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Asian Capital Flows and the Global Financial Cycle

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BY

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ABSTRACT: Capital flows to emerging Asian economies have become less dependent on the global financial cycle in the years since the Global Financial Crisis, during which policymakers in the region took steps to reduce their vulnerability to capital flow surges. Variations in the global financial cycle explain significantly less of the variation in capital flows during the past 15 years than the preceding 15-year period. However, the impact of global factors on domestic interest rates and some other domestic variables has remained undiminished, indicating that the transmission of external shocks to Asian economies may now be occurring through alternative channels.

JEL CLASSIFICATION NUMBER: E43, E58, F21, F32

KEYWORDS: Capital Flows, Exchange Rate, Interest Rate, Asia-Pacific

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1. EXECUTIVE SUMMARY

Emerging economies in Asia have taken steps to reduce their vulnerability to capital flow surges and stops often attributed to the influence of a “global financial cycle.” Flexible exchange rate regimes—now employed by many Asian central banks—are meant to allow economies to adjust to external shocks while setting interest rates based on domestic conditions. Macroprudential measures (MPMs)—implemented with increasing frequency over the past 15 years—are used to discourage buildups of potential flight capital.

To assess the effectiveness of these measures, we estimate the impact of external shocks, external policy changes, and the global financial cycle (GFCy) on capital flows to emerging market economies in Asia over the past 30 years. The study finds a statistically significant decline in the impact of the GFCy on capital flows to Asia since the 2008–10 Global Financial Crisis. However, while capital flows have become more independent of the GFCy, the impact of global factors on domestic prices and activity, including interest rates, credit and output growth, and even policy rates, remains large and undiminished by most measures.

Possible explanations for this paradox include the notion that MPMs and capital flow management measures (CFMs)—have pushed cross-border financial activity into other instruments such as derivatives. Linkages through trade flows may have strengthened, compensating for weaker capital flows. Policymakers may be acting in concert in response to common shocks such as the pandemic, or they may be moving more rapidly to counter market pressures that lead to capital outflows.

2. INTRODUCTION

Asian emerging economies have weathered the recent round of post-pandemic interest rate hikes surprisingly well, avoiding the capital surges and sudden stops that characterised previous external monetary shocks. During the 1997–99 Asian Financial Crisis (AFC), the 2008–10 GFC, and, to a lesser extent, the Taper Tantrum episode of 2013, capital outflows aggravated deteriorating financial conditions in many emerging market economies, often forcing policymakers into adopting procyclical policies. The frequency and severity of such episodes lent support to the thesis associated with Hélène Rey, that the well-known monetary trilemma of international economics has collapsed into a

dilemma. To the extent that this is the case, countries would have to choose between having a closed capital account or being at the mercy of the GFCy, and domestic monetary policy would be ineffective in the face of global capital flows. But the recent experience in Asia and elsewhere suggests that either domestic policy is more effective than previously thought, or that conditions have changed.

To test these ideas, the present study explores the influence of global monetary conditions or a GFCy on a subset of Asian economies (subsequently referred to as AEE).[2] It begins with a brief literature survey and a set of stylised facts on capital flows, exchange rates and interest rates of countries in the region. Next, it examines the determinants of capital flows to AEE by conducting a series of regressions of various capital flow measures on global factors obtained from an array of macroeconomic and financial variables pertaining to the US and other advanced economies. The focus is on determining the extent to which global factors can explain changes in capital flows[3], and how this relationship has changed over the past thirty years.

This approach is then extended to an analysis of the impact of global factors on domestic monetary and financial conditions. Domestic policy rates, short-term (90-day) interest rates and proxies for the business cycle[4] are regressed on global factors and on various measures of advanced to determine how correlations have changed over time. Possible explanations for patterns identified in this exercise are then considered, including the role played by increased currency flexibility, MPMs, increased savings (fiscal and external) surpluses, and strategic intervention by national authorities. The increased use of unconventional tools, including spot and forward intervention, CFMs and MPMs, is also discussed. A concluding section suggests possible policy measures to dampen the impact of the GFCy on AEE economies.

3. LITERATURE SURVEY

Several recent studies have explored the impact of GFCys on capital flows and domestic variables. A notable point of reference is Hélène Rey's frequently cited

2 The economies studied are Indonesia, Malaysia, the Philippines, South Korea, and Thailand—the countries most affected during the 1997–99 Asian financial crisis.

3 These are defined variously either as net flows on the financial account ex foreign direct investments (FDI) and reserves, or as net acquisition by foreigners of domestic debt instruments (bonds and bank deposits)

4 Dependent variables with a unit root—notably interest rates—are analysed in differenced form.

2014 Mundell-Fleming lecture and paper (2016), which highlights the power of the GFCy and the limits it imposes on the ability of policymakers in noncore countries to influence domestic monetary and credit conditions. Obstfeld (2015) accepts Rey's general thesis that global market conditions and US Federal Reserve policy decisions affect financial and credit conditions across borders, but argues that this does not invalidate the policy trilemma. Focusing on capital flows—specifically fixed income flows into bank deposits and bonds—rather than price changes, Forbes and Warnock (2020) conclude that the capital flow waves seen in the 1980's and 1990's have in recent years diminished to ripples.

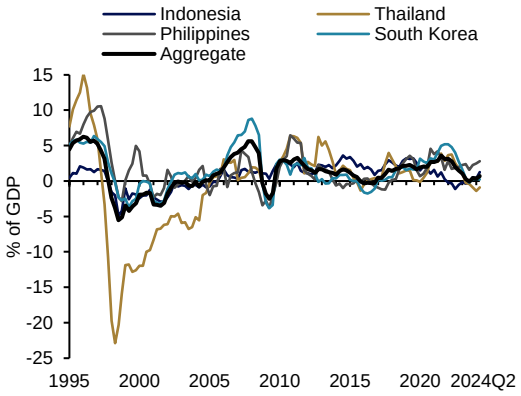
Employing a conventional panel regression on widely cited indicators of the global cycle, including the VIX volatility index and US policy rate, Cerutti et al. (2019) find that the GFCy explains less than 10 percent of capital flow variation (R^2 less than 0.1). In a subsequent study, Cerutti and Claessens (2024) find that the GFCy explains a much higher share of interest rate variation than it does the variation in capital flows. Most recently, noting that EMEs have been quite resilient to the recent round of central bank tightening, the BIS (2024) makes the case that susceptibility to external shocks and correlations with the GFCy have diminished since the GFC.

4. EXTERNAL ACCOUNT TRENDS

By some measures, capital flows to emerging economies in Asia have moderated since the GFC of 2008–10. Notably, net and gross inflows as a share of GDP have diminished, as have gross inflows to debt instruments (bonds and bank deposits) (**Chart 1**). In addition, the variance of capital flows into fixed income instruments, including bank deposits and portfolio debt (both domestic and international bonds), has declined by more than half as a share of GDP over the past decade (**Chart 2**).

Chart 1 Capital flows have diminished in magnitude…

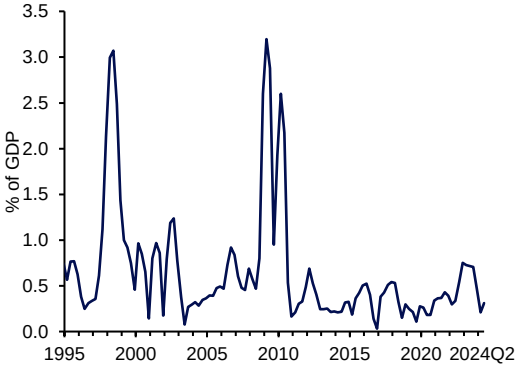
Debt flows as a share of GDP



Source: IMF, Haver Analytics, MAS estimates

Chart 2 … and volatility has declined

Volatility of aggregate debt flows



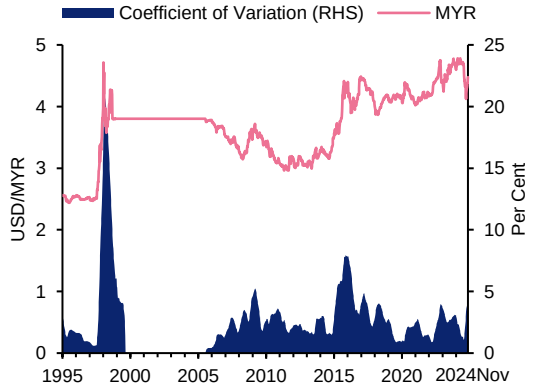
Source: IMF, Haver Analytics, MAS estimates

Note: Volatility is measured as the standard deviation of the quarterly flows as a percentage of GDP using 4-quarter rolling windows.

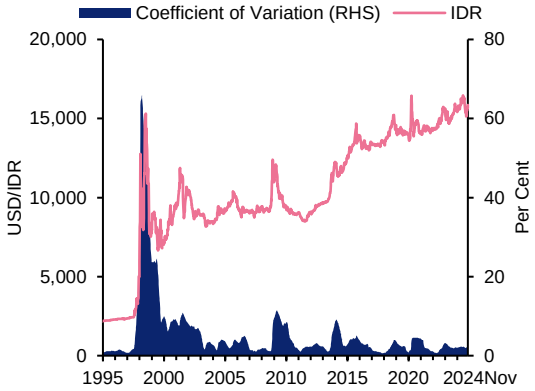
Other immediate comparisons are less suggestive of a structural change. Nominal exchange rate volatility has not shifted decisively, even as many countries have moved to adopt flexible exchange rate inflation targeting regimes. Some currencies (MYR, IDR, PHP) have registered trend nominal declines against the USD while others (THB, KRW) have fluctuated around a stationary mean (**Chart 3**). Since 2000, these five currencies have depreciated by an average of 1.5% annually against the USD, while annual inflation has averaged 3.3% in the five economies and 2.6% in the US.

Chart 3 Exchange Rates against the USD and Exchange Rate Volatilities

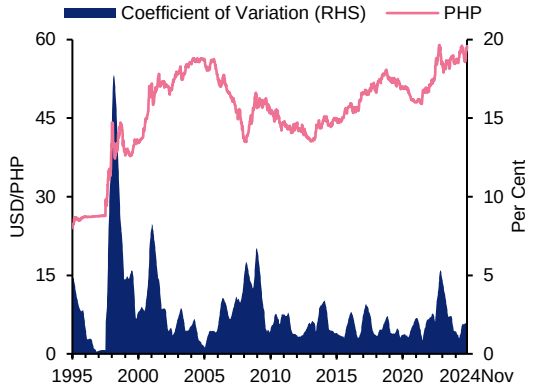
Malaysian Ringgit (MYR)



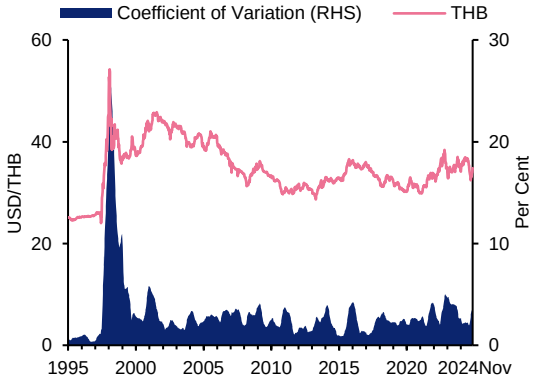
Indonesian Rupiah (IDR)



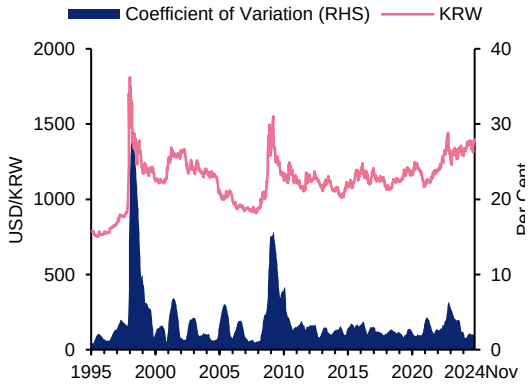
Philippine Peso (PHP)



Thai Baht (THB)



Korean Won (KRW)



Source: Bloomberg, MAS estimates

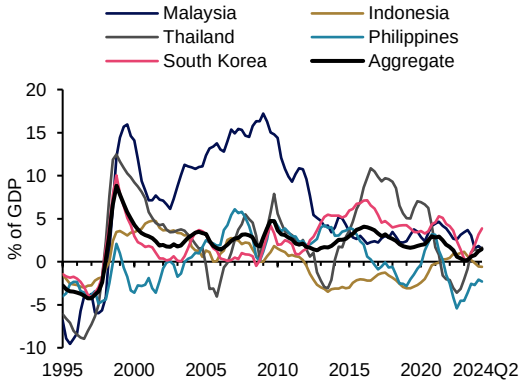
Note: Exchange rate volatility is measured as the coefficient of variation (defined as standard deviation over the mean) for the weekly bilateral exchange rate against the USD using 52-week rolling windows.

Current accounts strengthened after the AFC, rising from average deficits of 4% of GDP before the crisis to surpluses of 2% by 2005, but since 2022, average surpluses have slipped to 1% (**Chart 4**). During this period, the

average share of government bonds held by foreigners has declined by more than half from a high of 59% in 1997 to 23% in 2023 (**Chart 5**), reflecting the reduced rate of inflows into interest-bearing instruments.

Chart 4 Current accounts have generally been in surplus since the AFC

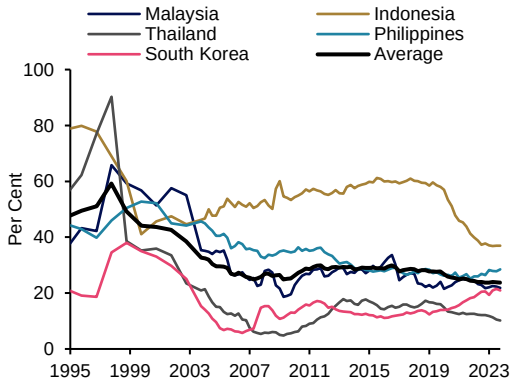
Current account balance as a share of GDP



Source: IMF, Haver Analytics, MAS estimates

Chart 5 The share of foreign investors in government debt markets has fallen

Share of general government gross debt held by foreign investors



Source: IMF, Haver Analytics, MAS estimates

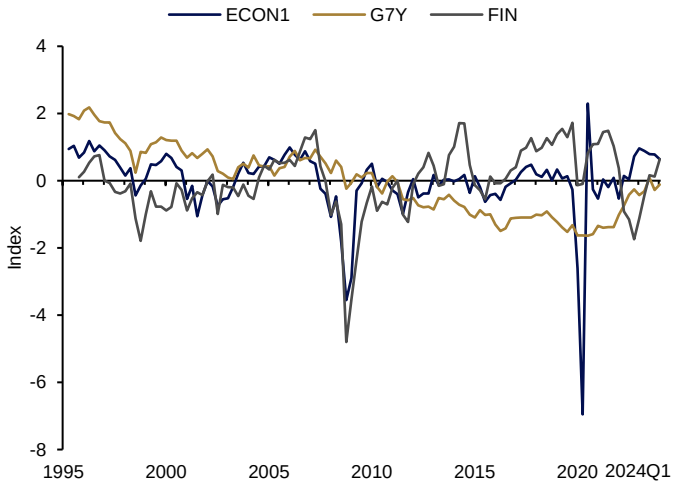
5. ESTIMATING THE GLOBAL FINANCIAL CYCLE

Following Mirinda-Agrippino and Rey, Obstfeld and others, the global cycle is proxied by extracting the first two principal components (ECON1 and ECON2) from a vector of 25 cyclical economic and policy variables, including quarterly GDP, M2, real policy rates, and real exchange rates in core economies (US, Europe, Japan). An additional factor (FIN) is computed as the first principal component of a vector of 14 financial variables, including the VIX index of implied US equity volatility, the MOVE implied bond volatility index, and several gauges of realised volatilities and credit spreads. Factors for medium- and long-term yields in G7 economies (G7Y) and for a weighted combination of yields across the U.S. yield curve (YIELD) are also included. All data are quarterly, covering the period 1995–2024, and each variable is normalised to zero mean and a standard deviation of one. As shown in **Chart 6**, ECON1 tracks global output growth, falling sharply with recessions in 2008 and 2020. FIN is calculated as the inverse of the principal component of implied volatilities; it is thus negatively correlated with the VIX index and may be interpreted as an

index of risk appetite. G7Y is effectively a weighted average of long-term yields in G7 countries.

Reflecting the downward trend in long-term yields prior to the COVID-19 pandemic, the hypothesis that YIELD, G7Y, and some domestic interest rate series have unit roots cannot be rejected. Accordingly, regressions involving these variables are performed in both levels and first differences; results from both are reported when informative. ECON1, ECON2, and FIN are stationary (I(0)), as are capital flows.

Chart 6 Global Financial Cycle Principal Components



Source: MAS estimates

5.1. Testing for the External Drivers of Asian Capital Flows

In the first battery of regressions, capital flows[5] to major Asian emerging market economies[6] are regressed on contemporaneous values of ECON1, ECON2, FIN, YIELD and G7Y using ordinary least squares (OLS), following the approach taken in other studies of the GFCy. For the sake of robustness, two types of capital flows are measured: the overall capital/financial account excluding change in reserves, and inward debt flows computed as changes in banking and portfolio debt liabilities, with the latter the measure employed in the Forbes/Warnock and Cerutti et al studies. Capital flows are derived from quarterly balance of payments accounts from the IMF. Regressions for country i have the form:

5 Calculated as changes in banking and portfolio debt liabilities.
6 Indonesia, Malaysia, the Philippines, South Korea, and Thailand.

$$CF_{i,t} = \alpha + \beta_{i,1}F_{1,t} + \cdots + \beta_{i,k}F_{k,t} + \epsilon_t$$

where $CF_{i,t}$ denotes capital flows (either definition) to country i in period t, and $F_{j,t}$ is the value of one of the global factors (e.g., ECON1, ECON2, etc) in period t. In some cases, lagged values of global factors were included, although this made little difference to the results. The focus, and the primary measure of the dependence of a variable on the GFCy, is the share of variance explained by the independent variables—that is, R^2 in the case of OLS. This approach is selected over the alternative, employed by several authors, of regressing capital flows on a set of global and domestic variables and basing the analysis on the estimated coefficient and associated t-statistic for the global variable(s) (e.g. ECON 1). A limitation of the standard approach, as distinguished from that used here, is that t-statistics do not show the share of variation explained by global factors (which may be quite low). Moreover, an increase in the coefficient or t-statistic associated with a specific variable or variables does not necessarily imply that the share of variation explained by global factors has increased. If domestic variables are included as regressors, endogeneity may be an issue as well. As a check, estimated coefficients and standard deviations are reported for some regressions, such as the comprehensive panel regressions in **Table 3.**

Regressions are done for an initial 15-year period (Period 1: 1995q1–2010q4)[7] running through the GFC, then repeated for the following period (Period 2: 2011q1–2024q2), with the R^2 measure of fit, as well as p-values, in Period 1 compared with the same measure in Period 2 for each country (**Table 1**). The choice of end-2010 as the dividing point for the sample corresponds to the end of the GFC, and keeps the two test periods at approximately equal lengths. Also provided, in parentheses, are the probability values from an F-test of the null hypothesis that the independent variables explain none of the variation in capital flows. Given a standard 95% confidence interval, a p-value below 0.05 implies confirmation that global factors influence capital flows in the period in question.

[7] Starting dates vary somewhat depending on data availability.

Table 1 Adjusted R2 Values with P-values of F-Statistics in Parentheses

	Bank and Portfolio Liabilities		Total Capital Flow	
	Period 1	Period 2	Period 1	Period 2
Indonesia	0.33 (0.00)	0.25 (0.00)	0.20 (0.01)	0.24 (0.00)
South Korea	0.52 (0.00)	0.03 (0.29)	0.35 (0.00)	0.14 (0.04)
Malaysia	0.41 (0.00)	0.27 (0.00)	0.38 (0.00)	−0.04 (0.63)
Philippines	0.27 (0.00)	0.02 (0.29)	0.14 (0.01)	0.03 (0.03)
Thailand	0.39 (0.00)	0.15 (0.04)	0.37 (0.00)	0.06 (0.20)
Average	**0.38**	**0.14**	**0.29**	**0.09**

Source: MAS estimates

As a control, the exercise is repeated (**Table 2**) with the inclusion of a lagged term for the differential between foreign (US) and domestic policy interest rates:

$$CF_{i,t} = \alpha + \beta_{i,1}F_{1,t} + \cdots + \beta_{i,k}F_{k,t} + \beta_{k+1}UIP_{t-1} + \epsilon_t$$

As bond flows are likely to respond to (exchange-rate adjusted) interest differentials, leaving this term out may omit an important – partly external – driver of capital flows. However, inclusion of the rate differential may introduce some endogeneity, as domestic rates may be set in part in response to capital flows. In the event, R^2 results do not change markedly with the inclusion of the UIP term, although they are somewhat higher for Malaysia and the Philippines in Period 1 and Indonesia in Period 2.

Table 2 Adjusted R2 Values with P-values, IR Differential Included as Regressor

	Bank and Portfolio Liabilities		Total Capital Flow	
	Period 1	Period 2	Period 1	Period 2
Indonesia	0.33 (0.00)	0.34 (0.00)	0.31 (0.00)	0.36 (0.00)
South Korea	0.56 (0.00)	0.06 (0.19)	0.37 (0.00)	0.12 (0.07)
Malaysia	0.59 (0.00)	0.28 (0.00)	0.40 (0.00)	−0.06 (0.73)
Philippines	0.45 (0.02)	−0.03 (0.61)	0.24 (0.08)	0.10 (0.39)
Thailand	0.30 (0.00)	0.13 (0.06)	0.25 (0.02)	0.06 (0.21)
Average	**0.45**	**0.13**	**0.31**	**0.12**

Source: MAS estimates

In both sets of regressions, every country (**Tables 1 and 2**)—with the partial exception of Indonesia—shows a large drop from the earlier to the later period. Coefficients in Period 1 generally have the expected signs—capital flows are positively correlated with the business cycle and negatively correlated with interest rates. While t-statistics for individual coefficients are typically under 1.96, F-tests in Period 1 indicate, for each of the five countries evaluated, strong rejection of the null hypothesis that capital flows are independent of global factors. Results for Period 2 are less consistent across countries, but for each country, global factors explain a lower share of capital flow variation in Period 2 than in Period 1.

As a comprehensive test of the hypothesis that the relationship between global factors and capital flows has shifted over time, data from across the five countries are aggregated in fixed-effects panel regressions for each of the two periods. A Chow test for structural break strongly confirms a structural shift in the panel regression from Period 1 to Period 2. Estimated coefficients, reported in **Table 3**, generally correspond to theoretical priors in Period 1 (with the exception of the sign on G7Y), with t-statistics indicating significance at the 1 percent level. T-statistics weaken in Period 2, with some coefficients displaying the wrong signs.

Table 3 Results from Panel Regression of Portfolio and Bank Liabilities of Asian Economies

	Period 1	Period 2
Constant Term	1.007 (0.598)*	3.351 (0.905)***
ECON1	2.511 (0.923)***	−1.396 (0.453)***
FIN	1.678 (0.493)***	1.419 (0.552)**
YIELD	−5.447 (1.23)***	1.426 (1.31)
ECON2	−1.551 (0.788)*	1.922 (1.027)*
G7Y	2.892 (1.093)***	1.524 (1.096)
Adjusted R^2	0.237	0.110

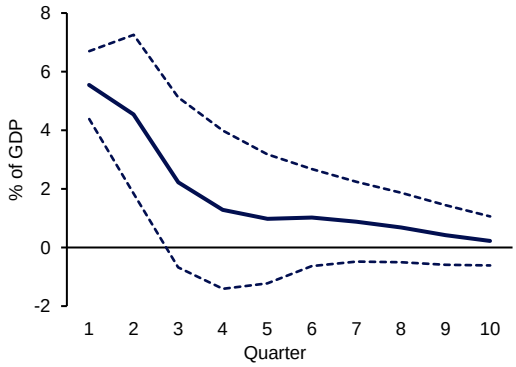
Source: MAS estimates

*, ** and *** indicate statistical significance at 10%, 5% and 1% level respectively.

Note: Chow Breakpoint Test confirms the presence of a breakpoint (F(6,555) statistic of 13.15 against the 1% critical value of 3.06) between periods 1 and 2.

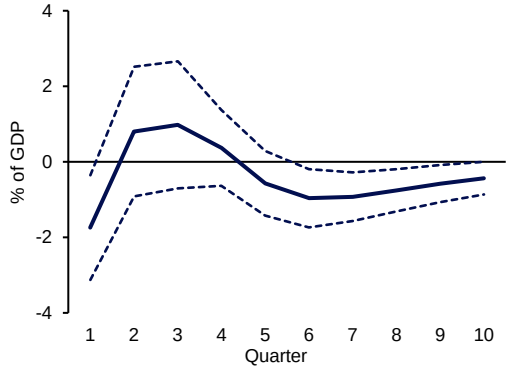
Impulse response functions generated from vector autoregressions (VARs) of Korean capital flows on ECON1 illustrate the difference between Period 1 and Period 2 for a subset of the data (**Charts 7 and 8**). In the first period, the global economic cycle (ECON1) is shown to have a statistically significant and persistent impact on capital inflows, while in the second period the impact is negligible.

Chart 7 Impulse Response of Korean Capital Flows to ECON1 (Period 1)



Source: MAS estimates

Chart 8 Impulse Response of Korean Capital Flows to ECON1 (Period 2)



Source: MAS estimates

Taken together, these estimations indicate that the exposure of Asian capital flows to the GFCy has diminished. However, they do not identify the underlying causes of this development, nor do they establish whether the reduced

dependence of capital flows on the GFCy leaves AEE central banks with more policy space to respond to country-specific shocks.

5.2. Domestic Interest Rates and Activity

If Asian emerging economies have become more independent of the GFCy, then domestic business cycles and other domestic variables such as interest rates should be less correlated with GFCy markers. This proposition is tested for GDP growth, credit growth, and domestic interest rates across the sample group of five Asian markets. While the strategy is similar to that employed with capital flows, the presence or possible presence of unit roots in some of the dependent variables prompts a greater emphasis on the use of equations in first differences (notably for interest rates) in this battery of tests. When tests are run in first differences, a lagged "uncovered interest parity (UIP) divergence" term is added to the regression in order to capture the arbitrage effect of departures from UIP. This term is defined as: *US interest rate$_{t-1}$ – Domestic interest rate$_{t-1}$*,[8] and is effectively equivalent to the interest rate differential term employed in the previous section.

Similar to the capital flows tests, regressions for GDP and credit growth for country i have the form:

$$G_{i,t} = \alpha + \beta_{i,1}F_{1,t} + \cdots + \beta_{i,k}F_{k,t} + \epsilon_t$$

These generally show little explanatory power in either period, with R^2 below or in the range of those related to capital flows (**Table 4**). However, in contrast to the results for capital flows, there is no tendency for R^2 to fall from Period 1 to Period 2. Unsurprisingly, the global variable most tightly correlated with GDP growth is ECON1, which closely tracks advanced economy GDP growth.

[8] In theory, the UIP divergence term should equal (*1+US interest rate$_{t-1}$) – (1+Domestic interest rate$_{t-1}$)*(Expected depreciation)-1*. If the expected depreciation rate is a constant k, then this is approximately equal to *(i_{US} -i_D – k)*, and a regression with one term for the interest rate differential and at least one constant would provide the same explanatory power (R^2) as a regression incorporating the full UIP divergence term.

Table 4 Results of Regression of Credit Growth and GDP Growth on Global Conditions

	Adjusted R^2			
	Credit Growth		Q-O-Q GDP Growth	
	Period 1	Period 2	Period 1	Period 2
Indonesia	0.20	0.10	0.03	0.34
South Korea	0.04	0.27	0.17	0.10
Malaysia	0.01	0.16	0.29	0.50
Philippines	-	-	0.16	0.57
Thailand	0.01	0.30	0.15	0.31
Average	**0.07**	**0.21**	**0.16**	**0.36**

Source: MAS estimates

Note: Estimates make use of data on Adjusted Credit to the Nonfinancial Sector from BIS, for which data on the Philippines is not available.

By contrast, regressions with domestic interest rates as the dependent variable indicate continued dependence on global financial conditions. Moreover, and at odds with the results from the capital flow regressions, R^2 for domestic interest rates generally rise from Period 1 to Period 2. Evaluated in levels and measured against global factors, the average adjusted R^2 for policy rates rises from .55 to .63, while the corresponding figure for 90-day rates increase from .41 to .57 and that for 10-year rates shifts up from .39 to .44.

Given some indication of unit roots in the dependent variables,[9] these regressions are also performed in first differences with a UIP divergence term included in **Table 5**, as described above.

The general specification for one country (dropping the country subscript) has the form:

$$\Delta R_t = \alpha + \sum_{i=1}^{n} \beta_i F_{i,t} + \sum_{j=1}^{m} \beta_j \Delta F_{i,t} + \beta_{n+m+1} UIP_{t-1} + \epsilon_t$$

[9] Durbin-Watson statistics range from 0.23 to 1.30, which fall outside the standard 1.50–2.50 reference range.

where F_i are global factors and ΔF_j are either first differences of yield-based global factors or first differences of individual yields such as 10-year US Treasury yields. In these regressions in first differences, the average R^2 rises from 0.27 in Period 1 to 0.40 in Period 2 for the policy rate, and from 0.31 to 0.45 for the 10-year yield. The explanatory variables most closely linked with domestic interest rates are foreign long-term rates. Similar trends are obtained when actual differenced US, German, and Japanese 10-year yields are substituted for the differenced global factors G7Y and YIELD in the baseline regressions.

Table 5 Results of Regression of Policy Rate and 10-Year Bond Rate Change on Global Conditions

	Adjusted R^2			
	Policy Rate (1st Difference)		10-Year Bond Rate (1st Difference)	
	Period 1	Period 2	Period 1	Period 2
Indonesia	0.27	0.19	0.58	0.42
South Korea	0.45	0.60	0.39	0.64
Malaysia	0.38	0.30	0.21	0.60
Philippines	0.11	0.59	−0.07	0.21
Thailand	0.13	0.29	0.44	0.38
Average	**0.27**	**0.40**	**0.31**	**0.45**

Source: MAS estimates

As a robustness check to establish that the exclusion of other domestic variables (e.g. credit growth) from the above domestic interest rate regressions did not bias the results, VARs were conducted with domestic interest rates (R), foreign interest rates G7Y (F), and domestic quarterly growth (ΔY) as endogenous variables. For the vector $\zeta_t = [\Delta R_t \quad \Delta F_t \quad \Delta Y_t]'$ the following relationship was estimated:

$$\zeta_t = \alpha + \beta_1 \zeta_{t-1} + \beta_2 \zeta_{t-2} + \epsilon_t$$

Decomposition of the sources of variance in domestic 10-year interest rates over the long run showed the following shares of the variance of domestic interest rates (out of 100) attributable to foreign interest rate shocks:

Table 6a Share of Variance in Domestic 10-Year Rate Attributable to Foreign Interest Rate Shocks from Variance Decomposition

	Total	Period 1	Period 2
Indonesia	11.54	25.81	22.83
South Korea	45.18	35.01	60.57
Malaysia	30.81	37.31	24.01
Philippines	8.54	11.33	15.44
Thailand	44.23	55.89	37.14
Average	**28.06**	**33.07**	**32.00**

Source: MAS estimates

Variance decompositions for the vector $\zeta_t = [\Delta R_t \quad ECON1_t \quad \Delta F_t \quad \Delta Y_t]'$ (i.e. incorporating the global economic cycle) yielded similar variance shares for the combination of the two external variables:

Table 6b Share of Variance in Domestic 10-Year Rate Attributable to Total Foreign Shocks from Variance Decomposition

	Total	Period 1	Period 2
Indonesia	18.11	41.73	36.03
South Korea	45.30	31.17	64.54
Malaysia	29.82	41.72	34.81
Philippines	9.47	13.72	26.34
Thailand	43.93	58.11	36.66
Average	**29.33**	**37.29**	**39.67**

Source: MAS estimates

Calculations of the share of variance in domestic rates attributable to foreign shocks in the VAR are generally in line with those from the OLS regressions. For all VARs, the domestic business cycle accounted for a small share of the variance in domestic interest rate (less than 7 percent on average).

The continued strong dependence of AEE policy rates on global variables is surprising in light of the results from the previous section. Given the reduced dependence of AEE capital flows on the GFCy demonstrated there, it might be supposed that AEE policy rates have become more independent of both the GFCy and policy decisions of advanced economy central banks. However, R^2 for policy rates follow those for longer term rates in showing little sign of falling

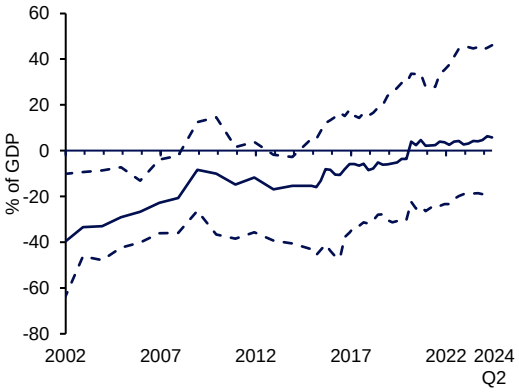
from Period 1 to Period 2. This suggests that the countercyclical policy space available to AEE central banks may not in fact have increased, despite the decline in the dependence of capital flows on the GFCy. This and alternative hypotheses are considered in the next section.

6. SHIFTING CHANNELS FOR CROSS-BORDER SHOCKS

Capital flows to AEE have declined in volume and volatility over time, while becoming apparently less sensitive to global factors and the GFCy. One possible explanation is that AEE economies have become generally less reliant on foreign capital, preferring to self-finance through higher savings, and thus less likely to suffer large capital outflows during crisis periods. Some evidence does point in this direction; net international investment positions have improved somewhat over the past two decades while the average ratio of gross foreign reserves to GDP has risen from 16% in the late 1990s to 30% in 2020 (**Charts 9 and 10**). However, even now, far from registering large recurrent surpluses, current accounts as a share of GDP are generally close to balance.

Chart 9 Net international investment positions have gradually improved over the past two decades

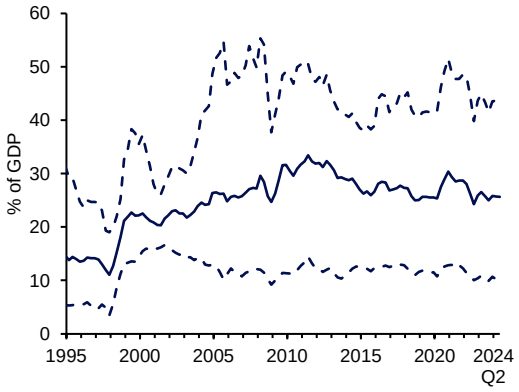
Average net international investment position as a share of GDP



Source: IMF, Haver Analytics, MAS estimates
Note: Dashed lines indicate the min/max ranges.

Chart 10 Foreign reserve holdings have increased post-AFC

Average gross foreign reserves as a share of GDP



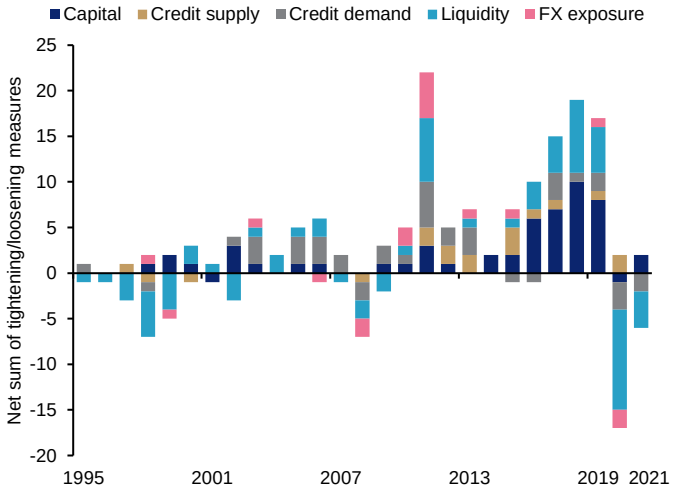
Source: IMF, Haver Analytics, MAS estimates
Note: Dashed lines indicate the min/max ranges.

Other recent policy developments may have also contributed to the reduced sensitivity of capital flows to global factors. With some qualifications, central banks in the region have moved in the direction of greater exchange rate

flexibility and the use of inflation targeting frameworks. In principle, by shifting more of the risk of cross-border and cross-currency investment to foreign investors, exchange rate flexibility may work to dampen some inflows. At the same time, there has been a substantial increase in the use of MPMs to discourage the buildup of financial imbalances and asset bubbles (**Chart 11**). Even when not aimed explicitly at cross-border flows, such measures can help to discourage speculative inflows. Further factors that may play a role in moderating recorded capital inflows, and/or reducing the influence of global factors on net flows, could include strategic deployment of currency intervention, as has been advocated by some recent researchers.[10] Relatedly, the increased use by central banks of forward intervention and swaps may have discouraged or diverted some types of capital flows such as portfolio flows.

Chart 11 The use of MPMs has risen since the GFC

Annual macroprudential tightening (+1) and loosening (−1) actions in AEE



Source: IMF, MAS estimates

Note: The chart shows the sum of tightening (+1) and loosening (−1) actions for 17 different types of MPMs across the five economies (MY, ID, TH, PH, KR) on an annual basis. These have been grouped into five categories based on the main focus of the measure in question.

How then to explain the observed continued strong dependence of interest rates and domestic activity on global factors, when the dependence of capital flows on those factors has diminished? It may be that, during the period under study (Period 2), AEEs and advanced economies were responding, to a greater degree than usual, to common shocks such as the COVID-19 pandemic and subsequent inflationary supply squeeze, which would be picked up in the regressions by global factors. Non-financial economic links, such as trade

[10] See, for example, Adrian et al. (2021).

channels, may have strengthened over the periods under study, bolstering an alternative channel of transmission for external shocks. Transmission channels for financial shocks may have shifted, from the banking and portfolio flows that were prominent in the Asian crisis and subsequent events, to derivatives, swaps and structured products that transfer risk but are not fully captured and more difficult to track through the balance of payment statistics. Trade in financial derivatives for the five economies grew rapidly from 2010 to 2022, rising by 154% from USD92 billion to USD233 billion, ahead of the global increase of 89% over the same period, providing some support for this view.[11]

A further possibility is that, even if central banks have managed to achieve greater freedom from the global financial cycle, they have become more aware of its power and less willing to move against it. Based on past experience, some AEE central banks appear more inclined to anticipate and minimise cross-border interest rate differentials, even if the consequences of not doing so are less dire than in the past. Regressions of changes in AEE domestic policy rates on changes in the Fed Funds rate since the Federal Reserve moved away from its zero interest rate policy (ZIRP) in 2016 (**Table 7**) suggest that this may have been the case since 2017. To accommodate recent and anticipated changes in the Fed funds rate, the estimated relationship is:

$$\Delta PR_t = a + \beta_1 \Delta FF_t + \beta_2 \Delta FF_{t-1} + \beta_3 \Delta FF_{t+1} + \beta_4 UIP_{t-1} + \epsilon_t$$

As indicated in **Table 7**, for each country in the sample, there is a substantial increase in the extent to which the policy rate moves with the Federal Funds rate in the 2018–24 period.

[11] Based on the results of the BIS Triennial Central Bank Survey of foreign exchange and OTC derivatives markets in 2022. Foreign exchange derivative activity data are not available for the MYR, IDR, THB, and PHP. Total foreign exchange activity (spot and OTC derivatives) is used as a proxy for FX derivative activity.

Table 7 Dependence of Change in Domestic Policy Rate on Change in Fed Funds Rate: Full Sample and post-ZIRP Period 2018–24

	Adjusted R^2	
	Full Sample	2018Q1–2024Q1
Indonesia	0.08	0.51
South Korea	0.31	0.87
Malaysia	0.15	0.57
Philippines	0.40	0.73
Thailand	0.20	0.65
Average	**0.23**	**0.67**

Source: MAS estimates

7. CONCLUSION

While the increased independence of capital flows from the GFCy is a promising sign for the development of policy autonomy and countercyclical policy space, it is clear that global factors are still important determinants of domestic prices and activity in Asian emerging market economies. This does not entail that central banks are powerless, that the trilemma does not apply, or that flexible exchange rates are not able to cushion external shocks. Rather, it implies that global shocks, including shocks from G7 policy decisions, continue to have strong influence on domestic economic and financial conditions. In these circumstances, exchange rate flexibility remains an appropriate policy to respond to external shocks, supported in some cases by MPMs, foreign exchange intervention, or, in more extreme and temporary circumstances, capital flow measures.

Further research will be needed to expand upon the empirical results presented here. If derivatives or other markets now substitute to some extent for portfolio flows, this may be shown in the net exposures entailed by the derivatives positions of large investors. It should also be possible to test for the importance of common shocks in shared monetary policy decisions. Similarly, additional tests for the independence of EME central bank policy decisions may be constructed. Finally, DSGE models incorporating divergences from UIP and appropriate market imperfections may help to address the question of transmission of shocks independent of capital flows.

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