

Cheap or Expensive by Design? Quantifying the Deep Misalignment of Asian Currencies

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RESEARCH C1 - Public Natixis 4 September 2026 A SIA MACRO INSIGHTS Cheap or Expensive by Design? Quantifying the Deep Misalignment of Asian Currencies Booming manufacturing and AI hardware demand have boosted Asian trade and current account surpluses (CAS). This should strengthen local currencies, but East Asia real effective exchange rate (REER) has declined 40% since 2000 on a weighted average basis. Take the example of China: between 2010 and 2025, its GDP per capita rose from USD 4,630 to USD 13,866, and its net international investment position (IIP) grew from 15.2% to 20.1% of GDP (over USD 4 trillion), yet the renminbi has stayed flat at 6.72 versus the USD as of late. Conversely, current account deficit (CAD) economies such as Indonesia, India and the Philippines have seen their exchange rates move with deteriorating balances. To assess these misalignments, we apply two valuation models to quantify the fair value of Asian FX. The first is the mean-reverting Purchasing Power Parity (PPP) model, which measures the deviation of the REER relative to its two-decade average. It reveals that the Japanese yen (JPY) is the most undervalued regional currency at 26% below its long-term average. The Korean won (KRW) is second at 14% undervalued, though 6.4% since August appreciation against the USD has narrowed this gap. The Indonesian rupiah (IDR) and Indian rupee (INR) are undervalued by 12% and 9%, while the Australian dollar (AUD) is 8% overvalued. The Behavioral Equilibrium Exchange Rate (BEER) model refines this by regressing real exchange rates against macroeconomic fundamentals: GDP per capita, Net Foreign Assets (NFA), and Terms of Trade (ToT). Over the past decade, emerging Asia led GDP per capita growth, while Singapore, Taiwan, Japan and South Korea held the largest NFA size relative to GDP. Even after factoring in these wealth dynamics and South Korea's improved terms of trade from AI hardware exports, the BEER model confirms that the KRW, IDR, INR, and JPY remain deeply undervalued, while the AUD appears heavily overvalued. Ultimately, domestic policy often decouples exchange rates from these strong fundamentals. JPY's undervaluation is primarily a consequence of the Bank of Japan's deliberate low-interest-rate policy, and ripe for correction on rate hikes, the unwinding of structural carry trades, and potential domestic pension fund reallocation. The recent interventions by the BOJ, BOK and US Treasury suggest that there is pressure for macroeconomic imbalances to be corrected. The rapid appreciation of the Korean won by 14.5% since July versus the USD point to the degree in which these misalignments can be rapidly corrected. WRITTEN BY Trinh NGUYEN Tel. +852 3900 8726 trinh.nguyen@natixis.com Dayeon HONG Tel. +852 3900 8540 dayeon.hong@natixis.com Haoxin MU Tel. +852 3900 8067 haoxin.mu@natixis.com With contribution from: Jeremy JI jeremy.ji-ext@natixis.com Discover more of our research... on research.natixis.com

A SIA MACRO INSIGHTS 2 Asia Current Account Surplus Accelerates but FX Stays Weak Asian manufactured exports are powering world and even more so in the age of parabolically rising AI capex, which drives up demand for Asian hardware exports. Trade surpluses have risen, pushing upward growth, GDP per capita and the current account surplus (CAS). Such accumulation of savings would

suggest a much stronger FX for CAS economies. But except for Singapore and Malaysia, and to a lesser extent Thailand and Taiwan, East Asian economies such as China, South Korea and Japan's currencies have remained weak. This is especially so when we consider the real effective exchange rate (REER) where the nominal effective exchange rate is adjusted for relative inflation of those economies versus the world (Chart 1 & 2). Take the example of China: GDP per capita rose from USD 4,630 to USD 13,866 between 2010 and 2025, but the exchange rate remains roughly the same level today at 6.72 versus the USD, even after a full year of appreciation. Its current account surpluses (CAS) have only risen in the past decade, with net international investment position (IIP) rising to 20.1% of GDP from 15.2% of GDP, or USD4trn from 1.5trn in 2011. And China isn't alone in this curious phenomenon of having a relatively weak FX for a strengthening CAS position. Japan, South Korea and Taiwan have a weak real effective exchange rate (REER) relative to their current account surplus and IIP positions (Chart 4). Chart 1 shows this curious phenomenon where Asia CAS are rising parabolically while the weighted average REER continues to decline irrespective of fundamentals. Meanwhile, current account deficit (CAD) economies in Asia such as Indonesia, India, and the Philippines FX trade more in line with their deterioration of CAD (Chart 5). In this note, we investigate whether Asian FX is over or undervalued and the degree in which they deviate from fundamentals following the methodology of Ca' Zorzi, Cap, Mijakovic and Rubaszek (2020) , where three standard FX Fair Value models were Trinh NGUYEN Senior Economist, EM Asia trinh.nguyen@natixis.com Haoxin MU Economist, Asia Pacific haoxin.mu@natixis.com Jeremy JI Junior Economist jeremy.ji-ext@natixis.com

60 80 100 120 140 160 00 02 04 06 08 10 12 14 16 18 20 22 24 26 Chart 2 REER for current account surplus countries in Asia CN SK TW MY SG TH JP Source: Natixis, CEIC N.B. data as of July 2026 -200 0 200 400 600 800 1000 -5 0 5 10 15 20 25 TW SG SK JP CN MY TH ID IN AU PH Chart 4 Current Account Balance: % of Nominal GDP Avg 2006-2010 2026 % change (rhs) Source: Natixis, CEIC N.B. data as of 2026 Q1, trailing four quarter for 2026 0 2 4 6 8 10 12 80 90 100 110 120 130 140 150 00 02 04 06 08 10 12 14 16 18 20 22 24 26 Chart 1 Weighted average REER for current account surplus countries in Asia Weighted average REER Current account % of GDP (rhs) Source: Natixis, CEIC N.B. Data is up to July 2026, Current account surplus countries include: South Korea, Taiwan (China), Japan, Malaysia, Singapore, Thailand -50 50 150 250 350 450 550 -10 0 10 20 30 40 50 60 70 80 90 100 110 SG AU TW SK JP CN MY TH ID VN PH IN Thousands Chart 3 GDP per Capita (USD, thous) 2006 2025 % change (rhs) Source: Natixis, CEIC N.B. data as of 2025, Vietnam data from 2019 to 2024, Indonesia data from 2010

A SIA M ACRO I NSIGHTS 3 introduced. We will use two of the three models as the third assumes that the current account adjusts to FX, which does not apply to Asian CAS economies as the FX remains unresponsive to rising current account surpluses, which is the basis of the model. Quantifying Equilibrium Exchange Rate Model 1: Purchasing Power Parity Model – JPY is most primed for mean reversion In the first model, we analyzed Asian equilibrium exchange rate using the Purchasing Power Parity (PPP) Model, which is the oldest theory of exchange rate determination. It is essentially boiling down to the idea that exchange rates should move to neutralize competitiveness changes by movements in price indexes across different economies. In other words, the REER should mean revert . In this approach, the REER is the only variable necessary to determine its equilibrium level. What's a REER? First, it is derived from the nominal effective exchange rate (NEER), which is a weighted FX index and the weights are based on relative importance of trade partners. The REER adjusts the relative price levels. Should a country have a lower price level than the rest of the world, then the REER would decline relative to the NEER. An example of this is China where prices in China have risen by less than the rest of the world (Chart 7). Thus, China's REER is much lower than its NEER. The PPP Model suggests that over time, the renminbi should adjust to its equilibrium level. So how would we calculate that? First, as this is a mean reversion model, it is just a simple case of taking an average of the REER

of a specific country over a period and then comparing the relative value of the average. We used quarterly data from August 2006 to July 2026 to determine the mean REER of each economy and then compare that average with July 2026 level. With the formula below, we got the results as shown in Chart 8 . The latest value of REER we use is for July 2026. $REER = \frac{USD}{Local\ Currency} \times 100$

04 06 08 10 12 14 16 18 20 22 24 26 Chart 5 Weighted average REER for current account deficit countries in Asia Weighted average REER Current account % of GDP (rhs) Source: Natixis, CEIC N.B. Data is up to July 2026, Current account deficit countries include: Australia, Indonesia, India, Philippines

60 70 80 90 100 110 120 130 140 60 70 80 90 100 110 120 130 140 00 02 04 06 08 10 12 14 16 18 20 22 24 26 Chart 6 REER for current account deficit countries in Asia AU ID IN PH Source: Natixis, CEIC N.B. data as of July 2026 60 70 80 90 100 110 120 06 08 10 12 14 16 18 20 22 24 26 Chart 7 China Effective Exchange Rate (2020=100) Real Nominal Source: Natixis, BIS N.B. data as of July 2026

A SIA M ACRO I NSIGHTS 4 JPY is the most undervalued FX by a long shot 26% below its long-term average . Meanwhile, the Korean won ranks second at 14% (See Chart 8). Since July, KRW has appreciated by 6.4% versus USD, thus narrowing that deviation from mean. IDR and INR are also below their two-decade average by a sizeable -12% and -9%. On the other hand, the AUD, SGD, and MYR current values are above their long-term average, with AUD 8% higher. Despite our model suggesting an overvaluation of AUD, expectations of further rate hikes continued to push for AUD appreciation in August. Meanwhile, NZD, PHP and CNY are for the most part at par with their two-decade mean. Model 2: Behavioral Equilibrium Exchange Rate: KRW, INR and IDR undervalued The key setback of the PPP Model is of course that REER may not be mean-reverting or that it would revert in a very gradual way, if ever. The Behavioral Equilibrium Exchange Rate (BEER) model adjusts for this by looking at fundamentals. Key variables that BEER use are GDP per capita, terms of trade (ToT), and net foreign assets (NFA). The theory goes, should GDP per capita go up, greater wealth will raise the demand for non-tradable goods and push up the price of tradable goods as well, which is reflected as currency appreciation. Should NFA go up, then the income on interest would lead to a worsening of trade balance as imports rise. Finally, a better term of trade should lead to higher wealth and better trade balance, which should push up the real exchange rate. In practice, we regress REER on the three variables to see if these fundamentals have explanatory power for real exchange rate, which is expressed as the formula below. $REER = \alpha + \beta_1 \frac{GDP}{Capita} + \beta_2 \frac{NFA}{GDP} + \beta_3 \frac{ToT}{GDP} + \epsilon$

capita, NFA and ToT. Chart 9 shows GDP per capita change in the past decade. The fastest rising in income has been emerging Asian economies such as China, Vietnam, India, the Philippines, Indonesia and Malaysia. Japan and Australia have had the lowest growth of GDP per capita, whether nominally or purchasing power parity (PPP) adjusted. Meanwhile, South Korea and Singapore have had relatively decent GDP per capita growth despite their higher income status. -26 -14 -12 -9 -5 -2 -1 0 1 5 7 8 -30 -20 -10 0 10 JPY KRW IDR INR CNY NZD TWD PHP THB MYR SGD AUD Chart 8 PPP (mean reversion) Source: Natixis, Bloomberg, CEIC, BIS N.B. data as of July, 2026 0 50 100 150 200 250 300 0 20 40 60 80 100 120 140 160 SG HK AU SK JP MY CN TH VN ID PH IN Chart 9 GDP per Capita (USDth, PPP) 2006 2025 % change (rhs) Source: Natixis, CEIC N.B. data as of 2025

A SIA M ACRO I NSIGHTS 5 For NFA, Singapore has the highest share of GDP, followed by Taiwan, Japan, and South Korea. Japan, South Korea, and China have had the biggest increase of wealth relative to GDP (Chart 10). worsening tourism receipts (Chart 11). In the past decade, commodity prices have risen, thanks to supply shocks, as such, terms of trade worsened for the most part for importers and improved for exporters such as Australia, Malaysia, and Indonesia. That said, terms of trade, recently improved significantly for AI hardware exporters such as South Korea. The BEER model using the three variables showed us the below results. Considering higher GDP per capita, NFA and ToT, we find that KRW, IDR, INR and JPY have the biggest gap between realized REER performance

and macro fundamentals. In other words, they are the most undervalued according to these three explanatory variables as the REER is below what would be predicted by our variables. Inversely, AUD is the most overvalued relative to long-term performance of GDP per capita, NFA and ToT. Other Asian currencies are broadly in line with fundamentals with not too much gap. Source: Natixis, Bloomberg, CEIC, BIS Wgt. Avg. PPP 4/9/2026 4/9/2026 2-factor 3-factor JPY 155.8 0.7% -23% -26% -30% -9% KRW 1,356.6 6.4% -15% -14% -12% -20% IDR 17,679 2.1% -11% -12% -11% -11% INR 94.49 1.0% -9% -9% -6% -11% TWD 31.77 2.1% -3% -1% -2% -7% CNY 6.72 0.6% -2% -5% -1% 3% PHP 62.52 -2.2% -1% 0% -1% -3% NZD 0.588 0.1% 0% -2% 1% 1% THB 32.93 1.4% 0% 1% 0% -2% MYR 4.04 1.0% 4% 5% 3% 2% SGD 1.27 1.2% 6% 7% 6% 3% AUD 0.720 2.6% 9% 8% 9% 13% Nominal exchange rate vs USD Deviation from fair value as of July BEER Change vs USD since July 31 Table 1. Summary of Results Currencies -30 -20 -10 0 10 20 30 40 50 0 20 40 60 80 100 120 140 AU MY ID SK PH CN SG TW IN KR JP HK TH Chart 11 Terms of trade (2014=100) 2015 2026 % change (rhs) Source: Natixis, Bloomberg N.B. data as of June, 2026 -210 -105 0 105 210 315 -150 -100 -50 0 50 100 150 200 250 SG TW JP SK CN TH MY IN PH ID AU Chart 10 Net IIP / GDP (%) 2015 2026 % change (rhs) Source: Natixis, CEIC N.B. data as of 2026 Q1, trailing four quarter for 2026

A SIA M ACRO I NSIGHTS 6 Given Japan and Australia lagging performance in GDP per capita (high based as already developed) and emerging Asia outperformance in rapidly growing income, we also run another BEER with just NFA and ToT. Both GDP per capita and NFA are measures of wealth effects, with GDP per capita favoring more emerging economies and NFA favoring more developed economies as GDP per capita growth is more rapid for economies with lower GDP per capita. Moreover, there is an issue with cointegration with GDP per capita and NFA for some economies, such as China and Australia. Taking away GDP per capita, like the PPP model, JPY and KRW are most undervalued while AUD remains most overvalued but to a lesser extent. The two- factor BEER model and the PPP model mirror each other rather closely. Other factors may better explain this, such as interest rate differentials, fiscal policies, short-term capital flows and central bank interventions. But we did not include as they would make the results noisy and these three variables are most reliable long- term, like the ECB paper. Clearly, for Japan, the BOJ very low interest rate is the key reason for its weakness, which is a deliberate policy, and hence making FX divorced from fundamentals. Macroeconomic Balance (MB) is another popular approach, but it differs significantly from the first two models in terms of underlying logic. Instead of looking at past trends to find potential explanatory variables for real exchange rates, MB requires solving a system of equations to find the real exchange rate level that is compatible with internal and external balance, which substantiates as a stable current account. Despite the appealing economic interpretation behind, this rationale draws a long- standing debate about the global current account imbalance which centers at the consistent surplus of Asian economies versus US ' deficit (Chart 14). Over the past three decades, Asian manufacturers maintained a stable current account surplus, but their real exchange rate weakened by more than 40% on a weighted average basis. As such, the impact of current account surplus on real exchange rates seems exceptionally weak for Asia, which undermines the credibility of the MB approach since the key assumption hardly holds. Therefore, we stick to the PPP and BEER approaches as discussed above. -30 -12 -11 -6 -2 -1 -1 0 1 3 6 9 -40 -30 -20 -10 0 10 20 JPY KRW IDR INR TWD PHP CNY THB NZD MYR SGD AUD Chart 13 NFA + ToT Source: Natixis, Bloomberg, CEIC, BIS N.B. data as of July, 2026 -20 -11 -11 -9 -7 -3 -2 1 2 3 3 13 -30 -20 -10 0 10 20 KRW INR IDR JPY TWD PHP THB NZD MYR SGD CNY AUD Chart 12 GDPpc + NFA + ToT Source: Natixis, Bloomberg, CEIC, BIS N.B. data as of July, 2026 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 1980 1983 1986 1989 1992 1995 1998 2001 2004 2007 2010 2013 2016 2019 2022 Chart 14 Current Account Balance (% of world GDP) US CN JP TW SK SG VN MY TH Source: Natixis, UNCTAD N.B. data as of July 2026

A SIA M ACRO I NSIGHTS 7 When will the misalignment be correct? Perhaps sooner than later for some In conclusion, the persistent weakness of CAS economies' exchange rates represents a fundamental departure from traditional economic theory. While both the PPP and BEER models confirm that key regional currencies like the Japanese yen and South Korean won are heavily undervalued, and this disconnect is largely driven by deliberate interest rate policies, structural capital flows, and sovereign interventions rather than trade dynamics. But changes are afoot. The recent interventions by the BOJ, BOK and US Treasury suggest that there is pressure for macroeconomic imbalances to be corrected , namely the rather low-interest rate environment. The rapid appreciation of the Korean won by 14.5% since July versus the USD thanks to the back-to-back 50bps rate hike to 3% point to the degree in which these misalignments can be corrected. At the other end of the spectrum, while higher rate hike expectations are helping AUD higher, the dependency on real estate for wealth and the still high leverage in the household sector suggests that a rebalancing is on the cards, the question is when. -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0 2.5 3.0 ID CN MY IN AU US VN SK TW SG JP TH PH Chart 15 Real Policy Rate (Aug-2026, %) Source: Natixis, Bloomberg N.B. Data as of August 2026, Real Policy Rate = Policy Rate - CPI.

A SIA M ACRO I NSIGHTS 8 Monetary policy velocity and FX intervention risks driving JPY catch-up While valuations models highlight long-term structural misalignments across Asian FX, near-term catalysts hinge heavily on monetary policy velocity and shifting authorities ' tolerance for currency weakness. For the Japanese yen, the prospects of an accelerated hiking cycle and escalating intervention risks remain the primary drivers of recent appreciation. Rates markets had already priced in further BoJ tightening but recent comments from hawkish board member Hajime Takata floating the possibility of outsized 50bp moves or back-to-back hikes to contain inflation pressures catalyzed a sharp yen rally this week. Crucially, while there does not seem to have been " rate checks " or official market intervention from Japanese authorities, the sheer pace of the downward pressure on USDJPY indicates a severe unwinding of structural carry trades and crowded short positions. Following the late July US-Japan joint interventions, the yen ' s enduring role as a funding currency has left speculative markets exposed. CFTC data indicates that while speculative shorts were trimmed following previous interventions, residual short positioning remains (Chart 16). This lingering overhang left the market highly vulnerable to sudden capitulation and short squeeze we just witnessed, driven by hawkish BoJ rhetoric to rapidly cut losses and buy back the yen. Adding to the bullish JPY narrative, reports suggest the Government Pension Investment Fund (GPIF) had an irregular management meeting. This fuels speculation that the GPIF may increase its domestic asset allocation targets , particularly as long-end JGB yields have surged since the government suggested the possibility (see JPY Rates section from Rates Weekly: Fading the geopolitical repricing). A structural shift of pension assets back to Japan could inject immense momentum into yen ' s recovery . Pace of KRW appreciation set to moderate Conversely, while the near-term JPY outlook remains decidedly bullish, the recent 14% quarter-to-date appreciation of the Korean won (KRW) against USD appears overextended . This abrupt KRW rally was primarily driven by three transient factors: speculative positioning surrounding SK Hynix ADR flows, aggressive exporter USD selling ahead of end-of-August interim corporate tax deadlines, and a sharp reduction in capital outflows. Following the severe KOSPI correction in July, previous foreign investors rebalancing demands dissipated. Consequently, foreigners remained only small net sellers of the index amount easily overshadowed by exporter USD supply. Moving forward, these supportive tailwinds are fading. The August tax season has concluded, and SK Hynix ADR-related flows appear to have been effectively absorbed by the Foreign Exchange Stabilization Fund, meaning the pace of KRW appreciation is likely to slow. Furthermore, having recently delivered consecutive hikes to push the base rate to 3%, the Bank of Korea (BoK) is expected to pause at the next meeting. This anticipated policy pause could also serve as a cap for further yield-driven upside for the won, stripping away the monetary

divergence premium for example versus BoJ which is expected to accelerate its own rate hikes. Dayeon HONG APAC Strategist dayeon.hong@natixis.com 100 110 120 130 140 150 160 170 -300 -200 -100 0 100 200 2020 2021 2022 2023 2024 2025 2026 '000s Chart 16 Yen Futures Positioning CFTC JPY Net Futures Positions, Non-Commercial USDJPY (Inverted, rhs) Source: Natixis, Bloomberg

A SIA M ACRO I NSIGHTS 9 Hawkish RBA stance to anchor near-term AUD outperformance While valuation models indicate that the Australian dollar (AUD) is currently overvalued, its strength particularly against G10 peers is likely to persist in the near term. The Reserve Bank of Australia (RBA) remains one of the most vigilant central banks regarding upside inflation risks. Following July 's unexpectedly high 1% month- on-month inflation print (Chart 17), the probability of further rate hikes tangibly increased. If the RBA executes an additional hike as early as the September meeting, markets will likely price in further tightening. The RBA governor has maintained a resolutely firm stance, emphasizing that containing inflation remains the central bank 's absolute priority even if the labor market deteriorates or housing prices experience a rapid correction. Consequently, much like BoJ, there is distinct potential for Australian monetary policy velocity to accelerate, applying sustained appreciation pressure on the AUD , at least in the near term. -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 1/25 4/25 7/25 10/25 1/26 4/26 7/26 %mom Chart 17 Monthly Inflation: Contribution by Category Food Energy Housing Goods ex food Core services Transport Headline Source: Natixis, RBA

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