growing evidence in favor of causal relationship between private and public net savings which needs accounting. Ricardian equivalence proposition holds that people's perceptions on Y^e_t depend on public sector debt levels which then leads private savings. For example, when Government expenditure rises (i.e. on services like health and education), people interpret it as rise in expected income thus "crowding out" private savings. This has been corroborated in Hatzinikolaou and Tsoka (2016) who find that savings move inversely with provident fund contributions. Another example can be a debt financed tax reduction which is often incorporated in household decisions as future increase in taxes. Hence, we choose to take Government debt to proxy for the true state of government's future liabilities[12]. An increase in debt generally reduces future expected income and hence should raise savings, according to LCH.

VOL_TOT captures the channel of uncertainty in relative profitability which directly hampers investment. However, uncertain incomes are likely to influence savings as well. The net impact is ambiguous.

III.II. Methodology

Unit root tests

Since CAB/GDP is stationary and the time series is long spanning three decades, our first step is to ensure the stationarity of regressors.

We use the usual panel unit root tests of Levin, Lin and Chu (2002) and Im, Pesaran and Shin (2003) (Table 2). While the former tests for common unit root, the latter tests for individual specific unit root process. More weight is given to the results of the latter which has better small sample properties. While all series satisfied stationarity in levels, a few like RPCI, RAW or RDR were difference-stationary. Hence their growth rates are taken in the analysis.

It is now well-accepted that standard unit root test results in the presence of structural breaks can be biased towards acceptance of false null (Arize *et al.* 2020). Since we find good amount of observational as well as empirical evidence (discussed later) of structural breaks in CAB/GDP, we further test for stationarity accounting for structural breaks using the Hadri and Rao (2008) – HR test[13] which is an advanced panel unit root test, as noted in Ranjbar *et al.* (2014), that simultaneously accounts for breaks in both intercept and trend as well as allows different break forms for different cross-sections. This has an additional advantage of accounting for presence of serial correlation as well as cross-dependence. It has a null of stationarity. The appropriate break-type for each cross-section is identified using Schwarz Bayesian Information Criterion.

12 We checked our regressions with fiscal balance to GDP ratio (> 0 means surplus) as well but found that GDEBT_GDP led to overall improvement in the estimates, as found in the literature.

13 We use a GAUSS code written by Ranjbar *et al.* (2014) replicating HR test. Details can be found in the same paper.

Empirical distribution of panel test statistics is computed using Bootstrap techniques with 20000 replications. Stationarity is satisfied in the HR test with the final transformations after the standard panel unit root tests (Table 2). Multicollinearity was also checked and found minimal (Appendix Table A).

Variable	Levin-Lin-Chu t stat (LLC)	Im, Pesaran and Shin W-stat (IPS)	Hadri and Rao (HR) panel stat
CAB/GDP	-1.09^	-1.93**	0.16^
FD	-4.42***	-5.23***	0.19^
ANTICOR@	-1.50*	-2.25 **	0.09^
BUR_EFF	-4.15***	-5.26***	0.15^
DEMO	-3.58 ***	-3.47***	0.14^
GOVSTABY	-4.39***	-4.11***	0.19^
LEGAL	-2.15**	-1.23*	0.17^
GDEBT_GDP	-17.40 ***	-18.53***	0.11^
LAG_NFA_GDP	0.31 ^	-2.59***	0.17^
G_PCI	-6.02***	-6.04***	0.14^
G_PCI^2	-9.26***	-8.26***	0.24^
VOL_TOT	-3.36***	-3.25***	0.15^
G_RAW	-7.37***	-8.36***	0.12^
G_RDR	-2.58***	-1.51*	0.11^

Note: Sample: 1995-2018. LLC and IPS tests the null of non-stationarity and specification includes country-specific intercept and linear trends. Lags for LLC and IPS selected using Schwartz Information Criteria.
HR tests the null of stationarity. If rejected, it implies unit root. ***: $p < 0.01$ level, **: $p < 0.05$ level, *:$p < 0.10$ level, ^: insignificant
@ Individual effects was included since no trend was observed.

Table 2. Panel unit root test

Estimation

Endogeneity is a major concern with institutions since it leads to inconsistent parameter estimates (Acemoglu *et al.* 2008 in a seminal paper show reverse causality between institutions and macro-variables like income)[14]. We have another possible source of simultaneity bias from the lagged dependent variable. Although usual fixed effects or first differences cancel the unobservable time- or cross-section invariant factors, they cannot remove the potential endogeneity inside the system arising from correlated errors.

14 Most recently, Wang (2020), Akkoyunlu and Ramella (2020) note the importance of accounting for endogneity.

To address this, we use the instrumental variable (IV) method. We use the Anderson–Hsiao (1981) (AH) IV estimator, similar to estimation in Acemoglu (2008) or Choi and Lee (2010), which instruments differenced endogenous variables through lagged values. There has been divergent opinion on the choice of IV since it can be difficult to find such variables. Anderson and Hsiao (1981) proposed that in a N*T panel, the first differenced regressors can be instrumented through past values. Say, there are K1 endogenous ($X_{NT * K1}$) and K2 exogenous ($Z_{NT * K2}$) regressors. AH instruments ΔX through lagged level values of X that are uncorrelated with Y, but correlated with the X. We estimate the regressions through two stage least squares using the AH instrumentation (2SLS-IV) [15].

The overall correctness of the specification is determined using the J statistic (Hansen 1982) defined as :

$$J = (1/T)\, \Delta u' \Theta (s^2 \Theta' \Theta /T)^{-1} \Theta' \Delta u \qquad (4)$$

where Θ is the instrument matrix, Δu is the regression residuals and s^2 is the residual sum of squares corrected for degrees of freedom. It can be shown that under the null of endogeneity, the parameter estimates obtained from any instrumental variables method, in effect, minimizes the J statistic to zero. If rejected, then usual panel OLS applies, otherwise we may proceed with IV estimation.

Since the AH method instruments first differences, the specification (3) in first differenced form can be written as:

$$\Delta CAB/GDP_{it} = \alpha_0 + \alpha_1 \Delta CAB/GDP_{i,t-1} + \alpha_k \sum_{k1} \Delta X_{i,t,k1} + \alpha_l \sum_{k2} \Delta Z_{i,t,k2} + \Delta u_{i,t} \qquad (5)$$

$\Delta CAB/GDP_{i,t-1}$ and $\Delta X_{i,t,k}$ are instrumented through $CAB/GDP_{i,t-2}$ and $X_{i,t-1,k}$ respectively. Chinn *et al.* (2014), advocate against using country fixed effects since they absorb some of the country-specific

15 Here it must be noted that AH method is most suitable for the panel we study. Papers like Wang (2020) or Saadaoui (2015) use the Generalized Method of Moments (GMM) to address endogeneity. GMM method is generally applicable for wide panels "small T, large N" since as a rule of thumb the number of instruments should not exceed the number of cross-sections, N. Since the panel we study is a "long" panel where T >> N and N is small relative to the number of instruments, it does not satisfy the pre-conditions for GMM. In the context of both difference and system GMM, Roodman (2009) notes that with larger T, the number of instruments in a GMM estimation can be very large relative to observations leading to over-identification and increases the possibility for type I errors—false positives. Hence we use AH instrumentation.

variations that could be captured through institutions. They take period fixed effects instead. Since we estimate the specification in first differenced form which naturally removes any one-time effects, fixed effects are not modelled separately. Period effects are taken care of through dummies and structural breaks.

IV. Results:

IV.I Baseline specification

Table 3 reports the results from 2SLS-IV estimations of specification (3) for the overall period. The Hansen test indicates significant endogeneity and that IV method can be applied. Endogeneity in each regressor is also checked using the Durbin-Wu-Hausman test[16] (Davidson and MacKinnon 1993). Significant presence of endogeneity was identified in persistence, institutions, GDEBT_GDP, LAG_NFA_GDP, G_RPCI, $(G\_RPCI)^2$ and VOL_TOT. These are instrumented in the AH method using lags.

Since we are dealing with a panel that has historical commonalities as well as strong geo-political connections, cross-dependence needs to be seen in the estimations. Pesaran test, however, rejected cross-dependence in all estimations indicating the correctness of the specification. The standard errors were also corrected for heteroscedasticity and autocorrelation (HAC). Anti-corruption measures and government stability were found to yield better results only with a lag and hence these institutions are lagged by one period throughout the paper.

Consistent with the hypothesis that good institutions help to reduce precautionary motives, we find FD and government stability significantly reduce CAB/GDP. CAB declines by 0.05% of GDP for every 1% increase in FD relative to other EMEs. The decline is marginally less at 0.04% with higher government stability.

The estimated negative impact from FD, proxied through IMF index, is in lines of the estimates found in Chinn *et al.* (2014). They find - 0.11% change in surplus for EMEs from increasing FD proxied through private sector credit. Their estimates, however, are based on the pre-GFC period, while ours include post-GFC years. The negative influence from governance has been found earlier in Chinn *et al.* (2014) but they use a factorial measure of anti-corruption, judiciary and bureaucratic quality. We find the role of government stability not discussed in the literature before. Government stability provides a sense of security to both investors as well as citizens which might result in more inflows and reduced savings. Negative impact from

16 This involves regressing the variable under consideration on the exogenous variables and using the residuals in place of the tested variable in the original regression. If the residuals are found to be significant, then this shows the null of exogeneity is rejected and hence points to endogeneity in the regressor.

institutions also shows that there has been a decline in net savings which is consistent with a rise in investment from good institutions.

We find a significant positive effect from persistence e.g. higher past CAB can pull up present CAB by 0.6 ~ 0.7 percent of GDP. This estimate is higher in comparison to Wang (2020) (0.23). Government debt ratio shows a positive impact as hypothesized. Higher initial wealth reduces CAB/GDP by 0.11 ~ 0.16% in lines with LCH. We do not find significance of G_PCI but its squared term is significant and positive, indicating higher levels of development is associated with higher surpluses. As observed in Chinn and Ito (2007), at higher levels of development countries incur surpluses to repay the debt accrued during initial stages of development. So the positive impact from squared growth is in expected lines. There is also a statistically significant and positive impact from growth in raw materials ratio indicating that a 1% increase in raw materials imports relative to exports increases CAB by ~ 0.03%. This variable is a new addition in the literature. This provides strong evidence that countries less dependent on raw materials exports have higher surpluses which shows the role of higher technology in driving surpluses through higher ability of setting prices. The coefficient sign of relative dependency growth is negative as expected, however it is insignificant similar to Chinn and Prasad (2003).

Dependent: CAB/GDP%	**Financial development (FD)**	**Anti-corruption measures (ANTICOR)**	**Bureaucratic efficiency (BUR_EFF)**	**Democracy (DEMO)**	**Government Stability (GOV STABY)**	**Legal (LEGAL)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Persistence	0.579***	0.630***	0.775***	0.588**	0.613***	0.645***
	(0.16)	(0.20)	(0.13)	(0.23)	(0.18)	(0.18)
Institution (INST)	-0.053**	0.030^	-0.114^	0.028^	-0.036*	-0.051^
	(0.02)	(0.02)	(0.08)	(0.05)	(0.02)	(0.07)
Government debt (GDEBT_GDP)	0.023*	0.018^	0.007^	0.025^	0.015^	0.019^
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
Initial wealth (LAG_NFA_GDP)	-0.161***	-0.119**	-0.103^	-0.144**	-0.099**	-0.114**
	(0.06)	(0.05)	(0.08)	(0.07)	(0.05)	(0.05)
Growth in RPCI (G_PCI)	0.024^	0.029^	0.007^	0.030^	0.009^	0.014^
	(0.04)	(0.05)	(0.04)	(0.06)	(0.04)	(0.04)
Squared growth in	0.001**	0.001**	0.001***	0.001*	0.001*	0.001**

RPCI						
(G_PCI^2)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
TOT volatility	0.001^	-0.004^	0.006^	0.002^	0.000^	0.001^
(VOL_TOT)	(0.006)	(0.008)	(0.008)	(0.004)	(0.004)	(0.004)
Growth in raw materials	0.027***	0.027***	0.032**	0.029***	0.027***	0.029**
ratio (G_RAW)	(0.010)	(0.010)	(0.012)	(0.011)	(0.010)	(0.011)
Growth in relative	-0.442^	-0.393^	-0.616^	-0.426*	-0.618^	-0.602^
dependency ratio (G_RDR)	(0.349)	(0.298)	(0.475)	(0.300)	(0.429)	(0.461)
Intercept	0.134^	0.101^	0.092^	0.116^	0.083^	0.083^
	(0.136)	(0.122)	(0.085)	(0.135)	(0.114)	(0.090)
DW stat	2.69	2.74	2.83	2.72	2.74	2.74
Prob(J-statistic)	0.60	0.61	0.57	0.49	0.62	0.51

Note: Unbalanced panel. Robust *HAC* standard errors corrected for non-spherical disturbances are reported in ( ). G_RAW, G_RDR are taken as exogenous, while other variables are instrumented in AH method. Probability values ($p > 0.10$ => accepts the null of endogeneity) of the J-statistic are reported. R^2 is not applicable to 2SLS method (Mauro, 1995). ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.10$, ^: insignificant.

Table 3. Baseline IV estimates

IV.II. Role of uncertainty

According to the famous Mundellian trilemma, an economy with an open capital account cannot simultaneously achieve a floating exchange rate and monetary independence. Hence, if an emerging market under a liberalized capital account prefers an independent monetary policy, it tries to maintain a stable exchange rate through buying and selling of foreign reserves which can be sterilized or not. This precautionary need for reserves should increase with fluctuations in foreign flows. This is all the more relevant in recent years with extensive international financial intermediation (Gruber and Kamin 2007) that allows significantly more foreign financing. Hence, we study uncertainty in capital flows (Table 5). We also include a crisis dummy (DUM_CRS[17]) as well as an interactive effect between institution and DUM_CRS.

Following the volatility definition in Fogli and Perri (2015), we capture volatility in foreign flows through √variance of the growth rate. Variance is modelled for each cross-section separately using auto-regressive conditional heteroscedasticity (ARCH) (Engle, 1982) that provides a better measure of variance by including information on past values of variance.

17 DUM_CRS = 1 for 1997-98 and 2007-08, 0 otherwise.

After some trial and error, the mean equation is specified as a first order autoregressive process[18] as below:

$$CF_t = \lambda_0 + \lambda_1 CF_{t-1} + \mathcal{E}_t \quad for\ each\ i \qquad (6)$$

where CF_t is the growth in net capital flows[19] calculated as percentage change over the absolute value of last year's net flows i.e. $(X_{t+1} - X_t)*100 / mod(X_t)$[20]. The *ARCH* variance equation is specified by regressing squared residuals from equation (6) over q lags of the squared residuals where q is determined using minimum AIC:

$$\sigma^{2\,i}{}_t = \varepsilon_t^{2\ i} = \sum \mu_q\ \varepsilon_{t-q}^{2\ i} + v_t \qquad (7)$$

The ARCH Lagrange multiplier (ARCH-LM)[21] test is used to check whether the modeling is correct.

The volatility measure $\sqrt{\sigma_t}^{2i}$ is normalized by taking it relative to the sample mean for the t^{th} year as:

$$\text{Relative volatility}_{it} = (\sigma_t)^i \quad *100 / \ (1/N \sum_i \ \sigma_t{}^i) \qquad (8)$$

As an additional robustness check, we also calculate the relative volatility measure for a second variable e.g. net portfolio equity flows (PEF) which is used in robustness check section. PEF helps to capture the riskiest definition of foreign investment since portfolio equity capital are generally more volatile and equities do not ensure returns and are more prone to sell-offs in time of crisis when dividend payments or capital gains may not be certain. Table 4 below provides the ARCH-LM test results of the variance equations. Both the relative volatility measures were stationary in level.

	ARCH LM test

18 Similar to Arize *et al.* (2020).

19 Proxied through outflows-inflows.

20 Absolute value as base ensures proper change of sign for years with negative figures.

21 This tests whether the residuals capture any additional ARCH effects. There should be no ARCH left in them if the variance equation is correctly specified.

	statistic (nR^2)
Net capital flows (CF) Volatility	
Brazil	0.02 ^
China	0.09 ^
Indonesia	0.41 ^
India	0.97 ^
Mexico	1.94E-05 ^
Russia	0.60 ^
Thailand	0.20 ^
Turkey	0.11 ^
Net portfolio equity flows (PEF) Volatility	
Brazil	1.38 ^
China	0.04^
Indonesia	0.00 ^
India	0.23 ^
Mexico	0.57 ^
Russia	0.66^
Thailand	0.00 ^
Turkey	0.18 ^

Note: ARCH LM test: Null: no ARCH effect upto order q in the residual. If accepted, the modeling is correct. The reported statistic is Engle's LM test statistic computed as the number of observations times the goodness of fit from the test regression and is asymptotically distributed as $\chi 2(q)$. ^: p-value > 0.01 e.g. acceptance of null.

Table 4. ARCH-LM test for conditional variance

We find that although coefficient of CF volatility is positive as hypothesized, it is not significant. In the case of regression with democratic accountability (column 4), it holds weakly at 19% level. The significance of both relative FD and government stability continues to hold. The interactive term shows that democratic accountability yields a significant negative impact of 0.01% on CAB/GDP in crisis years which implies that during crisis period countries with higher democratic quotient are likely to adopt more populist measures such as expenditure stimulating policies that increases imports.

	Dependent: CAB/GDP %					
	Financial development (FD)	**Anti-corruption measures (ANTICOR)**	**Bureaucratic efficiency (BUR_EFF)**	**Democracy (DEMO)**	**Government Stability (GOV STABY)**	**Legal (LEGAL)**
	(1)	(2)	(3)	(4)	(5)	(6)
Persistence	0.536***	0.579***	0.742***	0.482**	0.578***	0.600***

	(0.14)	(0.19)	(0.15)	(0.23)	(0.16)	(0.17)
Institution	-0.056**	0.030^	-0.097^	0.046^	-0.035*	-0.056^
	(0.02)	(0.02)	(0.09)	(0.05)	(0.02)	(0.06)
Government debt	0.024*	0.020^	0.006^	0.031^	0.016^	0.019^
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
Initial wealth	-0.172**	-0.134**	-0.113^	-0.169**	-0.108**	-0.124**
	(0.07)	(0.06)	(0.08)	(0.08)	(0.05)	(0.05)
Growth in relative PCI	0.026^	0.030^	0.008^	0.036^	0.011^	0.017^
	(0.03)	(0.04)	(0.03)	(0.05)	(0.03)	(0.03)
Squared growth in relative PCI	0.001***	0.001***	0.001***	0.001**	0.001**	0.001**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
TOT volatility	0.000^	-0.004^	0.004^	0.001^	-0.001^	0.000^
	(0.006)	(0.008)	(0.008)	(0.006)	(0.005)	(0.005)
Growth in raw material imports ratio	0.026***	0.027***	0.031***	0.030***	0.026***	0.028**
	(0.009)	(0.010)	(0.012)	(0.011)	(0.009)	(0.011)
Growth in relative dependency ratio	-0.411^	-0.366^	-0.599^	-0.366^	-0.591^	-0.575^
	(0.348)	(0.316)	(0.466)	(0.314)	(0.430)	(0.440)
CF Volatility	0.002^	0.002^	0.002^	0.003[19%]	0.002^	0.002^
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Crisis Dummy	0.397^	0.531^	0.310^	0.966^	0.270^	0.281^
	(0.539)	(0.650)	(0.508)	(0.728)	(0.619)	(0.634)
Institution*DUM_CRS	-0.003^	-0.005^	-0.003^	-0.010*	-0.002^	-0.001^
	(0.006)	(0.008)	(0.006)	(0.008)	(0.007)	(0.007)
Durbin-Watson stat	2.63	2.69	2.80	2.57	2.70	2.69
Prob(J-statistic)	0.62	0.61	0.53	0.54	0.60	0.49

Note: Institutions, TOT and CF volatility in percentage relative to sample average. Robust *HAC* standard errors are reported in ( ). G_RAW, G_RDR, CF Volatility, DUM_CRS and interactive term are exogenous, while other variables are instrumented in AH method. ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.10$, ^: insignificant. Insignificant intercept not shown in Table.

Table 5. Baseline estimates including uncertainty

V. Robustness checks

V.I. Structural breaks

Since these EMEs show a significant rise in CAB during the years between 2000 and 2008 (GFC) (Figure 1), we test for the presence of structural breaks. We employ the Bai and Perron (BP) method to endogenously determine multiple breakpoints in CAB/GDP. It runs individual-specific regressions of CAB/GDP on regime-specific covariates across j = 0 to M regimes as:

$$CAB/GDP_t = Z'_t \lambda_j + \mathcal{E}_t \qquad (9)$$

The BP test minimizes the total of residual sum of squares from regressions across m partitions in the data to estimate the parameters and tests for the null of stability in λ_j using F statistic and critical values provided by Bai and Perron (2003). Two or more breaks could be identified for Brazil, China and Mexico, while at least one break in the data was significant for Indonesia, India, Russia, Thailand and Turkey. The break dates were uniformly identified around 1999-00 and 2008-09 (Table 6).

	Break Test	***Scaled F-statistic***	***Critical Value @***
Brazil	0 vs. 1 *	24.44	9.81
Breaks: 2001, 2008	1 vs. 2 *	18.41	11.4
	2 vs. 3	11.94	12.29
China	0 vs. 1 *	50.71	9.81
Breaks: 2005, 2009	1 vs. 2 *	27.37	11.4
	2 vs. 3	8.36	12.29
Indonesia	0 vs. 1 *	93.32	9.81
Breaks:2000	1 vs. 2	10.87	11.4
India	0 vs. 1 *	14.50	9.81
Breaks: 2008	1 vs. 2	9.46	11.4
Mexico	0 vs. 1 *	20.68	9.81

Breaks: 1998, 2007, 2013	1 vs. 2 *	14.30	11.4
	2 vs. 3 *	14.40	12.29
	3 vs. 4	5.42	12.9
Russia	0 vs. 1 *	51.96	9.81
Breaks: 1999	1 vs. 2	9.00	11.4
Thailand	0 vs. 1 *	17.90	9.81
Break: 2000	1 vs. 2	8.87	11.4
Turkey	0 vs. 1 *	10.41	9.81
Breaks: 2010	1 vs. 2	6.42	11.4

Note: @ Bai and Perron (2003) critical values are reported. * Signifcant at 10 % level. We take a maximum of 5 breaks and use sequentially determined breaks testing. We include regime specific trend and intercept in all the individual regressions.

Table 6. Test for structural breaks

To address this, we account for structural breaks at 2000 and 2008 in the IV regressions through dummy variables[22] and test whether the estimated relationship was stable over the sub-periods 2001-08, a time for high global and financial growth, low prices (Obstfeld and Rogoff 2009), post-2008 which was a period of recovery and low growth after the GFC of 2008. The break-augmented specification (Table 7) is:

$$CAB/GDP_{it} = \beta_0 + \sum_{j=1}^{K} \beta_j X_{j,it} + \beta_{01}*(D\_01) + \beta_{02}*(D\_09) + \sum_j \beta_{j1}(X_{j,it} * D\_01) + \sum_j \beta_{j2}(X_{j,it} * D\_09) + v_{it} \quad (10)$$

22 D_01 = 1 for years 2001-08
= 0 otherwise.
D_09 = 1 for years 2009-18
= 0 otherwise.

Here, β_0 and β_j s capture the average CAB/GDP ratio and overall coefficient of jth regressor respectively during 1995-2018. $X_{j,it}$ includes CAB/GDP(-1), Institutions, LAG_NFA_GDP, G_PCI^2, G_RAW, CF Volatility.

β_{01}, β_{02}, β_{j1} s and β_{j2} s capture the change in overall intercept and coefficient estimates in the first and second sub-periods 2001-08 and 2009-18 respectively. Thus, the intercept and coefficients for first and second sub-periods can be calculated as ($\beta_0 + \beta_{01}$), ($\beta_0 + \beta_{02}$), ($\beta_j + \beta_{j1}$) and ($\beta_j + \beta_{j2}$).

We take only four institutions which are found to be significant in modified baseline specification (Table 5). To save on degrees of freedom we exclude those control variables which are insignificant in both overall period and the two sub-periods across all four regressions. G_RAW is taken only in the overall period, since it was insignificant in both sub-periods indicating that there was no significant change in its dynamics. As an additional check, we also regress CAB/GDP on PEF volatility.

The dummy or interacted variables are taken as exogenous. These break-augmented regressions throw light on interesting changes that took place in the dynamics of CAB. The importance of break-accounting is clear since several variables like relative anti-corruption measures, democratic accountability or CF volatility, which were insignificant earlier are now significant. The results are discussed below:

Uncertainty: Uncertainty in capital flows yielded significant impact on CAB after 2000. During 2001-08, a 10% increase in total CF volatility compared to the sample average increased surpluses by 0.02 ~ 0.04% of GDP providing evidence that higher risk in financial flows significantly increased EME net savings in the pre-crisis period. During 2009-18, volatility in portfolio equity flows (PEF), the riskier component of capital flows, significantly increased surpluses (columns (2), (4), (6), (8)). A 10% higher PEF volatility increased CAB/GDP by around 0.11 ~ 0.13 %.

However, there is a change in the sign of impact of CF volatility during 2009-18, as CAB is now reduced with greater CF volatility. The negative sign becomes significant in the estimations with democratic accountability and government stability (columns (5) and (7)). In the post-crisis years, a 10% increase in CF volatility depresses surpluses by 0.03 ~ 0.05 % of GDP. One possible explanation for this role reversal is change in EME reserves policy with changing nature of flows. Data show that total inflows into EMEs were greater in post-GFC years which is consistent with the finding in several other papers e.g. Chen *et al.* (2014), Banerjee and Goyal (2020) that there was significant portfolio rebalancing of AE investors towards EME assets in the wake of QE. However, reserves accumulation declined significantly in the post-GFC period showing lesser management of inflows compared to pre-GFC years. This appreciates the real exchange rate, hence pushing down CAB. This result, along with the positive coefficient of PEF volatility during 2009-18,

provides evidence that EMEs were more inclined to manage risky portfolio inflows rather than total inflows during post-GFC period.

Institutions: Compared to the estimation over 1995-2018 (Table 5), along with FD and government stability, two more institutions e.g. anti-corruption measures and democratic accountability become significant in these break-augmented regressions. This shows that the estimated relationship between CAB and institutions were subject to change which if not taken into account might not show the true situation. In the overall period only democratic accountability is significant showing the importance of democracy prior to 2000s as well. When democratic accountability in any EME rises by 1% compared to the average, CAB is pushed down by 0.04 ~ 0.05%. All of FD, anti-corruption measures and government stability are found to be significant in the first and/or second sub-periods indicating the gain in influence of institutions in the post-2000 years.

During 2001-08, the impact of democratic accountability is higher (-0.06%) although at 13 percent level of significance. Comparatively, a 1% increase in relative FD declined CAB/GDP by lower amount (- 0.03 ~ -0.04 %). The estimated impact is similar to FD for both anti-corruption measures and government stability.

During 2009-18, the impact of both FD and government stability was pushed down further by – 1 percentage point to -0.04 ~ -0.05%, and became similar to democratic accountability. The impact of anti-corruption measures remained same.

These estimates imply that, on average, countries relatively lower on these measures would have higher CAB compared to counterparts. This possibly explains the rise in CAB surpluses of China or Russia during the middle sub-period since sub-period wise averages show that they had relatively low levels of both anti-corruption measures as well as democratic accountability compared to other EMEs during 2001-08.

Controls: We find that persistence, initial wealth, higher levels of development and resource independence are significant in CAB/GDP, both in overall and sub-periods. However, negative and significant coefficient of CAB/GDP(-1) in the first and second sub-periods moderates the overall positive impact to almost nil in 2001-08 and puts it in the negative in 2009-18. So over time, there is a growing tendency of higher surplus in last year to reduce today's surplus. This shows that CAB imbalances have tended towards more correction after the GFC. This might be capturing some retaliatory actions on surplus economies.

Although the overall effect of initial wealth on the CAB is negative in lines with LCH (equation A, footnote 11 and similar to Tables 3 and 5), we find that during the first and 2nd sub-periods the negative impact is moderated significantly to almost nil during 2001-08 and positive during 2009-18. This shows that over time initial wealth has become increasingly instrumental in creating surpluses. Similarly, higher level of

development is also associated with higher surpluses although marginally. This effect holds in the overall period, increases in the first sub- period to 0.004%, but becomes insignificant during 2009-18. The growth in raw materials ratio (G_RAW) is significant and stable throughout the three sub-periods. Higher resource independence leads to higher surpluses. The controls indicate unanimously that CAB surpluses are strongly linked to a higher stage of development. Pre-GFC surpluses are, thus, consistent with higher growth rates of EMEs during that time.

	Dependent variable: CA/GDP %							
	FD		**ANTICOR**		**DEMO**		**REL_GOV STABY**	
	CF Volatility	***PEF Volatility***	***CF Volatility***	***PEF Volatility***	***CF Volatility***		***CF Volatility***	***PEF Volatility***
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Persistence	1.292***	1.249***	1.429***	1.420***	1.215***	1.205***	1.336***	1.359***
	(0.28)	(0.30)	(0.27)	(0.34)	(0.18)	(0.21)	(0.28)	(0.26)
Institution	-0.003^	-0.016^	0.049[13%]	0.041[17%]	-0.050*	-0.041[15%]	0.025^	0.026^
	(0.05)	(0.05)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
Initial wealth	-0.529**	-0.603***	-0.563**	-0.616***	-0.663***	-0.655***	-0.556***	-0.598***
	(0.23)	(0.18)	(0.23)	(0.21)	(0.21)	(0.19)	(0.19)	(0.18)
Squared growth in RPCI	0.001**	0.001***	0.001**	0.001***	0.000[13%]	0.001**	0.001**	0.001***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Growth in raw materials ratio	0.013***	0.014**	0.013**	0.014*	0.013**	0.012*	0.013*	0.013**
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Uncertainty in capital flows	-0.001^	-0.005^	-0.002^	-0.007^	0.000^	-0.005^	0.000^	-0.006^
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)
C	0.144^	0.244[11%]	0.119^	0.162^	0.208^	0.246^	0.156^	0.193*
	(0.23)	(0.15)	(0.11)	(0.14)	(0.21)	(0.21)	(0.15)	(0.12)
D_09	-0.270^	-0.392**	-0.215^	-0.303^	-0.440^	-0.495[17%]	-0.243*	-0.311*
	(0.23)	(0.20)	(0.22)	(0.27)	(0.33)	(0.36)	(0.14)	(0.16)
Interactions with break dummies								
Persistence *D_01	-0.980***	-0.942***	-1.108***	-1.120***	-1.016***	-0.969***	-1.008***	-1.040***
	(0.17)	(0.22)	(0.14)	(0.26)	(0.17)	(0.17)	(0.13)	(0.15)
Institution *D_01	-0.034**	-0.028*	-0.033*	-0.028[14%]	-0.016[13%]	-0.013^	-0.0319***	-0.029*
	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)

Initial wealth *D_01	0.483*** (0.16)	0.474*** (0.13)	0.516*** (0.18)	0.511*** (0.19)	0.493*** (0.19)	0.464*** (0.17)	0.497*** (0.15)	0.495*** (0.14)
Squared growth *D_01	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003** (0.00)	0.003*** (0.00)	0.003*** (0.00)
Uncertainty in capital flows*D_01	0.004* (0.00)	0.000^ (0.01)	0.004[16%] (0.00)	0.003^ (0.01)	0.002** (0.00)	-0.002^ (0.01)	0.002^ (0.00)	0.002^ (0.01)
Persistence *D_09	-1.413*** (0.32)	-1.312*** (0.30)	-1.593*** (0.29)	-1.501*** (0.34)	-1.309*** (0.22)	-1.251*** (0.22)	-1.493*** (0.31)	-1.431*** (0.25)
Institution *D_09	-0.019^ (0.03)	-0.041*** (0.01)	-0.028[16%] (0.02)	-0.037* (0.02)	0.002^ (0.02)	-0.013^ (0.02)	-0.031** (0.01)	-0.045*** (0.01)
Initial wealth *D_09	0.554*** (0.19)	0.594*** (0.16)	0.619*** (0.21)	0.613*** (0.20)	0.563*** (0.20)	0.538*** (0.19)	0.610*** (0.17)	0.617*** (0.14)
Squared growth *D_09	0.000^ (0.00)	0.000^ (0.00)	0.000^ (0.00)	0.000^ (0.00)	0.000^ (0.00)	0.000^ (0.00)	-0.000^ (0.00)	0.000^ (0.00)
Uncertainty in capital flows*D_09	-0.003^ (0.00)	0.011[15%] (0.01)	-0.002^ (0.00)	0.014[20%] (0.01)	-0.005* (0.00)	0.011^ (0.01)	-0.003*** (0.00)	0.013* (0.01)
DW stat	2.25	2.26	2.17	2.22	2.13	2.18	2.31	2.36
Prob(J-statistic)	0.96	0.92	0.98	0.99	0.87	0.78	0.96	0.93

Note: Robust *HAC* standard errors are reported in ( ). G_RAW, dummies and all interactive terms are exogenous, while other variables are instrumented in AH method. ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.10$, ^: insignificant.

Table 7. Break-augmented estimates

V.II. Were Asia-Pacific nations significantly different?

There was a tremendous debate on East Asian mercantilism and strong arguments were made against currency manipulation in these countries. The average CAB/GDP ratio of the Asia-Pacific nations of China, Indonesia and Thailand during 1995-2018 happens to be more than 2.6 times higher than the overall sample mean indicating that there might be significant differences between these nations and the rest of the sample. This lead us to do a further check whether the previous results held for the Asia-Pacific nations as well through a dummy DUM_AP that takes the value of 1 for China, Indonesia and Thailand and 0 otherwise.

The significant presence of breaks also makes it imperative to study whether the Asia-Pacific nations were subject to structural change as well. We estimate these regressions with CF volatility (Table 8). The baseline specification is now modified through the simultaneous use of two dummies e.g. dummy for Asia-Pacific nations (DUM_AP) and dummy for structural breaks (D_01, D_09) as below:

$$CAB/GDP_{it} = \lambda_0 + \sum_j \lambda_j X_{j,it} + \lambda_{01}(DUM\_AP) + \lambda_{02}(DUM\_AP*D\_01) + \lambda_{03}(DUM\_AP*D\_09) + \sum_j \lambda_{j1}(X_{j,it} * DUM\_AP) + \sum_j \lambda_{j2}(X_{j,it} * DUM_{AP} * D\_01) + \sum_j \lambda_{j3}(X_{j,it} * DUM_{AP} * D\_09) + v_{it} \quad (11)$$

Here, the variables are same as those in Table 7. λ_{01} *and* λ_{j1} s captures the change in overall intercept and coefficient estimates for Asia-Pacific nations, while λ_{02}, λ_{03}, λ_{j2} s *and* λ_{j3} s capture the change in overall intercept and coefficient estimates for Asia-Pacific nations during 2001-08 and 2009-18 respectively. Apart from institution and CF volatility only squared growth in RPCI was kept in the interacted variables since it showed significant change across the chosen dummies. However, its interaction with DUM_AP was dropped since it was insignificant across the regressions.

Interestingly we find significantly higher surpluses in the Asia-Pacific nations during the overall period which was also significantly reduced during 2009-18. Asia-Pacific CAB was higher by 1.2 ~ 1.4% of GDP on average compared to the sample. However, DUM_AP*D09 shows that the surpluses had reduced considerably in the second sub-period. Asia-Pacific nations now on average had 1 ~ 1.1% lesser surpluses compared to the overall set indicating reduced mercantilist efforts.

Institutions had been particularly prominent in their influence on Asia-Pacific CAB/GDP in the last sub-period 2009-18 when all four institutions are significant with DUM_AP*D_09. This is in contrast to the significance of only FD and government stability for the overall sample. Compared to other EMEs where higher deficits are associated with better institutions, both FD and governance institutions have played a different role in Asia-Pacific nations by helping to improve surpluses especially in post-2008 years.

For 2009-18, there is a significantly more negative influence on Asia-Pacific surpluses from CF volatility. Our earlier regression in Table 7 had indicated that CF volatility negatively impacted EME surpluses in the post-crisis years but marginally (-0.03 ~ -0.05%). In Asia-Pacific nations a 10% higher CF volatility reduces CAB/GDP by 0.19% on average. Thus the impact of inflows had been considerably higher with Asia-Pacific nations, and combined with reduced reserves accumulation could significantly rebalance a part of Asia-Pacific surpluses in the post-GFC period.

	Dependent variable: CA/GDP %			
	FD	**ANTICOR**	**DEMO**	**REL_GOVSTABY**
	(1)	(2)	(3)	(4)
Persistence	0.502[11%]	0.387^	0.439^	0.463^
	(0.32)	(0.33)	(0.33)	(0.33)
Institution	-0.125*	0.019^	0.010^	-0.062[12%]
	(0.07)	(0.03)	(0.10)	(0.04)
Initial wealth	-0.386[17%]	-0.490[15%]	-0.445[11%]	-0.349^
	(0.28)	(0.35)	(0.28)	(0.26)
Squared growth in RPCI	0.001**	0.001**	0.001[16%]	0.001*
	(0.00)	(0.00)	(0.00)	(0.00)
Growth in raw materials ratio	0.022***	0.022***	0.022**	0.027***
	(0.01)	(0.01)	(0.01)	(0.01)
CF Volatility	0.002*	0.001^	0.002^	0.000^
	(0.00)	(0.00)	(0.00)	(0.00)
C	0.260^	0.299^	0.279^	0.240^
	(0.26)	(0.27)	(0.26)	(0.23)
DUM_AP	1.160*	1.447*	1.365[11%]	1.160*
	(0.68)	(0.86)	(0.86)	(0.72)
DUM_AP*D_01	-1.070*	-1.113^	-0.812^	-1.192*
	(0.59)	(1.06)	(0.96)	(0.67)
DUM_AP*D_09	-2.267**	-2.435**	-2.293**	-2.075*
	(1.14)	(1.13)	(1.10)	(1.18)
Interactions with break dummies				

Institution*DUM_AP	0.115[14%]	-0.022^	-0.035^	0.052^
	(0.08)	(0.04)	(0.09)	(0.05)
CF Volatility*DUM_AP	-0.001^	0.000^	-0.001^	0.001^
	(0.00)	(0.00)	(0.00)	(0.00)
Institution *DUM_AP *D_01	-0.006^	0.005^	-0.017^	-0.001^
	(0.01)	(0.01)	(0.01)	(0.01)
Squared growth*DUM_AP *D_01	0.015***	0.012*	0.009*	0.015**
	(0.00)	(0.01)	(0.00)	(0.01)
CF Volatility*DUM_AP *D_01	-0.003^	-0.008^	-0.002^	-0.007^
	(0.00)	(0.01)	(0.00)	(0.01)
Institution*DUM_AP*D_09	0.091***	0.067[13%]	0.058*	0.085*
	(0.03)	(0.04)	(0.03)	(0.05)
Squared growth*DUM_AP *D_09	-0.003^	-0.003^	-0.002^	-0.004^
	(0.00)	(0.00)	(0.00)	(0.00)
CF Volatility *DUM_AP *D_09	-0.020**	-0.015*	-0.016**	-0.027[15%]
	(0.01)	(0.01)	(0.01)	(0.02)
Durbin-Watson stat	2.27	2.25	2.28	2.39
Second-Stage SSR	758.47	782.88	778.53	791.14
Prob(J-statistic)	0.61	0.60	0.43	0.56

Note: Robust *HAC* standard errors are reported in ( ). ***: p < 0.01, **: p < 0.05, *: p < 0.1, ^:insignificant.

Table 8. Asia-Pacific estimates

V.III. Role of reserves accumulation on the impact of uncertainty

The results from the break-augmented and Asia-Pacific regressions show strong evidence for the presence of an impact from uncertainty in capital flows. As a plausible mechanism behind the influence, we explore the role of reserves accumulation (Table 9). Uncertainty in capital flows is directly linked with foreign reserves since monetary authorities prefer to maintain stability in the domestic exchange rate. Hot money flows can be detrimental to this stability and hence creates a need for reserves accumulation. If we study the data, we find a good extent of co-movement between the reserves to GDP % and the relative volatility % for these EMEs (Figure 3), especially for Indonesia, Mexico, Thailand and Turkey.

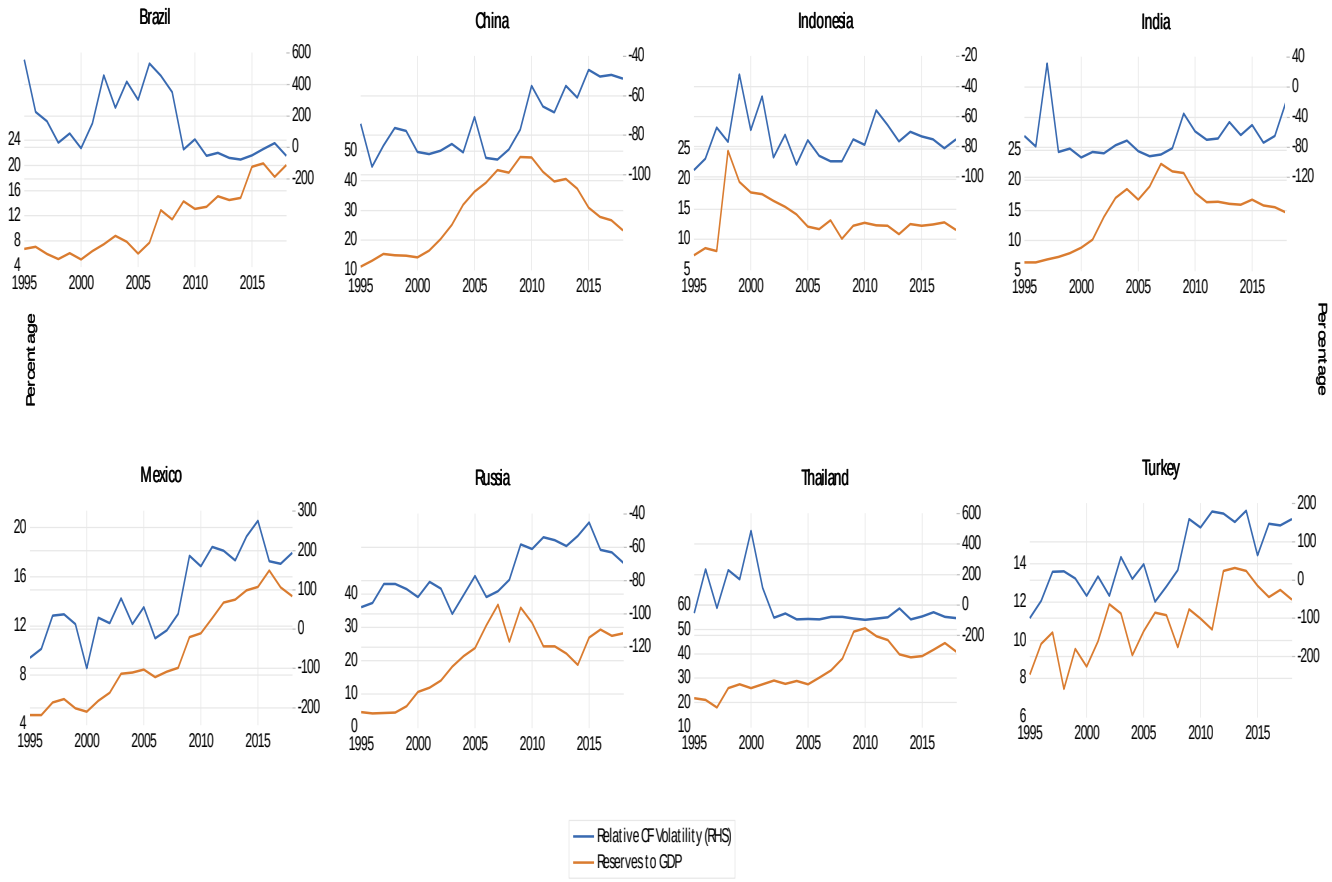


Fig 3. CF Volatility and Reserves-GDP ratio

Source: Authors' estimates and World Bank

To explore the potential mechanism, we study how CF volatility influences the impact of growth in reserves-GDP ratio[23] in CAB/GDP both in overall and sub-periods (interacted with D_01 and D_09). We also study if there is a significant difference for Asia-Pacific nations (interacted with DUM_AP*D_01 and DUM_AP*D_09).

We find that CF volatility does have linkages with EME reserves accumulation. The relationship between reserves and CAB is positive through depreciation. A 10% higher CF volatility would lead to impact of reserves growth increased by 0.002% in 2001-08. This increased to 0.005% percent in 2009-18. This indicates that after 2008 uncertainty could enhance the impact of EME reserve policy by higher amount, compared to pre-GFC years. However, since reserves growth declined considerably in the post-2008 period (Figure 3), this higher positive coefficient also implies that surpluses were moderated more after 2008.

23 The ratio was non-stationary in level and hence its growth rate was taken.

Reserves policy of Asia-Pacific nations with respect to net capital flows (CF volatility) was not significantly different from other EMEs. However, we find in another set of regressions (Appendix Table B) that in the post-GFC period, Asia-Pacific nations had higher impact from PEF volatility compared to other EMEs.

	Dependent variable: CA/GDP %			
	FD	**ANTICOR**	**DEMO**	**REL_GOVSTABY**
	(1)	**(2)**	**(3)**	**(4)**
Persistence	0.388^	0.454[13%]	0.417^	0.402^
	(0.29)	(0.30)	(0.31)	(0.32)
Institution	-0.064*	0.005^	0.014^	-0.022^
	(0.04)	(0.02)	(0.09)	(0.03)
Initial wealth	-0.444^	-0.382^	-0.417^	-0.401^
	(0.43)	(0.41)	(0.41)	(0.41)
Squared growth in RPCI	0.001*	0.001*	0.001^	0.001*
	(0.00)	(0.00)	(0.00)	(0.00)
Growth in raw materials ratio	0.022**	0.023**	0.023*	0.023**
	(0.01)	(0.01)	(0.01)	(0.01)
CF Volatility	0.000^	0.001^	0.001[11%]	0.001^
	(0.00)	(0.00)	(0.00)	(0.00)
C	0.279^	0.251^	0.272^	0.260^
	(0.31)	(0.27)	(0.31)	(0.28)
DUM_AP	1.377**	1.343*	1.392*	1.379*
	(0.66)	(0.73)	(0.71)	(0.73)
D_01*DUM_AP	-0.769^	-0.828^	-0.794^	-0.834^
	(0.98)	(0.87)	(0.80)	(0.86)
D_09*DUM_AP	-1.890*	-1.824*	-1.912*	-1.872*
	(1.08)	(1.04)	(1.02)	(1.03)
CF Volatility*G_RES	-0.0002*	-0.0002^	-0.0002^	-0.0001[11%]
	(0.00)	(0.00)	(0.00)	(0.00)
CF Volatility*(G_RES)*D_01	0.0002*	0.0002[16%]	0.0002^	0.0002*
	(0.00)	(0.00)	(0.00)	(0.00)
CF Volatility*(G_RES)*D_09	0.0005**	0.0005**	0.0005**	0.0004**
	(0.00)	(0.00)	(0.00)	(0.00)

CF Volatility*G_RES*DUM_AP	0.000^	0.000^	0.000^	0.000^
	(0.00)	(0.00)	(0.00)	(0.00)
CF Volatility*(G_RES)*D_01*DUM_AP	-0.002^	-0.002^	-0.002^	-0.002^
	(0.00)	(0.00)	(0.00)	(0.00)
CF Volatility*(G_RES)*D_09*DUM_AP	0.002^	0.002^	0.002^	0.002^
	(0.00)	(0.00)	(0.00)	(0.00)
Durbin-Watson stat	2.30	2.51	2.44	2.43
Prob(J-statistic)	0.90	0.73	0.73	0.75

Table 9. Reserves: a potential channel

V. Findings and Conclusion

This paper aims to contribute to the debate on global imbalances through some under-explored factors. We investigate both internal as well as external factors causing CAB of large EMEs over 1995-2018, thus providing a balanced view to a literature divided between extremes. We find that while domestic institutions like governance or financial development negatively impact surpluses, uncertainty in capital flows yields a positive impact. This makes rebalancing a mutual responsibility between EMEs and AEs.

Accounting for structural breaks, we find that both institution and uncertainty gained in their influence on CAB in the immediate pre-GFC years. Empirical results show that FD, captured through the IMF index, helped to reduce EME surpluses consistent with earlier findings. We find key role of three governance measures. Government stability and anti-corruption measures were almost at par with FD in their negative impact on CAB (around 0.03% of GDP decline from a 1% increase in the institution) and their influence became significant only after 2000, while negative impact from democratic accountability was highest and it was operational throughout 1995-2018. This finding is consistent with relatively lower level of democratic accountability in major surplus countries like China and Russia and underlines the need for more research on democracy as a factor behind CA imbalances. In crisis years, democracy is found to significantly increase deficits. This shows that more democratic nations are naturally inclined towards more populist expenditure stimulating measures.

The mechanism of institutions during 2009-18, however, differed for Asia-Pacific nations. Here better institutions helped to increase surpluses. This throws a new research question on possible behavioral differences between Asian and non-Asian countries that lead to different role of institutions in savings.

Our hypothesis that capital flows uncertainty should increase precautionary motive, holds. The quantitative impact for this factor is marginally less than that of institutions. Surpluses were increased significantly by uncertainty in net capital and net portfolio equity flows during 2001-08 and 2009-18 respectively. Interestingly we find a role reversal for volatility of net capital flows. While higher CF volatility led to higher surpluses during 2001-08, it significantly reduced surpluses during 2009-18 which was also a period of higher capital inflows. This indicates that compared to pre-GFC years, in post-2008 period EMEs didn't intervene as much for total capital flows but intervened more to counter fluctuations in portfolio capital. This shows the higher role of portfolio capital in EME reserves policy in the post-2008 period to reduce appreciating effects of inflows.

Although Asia-Pacific nations started with much higher surpluses, they show considerable rebalancing in post-GFC years, despite the positive impact from institutions. 2009-18 was a period of higher total inflows into these nations. This along with lesser reserves accumulation combined with lower growth were some factors behind this rebalancing.

We study the role of reserves as a possible mechanism of precautionary savings and find that uncertainty significantly increased the positive impact from reserves especially in the post-2000 years. Its influence during 2009-18 increased compared to 2001-08 showing more efficiency of EME reserves policy. Other possible mechanism through which uncertainty can influence CAB/GDP is the role of firm level savings and investment, which is kept for future research.

We have other interesting findings. EME surpluses have uniformly increased with their development. Rather than increasing imports at higher incomes, EMEs have preferred to focus on developing the export sector and hence incurred more surpluses. This result resonates with Chinn and Ito (2007). Such non-linear behavior becomes possible when the EME population has the means to save and chooses to save after satisfying all consumption needs. If this is precautionary behavior or if it is the effect of past liabilities, can be studied in future. We find renewed support for the 'resource curse' thesis that higher dependence on raw resources leads to lower growth outcomes. We show that as the EMEs had moved towards resource independence, their surpluses had increased significantly and the impact held for the entire period. This shows that EMEs which had a higher share of technology based exports accumulated greater surpluses. Higher-than-average EME surpluses during 2001-08 was mainly due to higher levels of these development-oriented factors as well greater uncertainty from capital flows that increased precautionary holdings.

This study strongly supports development of good institutions and also reduction in capital flows uncertainty for rebalancing of trade imbalances. We argue that countries would attempt to hold buffer reserves when faced with volatile capital flows and hence AE policies should aim to reduce their impact on EMEs. That

democratic accountability and anti-corruption measures are inversely related to surpluses explain high surpluses in Russia and China, which are lower on these measures relative to other EMEs.

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Appendix

	FD	GDEBT_GDP	LAG_NFA_GDP	G_RPCI	SQ_G_RPCI	VOL_TOT	G_RAW	G_RDR	ANTICOR	BUR_EFF	DEMO	GOV_STABY	LEGAL
FD	1												
GDEBT_GDP	0.05	1.00											
LAG_NFA_GDP	0.31	-0.31	1.00										
G_RPCI	0.02	-0.20	0.20	1.00									
SQ_G_RPCI	-0.02	0.09	-0.08	-0.51	1.00								
VOL_TOT	-0.02	-0.36	0.24	0.04	0.09	1.00							
G_RAW	-0.03	-0.08	0.00	-0.15	0.13	0.00	1.00						
G_RDR	0.21	-0.27	0.32	0.05	-0.02	0.46	-0.12	1.00					
ANTICOR	-0.05	0.18	-0.40	-0.01	-0.15	-0.26	0.02	-0.22	1.00				
BUR_EFF	-0.12	0.46	-0.23	0.01	-0.21	-0.48	-0.02	-0.36	0.29	1.00			
DEMO	-0.29	0.51	-0.54	-0.10	-0.18	-0.29	-0.11	-0.32	0.40	0.62	1		
GOV_STABY	0.15	-0.45	0.33	0.27	-0.05	0.25	0.00	0.10	-0.18	-0.42	-0.58	1.00	
LEGAL	0.10	-0.23	0.17	0.13	-0.08	0.06	0.11	0.04	0.00	-0.09	-0.29	0.39	1

Note: Sample: 1995-2018.

Table A. Correlations

	Dependent variable: CAB/GDP %							
	REL_FDI		**REL_ANTICOR**		**REL_DEMO**		**REL_GOVSTABY**	
	(1)		**(2)**		**(3)**		**(4)**	
Persistence	0.504	**	0.543	**	0.574	**	0.506	*
	(0.23)		(0.25)		(0.24)		(0.27)	
Institution	-0.034	^	0.007	^	-0.078	^	-0.026	^
	(0.06)		(0.02)		(0.07)		(0.02)	
Initial wealth	-0.380	12%	-0.364	16%	-0.358	*	-0.337	15%
	(0.25)		(0.26)		(0.22)		(0.24)	
Squared growth in RPCI	0.001	^	0.001	^	0.000	^	0.001	*
	(0.00)		(0.00)		(0.00)		(0.00)	
Growth in raw materials ratio	0.015	*	0.015	**	0.011	^	0.015	**
	(0.01)		(0.01)		(0.01)		(0.01)	
PEF Volatility	0.002	^	0.002	^	0.001	^	0.002	^
	(0.01)		(0.01)		(0.01)		(0.00)	
C	0.271	^	0.265	^	0.239	^	0.250	^
	(0.24)		(0.23)		(0.19)		(0.23)	
DUM_AP	1.143	**	1.154	**	1.104	*	1.133	**
	(0.45)		(0.51)		(0.67)		(0.49)	
DUM_AP*D_01	-0.673	^	-0.714	^	-0.579	^	-0.768	^
	(0.77)		(0.73)		(0.90)		(0.75)	
DUM_AP*D_07	-1.544	**	-1.556	**	-1.502	**	-1.484	**
	(0.77)		(0.73)		(0.74)		(0.68)	
PEF Volatility *G_RES	0.0001	^	0.0001	^	0.0003	*	0.0001	^
	(0.00)		(0.00)		(0.00)		(0.00)	
PEF Volatility *(G_RES)*D_01	-0.0004	^	-0.0004	^	-0.0006	***	-0.0004	^
	(0.00)		(0.00)		(0.00)		(0.00)	
PEF Volatility *(G_RES)*D_09	0.0002	^	0.0002	^	0.0001	^	0.0002	^
	(0.00)		(0.00)		(0.00)		(0.00)	
PEF Volatility * G_RES*DUM_AP	0.000	^	0.000	^	0.000	^	0.000	^
	(0.00)		(0.00)		(0.00)		(0.00)	

PEF Volatility * (G_RES)*D_01*DUM_AP	0.000	^	0.000	^	0.001	^	0.000	^
	(0.00)		(0.00)		(0.00)		(0.00)	
PEF Volatility * (G_RES)*D_09*DUM_AP	0.001	14%	0.002	*	0.001	**	0.001	*
	(0.00)		(0.00)		(0.00)		(0.00)	
Durbin-Watson stat	2.40		2.46		2.46		2.44	
Prob(J-statistic)	0.96		0.93		0.96		0.95	

Table B. PEF volatility with reserves