

FX Insight

Assessing FX Volatility Amid Current Uncertainty

What Is Happening in FX?

Markets are in a state of flux amid concerns over the global economy, central bank pivots and a looming US election. This creates a backdrop for ample volatility in the global macro space. Our base case remains for a global soft landing, Fed rate cuts and for the USD to weaken. However, we remain cognizant of the risks of other scenarios such as a global hard landing, larger Fed rate cuts or a stronger/better supported USD.

Assessing Shocks to Asian Currencies

We use a range of FX models to assess shocks that could impact Asian currencies. The main takeaway is that the JPY is the most resilient currency to shocks in Asia. In the ASEAN space, SGD tends to be more resilient to shocks. The CNY is a suitable hedge against USD strength, but it is not our preferred choice at this point where we do see a stronger case for the USD to go weaker.

Model Implied Forecasts

Our implied forecasts derived from our modeling exercise are broadly less bearish on the USD than our own. We suggest that this is because the models do not account for the potential for future Fed rate cuts well. Our own forecasts broadly fall within the 95% confidence interval implied by the markets.

Update of the BEER Fair Value Model

We update the BEER model and discover that most non-USD currencies are trading around their fair values. The USD remains the most overvalued currency (+5.29%) and this suggests that there is ample room for the USD weakness that we expect as our base case.

Conclusion

We remain confident in our base case for a global soft landing, Fed rate cuts and an ultimately weaker USD. However, we do recognize that there are salient risks in the form of US elections, recalibrations in central bank expectations over the next six months as well as macro and geopolitical risks. Against this backdrop, the two currencies that stand out to us the most are the **JPY and the MYR**. JPY is a safe haven that is resilient to shocks and while no longer as undervalued still has room to appreciate as the BOJ hikes and Fed cuts. MYR is YTD the best performing currency and the outperformance can continue as a global soft landing materializes alongside Fed cuts.

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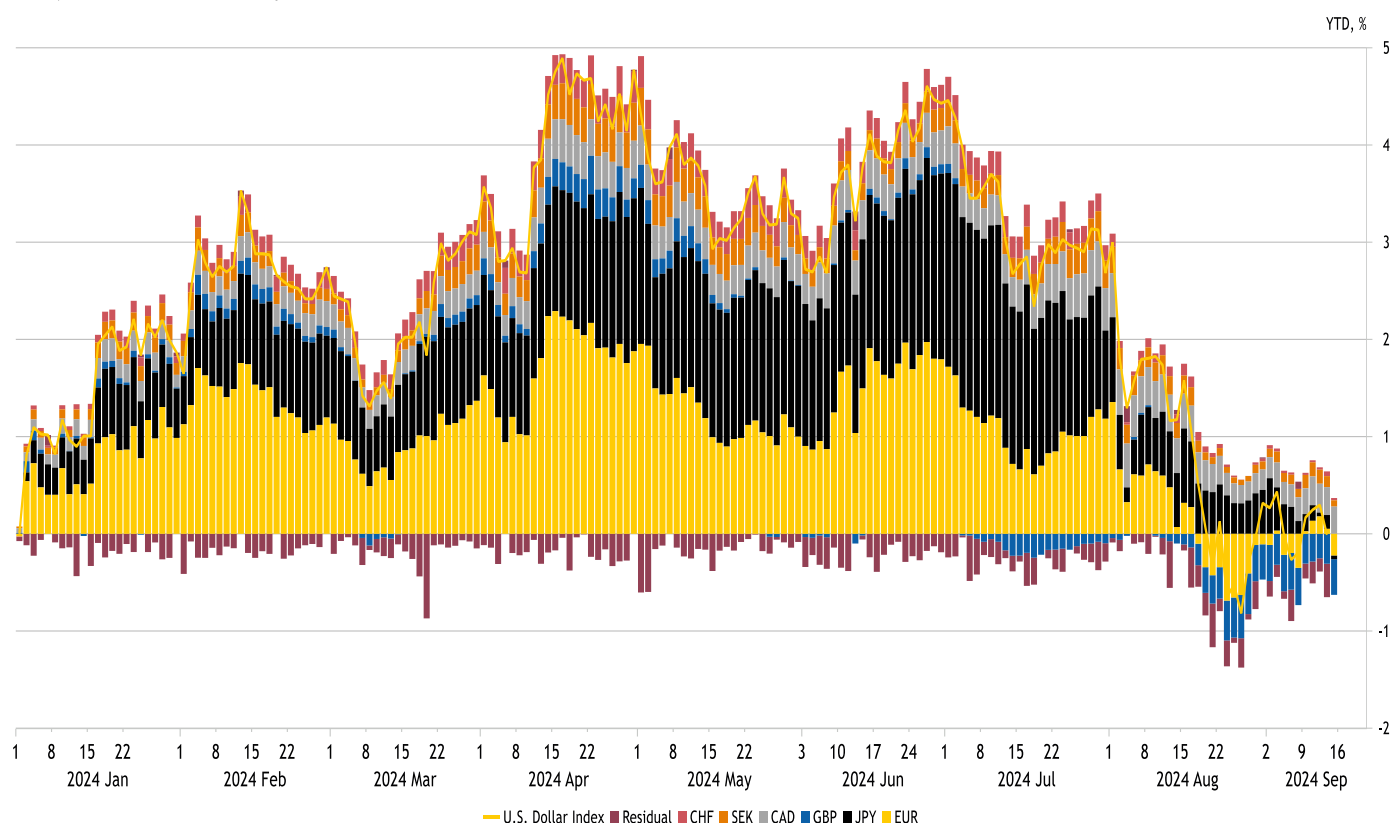
What Do We See Happening in FX?

In the next 6 months, our baseline expectations are for the USD to broadly weaken against all currencies. We have seen Asian currencies perform better of late against the USD amid a stronger JPY and CNY. We expect this to continue against a backdrop of a global soft-landing and fading US exceptionalism. The disinflationary trajectory is intact for most economies. Against this backdrop, the Fed is heavily expected to cut and that would provide room for Asian central banks to become more accommodative. This would then be more supportive for global growth and provide Asian currencies with a lift in the USD. That aside, there is uncertainty over the growth outlook, with markets having recently been spooked by recession indicators and concerns over the US labour market. However, we can observe that USD strength has indeed broadly moderated (Chart 1).

Chart 1: Most Currencies Are Gaining Ground against the USD

Contributions to DXY since start of 2024

Currency contributions to broad-based DXY gains



Source: Intercontinental Exchange (ICE), Macrobond Financial AB, Maybank, Macrobond



Source: Macrobond, Maybank FX Research and Strategy

What Risks Do We See?

There are various risks that we can see on the horizon. We break these down into the following:

1. USD being better supported or stronger than we expect. We note that USD tends to be better supported going into an election and this could be a potential trigger for USD strength.

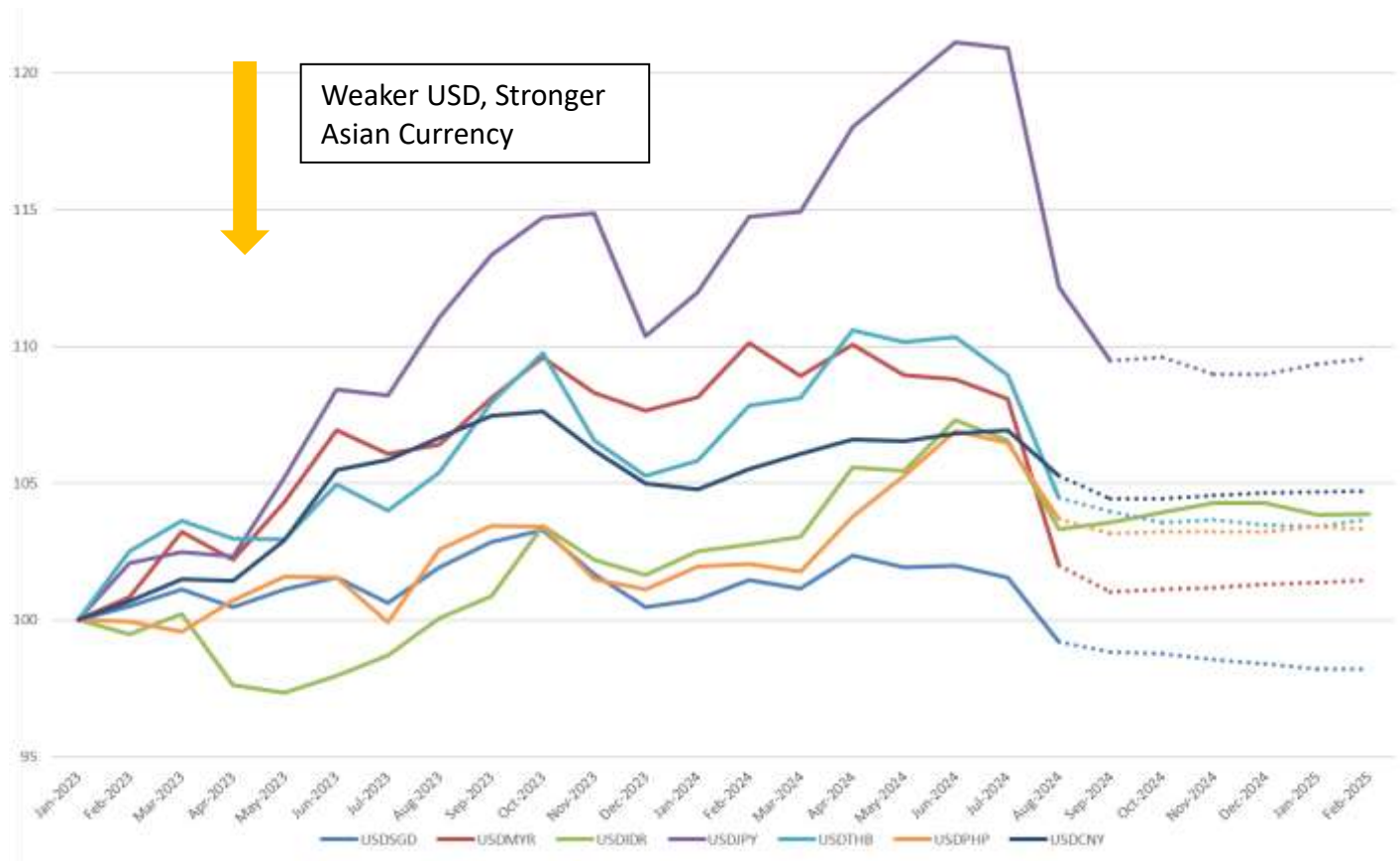
2. A faster/slower than anticipated pace of Federal Reserve rate cuts. This could trigger fears of a recession and lead to a repricing of risks in asset markets. Market expectations for rate cuts are at an extreme, a total of 100bps is being priced for end 2024. Our house view is for 50bps.
3. A larger than anticipated drop in US yields. This could happen if the pace of disinflation quickens or because of an adjustment to future inflation expectations.
4. A global recession. There are concerns over the US economy. At the same time China's growth is languishing and Eurozone growth is not great with Germany a laggard.
5. JPY strengthening more quickly than anticipated. While the bout of JPY strength in the carry trade unwind should be viewed as episodic, it is entirely possible that we see a repeat episode.

We note that many of these risks are interconnected and are certainly not mutually exclusive. For instance, recession fears could trigger a quicker than anticipated pace of Fed easing which could then translate to a larger than anticipated drop in yields and so on. To avoid unnecessary complication, we look at each of these shocks separately and try to discern quantitatively what their impact on Asian currencies might be.

To do this, we employ a series of quantitative models (see Annex for more details) to form a baseline of how currencies should trade in the next six months. We then shock the relevant macroeconomic variables to derive the deviation from the baseline for such shocks. **Note that the model implied forecasts differ from our own official forecasts.**

Chart 2 shows a summary of model-implied forecasts for Asian currencies against the USD indexed to Jan 2023. We see that the only Asian currency the models expect to appreciate against the USD over this time frame is the SGD which is seen roughly 1.8% stronger (lower USDSGD). Other Asian currencies are expected to be roughly flat against the USD. This contrasts with our own expectations where we do see the USD weaker against Asian currencies. However, as we mentioned, this is one potential risk with the US elections looming. Historically, USD has been better supported heading into the elections (Chart 2) and ASEAN FX tends to tread water going into the elections (Chart 3).

Chart 2: Summary Of Model-Implied Forecasts for Asian Currencies
(Index Base 100 = Jan 2023)



Source: Macrobond, Maybank FX Research and Strategy

Chart 3: USD Typically Better Supported Going into the Elections (100 days before and after)

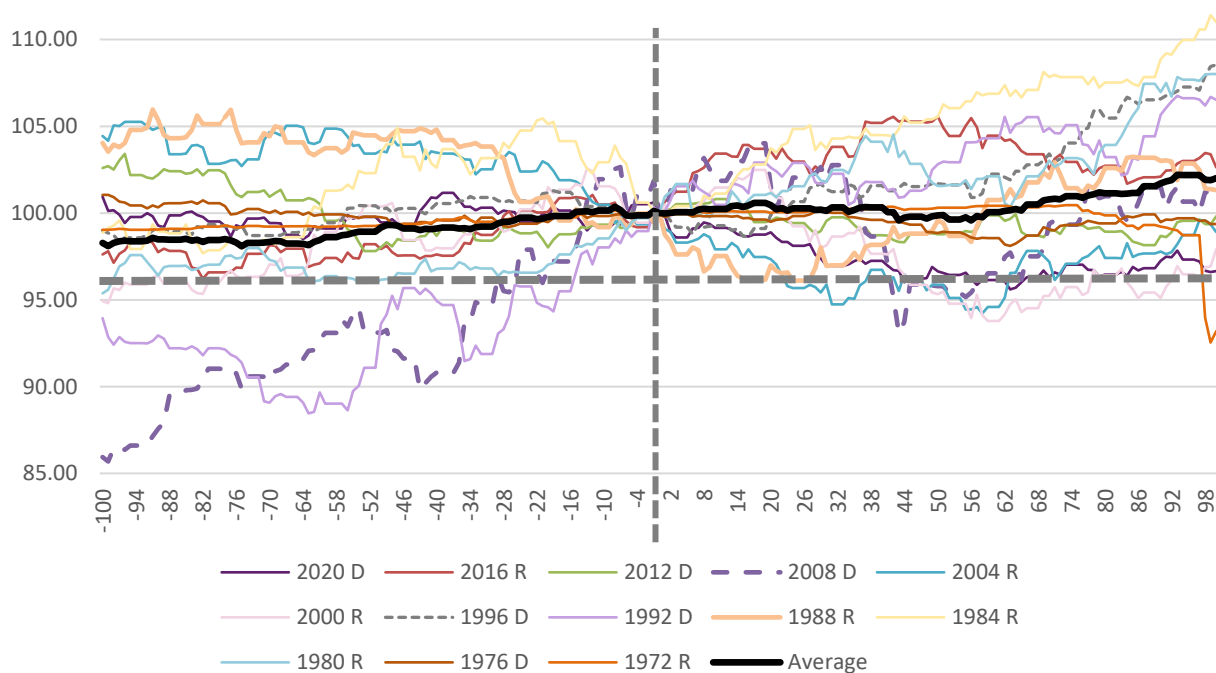
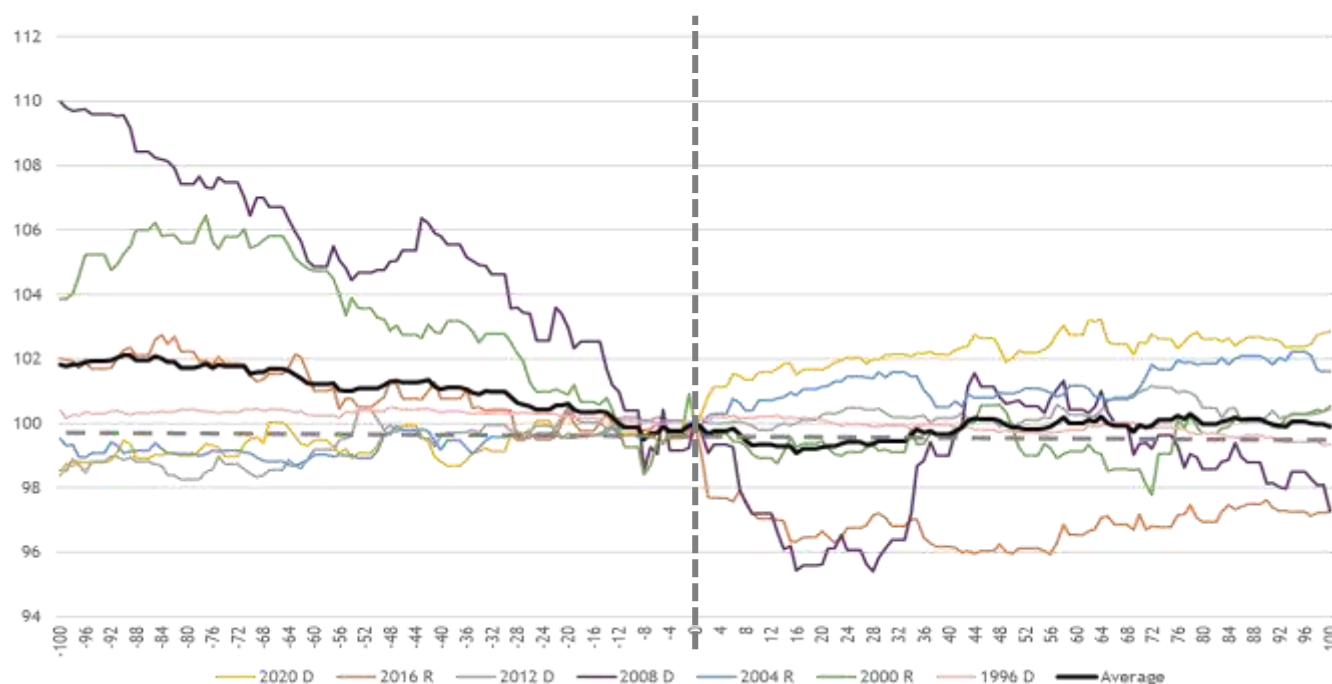


Chart 4: ASEAN Currencies Tend to Tread Water before Elections



Source: Bloomberg, Maybank FX Research and Strategy Note: R denotes a Republican President Win that year while D denotes a Democratic President Win

Variable Selection for Shocks

For the scenarios, we shock the following macroeconomic variables to discern their impact. For yields, we reduce 10Y US Treasury yields by 100bps. For growth, we reduce the global growth rate to be 10% weaker than what the models imply. For inflation, we reduce US core PCE to be 10% lower than what the models imply. To address various possible currency movements, we also shock the JPY stronger, CNY weaker and USD stronger. We also included domestic inflation and yields for each currency, but the models suggest that these tend to have less of an impact on currencies than their US counterpart.

Summary of Results

We summarize the results of the shocks in table 1 below. Numbers displayed are average deviation from the baseline over a six-month period for a shock of 10% (or 100bps for yields) of the relevant macroeconomic variable. We find that the results are broadly consistent with intuition. We examine and discuss each of the shocks in greater detail.

Table 1: Summary Table of Shocks (Average % Deviation from Baseline)

	Lower Yields	Stronger JPY	Weaker CNY	Stronger USD	Weaker Growth	Weaker Inflation
USDJPY	-1.28%	-1.67%	0.36%	1.28%	0.07%	-0.63%
USDCNY	-0.23%	-1.25%	1.67%	0.37%	1.63%	-0.81%
USDSGD	-0.82%	-0.48%	0.44%	1.09%	0.85%	-0.31%
USDMYR	-0.35%	-1.19%	0.43%	1.19%	0.99%	-0.26%
USDTHB	-0.47%	-1.41%	0.53%	1.06%	1.27%	-0.86%
USDPHP	-0.12%	-0.44%	0.46%	1.08%	1.06%	-0.38%
USDIDR	-0.58%	-0.58%	0.30%	1.23%	1.56%	-0.49%

Source: Macrobond, Maybank FX Research and Strategy

Note: Negative (Positive) values denote a weaker (stronger) USD

Lower Yields: For this shock, we created a scenario where UST yields would be 100bps lower than what our models had initially implied. In such a case, intuition suggests that ceteris paribus, Asian currencies would be broadly stronger against the USD which was indeed the case. The JPY was the biggest beneficiary of such a shock, followed by the SGD and then the IDR. Lower yields did not benefit the PHP much. CNY, MYR and THB were also not as affected. The results here are also consistent with our other models of currencies which show that indeed yield differentials are a major driver of the JPY.

Stronger JPY: We shocked the JPY 10% stronger in this scenario. Looking at deviations from baseline, we see that THB, CNY and MYR strengthened the most in such a scenario. While the IDR, SGD and PHP were also affected and were dragged stronger here, the effects were not as strong. This is somewhat consistent with results of our earlier efforts in Mar (***Focusing on FX Reactions to Central Bank Actions***) where we saw that THB and MYR were more affected by movements in JPY. It is perhaps also unsurprising that the models suggest that a JPY shock would affect Asian currencies in a distinct manner.

Weaker CNY: With the US elections looming, there is a risk that the US could start becoming more hawkish on China. As we have maintained, this should be worse for the CNY. As such, we shocked CNY 10% weaker here. The model suggests that the impact across Asian currencies may not be all that large, with the magnitude of the moves one-third or less than the shock in CNY. The models seem to suggest that CNY moves, while they matter, matter less than JPY or USD moves.

Stronger USD: Looking at a scenario where the USD is 10% stronger, the models then imply that most Asian currencies, except for the CNY, are strongly impacted. In terms of currency shocks, a USD shock looks to have the largest and most far-reaching influence. Perhaps this is a reflection of the CNY being a more tightly controlled currency, both in terms of capital controls and with a more consistent stabilizing anchor in the form of a daily CFETS fixing.

Weaker Growth: We shocked world GDP growth by 10% lower here and the findings are interesting. Firstly, JPY is the least affected by this shock, which is unsurprising given its safe-haven status. The SGD is the second least affected, and this is intuitive given that the SGD exhibits safe haven properties from time to time. We have postulated that it is a regional safe haven of sorts given its robust macroeconomic fundamentals and strong institutions. We also observe that currencies of the larger economies (CNY, IDR and THB) appear to be more adversely affected by a negative global growth shock. One possible explanation could be that indeed these

economies and ergo these currencies would be more adversely affected in the event of a global growth slowdown.

Weaker Inflation: With a broad global disinflationary trend relatively intact, we examine what might happen if inflation were to come off by 10% more than the models imply. We find that the THB and CNY are most affected by an inflation shock. MYR and SGD are the two least affected by a steeper than anticipated fall in inflation.

We infer the following from the shocks:

- (1) **JPY is the most resilient currency across a variety of shocks.**
This is unsurprising given the JPY's safe haven status. Moreover, recall that in recent episodes of market stress (carry trade unwinding), the JPY was the outperformer.
- (2) **Among ASEAN currencies, the SGD looks to be more resilient.**
While its resilience is not on the same level as the JPY, we have also observed that this holds true in reality. SGD tends to be one of the more resilient currencies. It rarely outperforms, but it also rarely underperforms and is usually somewhat steady.
- (3) Interestingly, **CNY is least affected by the USD shock but is most affected by the global growth shock.** Perhaps China's FX regime provides some stability for the currency and the models less susceptible to swings. In addition, China's contribution to global growth is likely relatively large and therefore global growth may be a proxy for China's growth which explains the outsized impact.

Other Model Results and Forecast Ranges

In this section, we look at the model results and the forecast trajectories implied. Models are trained on up to 50 years of data to produce forecasts for 6 months ahead. Forecasts are also back tested for accuracy. The weighted models improve forecast accuracy by reducing the root mean squared error (RMSE) of the models and taking different weights of different models for each step of the forecast. Lower RMSE indicates that a model's predictions are closer to the actual values, which implies better forecast performance. A summary of what the model implied forecasts are is contained in Table 2.

Table 2: Summary of Model Implied Forecasts and Confidence Intervals
(as at end Feb 2025)

	Max 95%	Max 75%	Max 50%	Model Implied Forecast	Min 50%	Min 75%	Min 95%
USDSGD	1.3863	1.3547	1.3363	1.3101	1.2843	1.2660	1.2350
USDTHB	36.8579	35.8427	35.2510	34.4185	33.5926	33.0139	32.0338
USDPHP	60.7916	58.9760	57.9158	56.4232	54.9408	53.9001	52.1384
USDMYR	4.6845	4.5442	4.4623	4.3471	4.2327	4.1527	4.0171
USDIDR	17496	16794	16388	15821	15261	14870	14210
USDCNY	7.4282	7.2936	7.2148	7.1036	6.9930	6.9152	6.7833
USDJPY	156.96	150.93	147.44	142.52	137.66	134.28	128.56

Source: Macrobond, Maybank FX Research and Strategy

Note: Forecasts are monthly, model-implied, and are not representative of Maybank FX Research and Strategy official forecasts provided on a quarterly basis.

Our own forecasts for these currencies fall within the model-implied ranges, although we note that some of these ranges are wide. We then try to use these models for a deeper understanding of the drivers of Asian currencies.

What Drives Currencies?

The question of what drives currencies is an interesting one, and traditional economic literature suggests that currencies are influenced by a combination of the following:

1. Interest Rates: Higher interest rates in a country tend to attract foreign investment, increasing demand for that country's currency and causing its value to appreciate. Conversely, lower interest rates can lead to depreciation.

2. Inflation Rates: Lower inflation rates generally correlate with currency appreciation because they maintain a country's purchasing power. Higher inflation erodes value and can lead to depreciation.

3. Other Economic Indicators: Various indicators, such as GDP growth, unemployment rates, and trade balances, provide insights into a country's economic health and can influence currency values. Strong economic performance typically strengthens a currency.

4. Political Stability and Economic Performance: Countries with stable governments and strong economic performance are more attractive to investors, which can increase currency value. Political instability or economic trouble can lead to currency depreciation.

5. Market Sentiment and Speculation: Traders' perceptions and speculative activities can drive currency movements. Market sentiment can be influenced by news, geopolitical events, and other factors, leading to fluctuations in currency values.

6. Trade and Capital Flows: A country's trade balance (exports minus imports) and capital flows (investment inflows and outflows) impact currency demand. A trade surplus can strengthen a currency, while a trade deficit can weaken it. Capital inflows also tend to appreciate a currency, while outflows can lead to depreciation.

7. Government Policies: Government policies, including central bank actions, can shape and influence the above factors and in so doing affect a currency.

The above drivers are generally well documented and accepted. However, they are also complex, dynamic and it can be difficult to discern their exact impact at any point of time. In other words, their impact can be difficult to quantify at any point of time. With the aid of quantitative models, we try to answer a related question. Given a set of variables that represent the factors above, what do the models have to say about which ones are the most useful in terms of forecasting a particular currency.

For each currency, we look at the following variables for up to a 50 year period (depending on data availability). Domestic inflation rates and US inflation rates, domestic short and long-term interest rates and US interest rates, domestic growth, US growth, world growth and the terms of trade. In addition, the currencies themselves and the CNY and JPY are also used as variables. These variables broadly map to the factors that economic literature says drive currencies above. The models assign a score to these variables in terms of how useful they are as forecast indicators and we summarize these variables below in Table 3.

Table 3: Which Variables are Deemed as Useful Forecast Indicators?

Currency	Useful Forecast Indicators
SGD	SGD, SGD (Trend), 10Y US Yields
MYR	MYR, JPY
THB	THB, JPY, Thai Inflation, US Inflation
PHP	PHP, PH Terms of Trade
IDR	IDR, 10Y ID Yields, US GDP Growth Rate
JPY	JPY, 10Y US Yields, 10Y JP Yields
CNY	JPY, World GDP Growth Rate, US Inflation

Source: Macrobond, Maybank FX Research and Strategy

We observe the following:

Observation 1: For all currencies except the CNY, the currencies themselves tend to be the strongest forecast predictors of themselves. Especially for the SGD where a clear trend can be discerned over a long period of time. Given that the SGD is essentially on a default appreciating path against a basket of currencies, this is not unusual. This is also broadly supportive of technical analysis - historical price is a reasonable gauge for future price. For the CNY, perhaps the relatively recent change in FX policy has created some noise and affected the usefulness of the CNY as a forecast indicator in the longer term.

Observation 2: The JPY is a useful forecast predictor of the THB, MYR and CNY, but is not as useful a predictor for the IDR, PHP or SGD. This is perhaps a little surprising, given that our understanding was that the JPY would naturally have some knock-on effects on Asian currencies. Perhaps over a longer timeframe, the usefulness of the JPY as a forecast indicator for some of the currencies is diminished.

Observation 3: Other macroeconomic variables are of mixed usefulness as forecast predictors of currencies. Our understanding of what drives certain currencies is somewhat confirmed here. The JPY is influenced by yield differentials. IDR benefits from higher ID yields. SGD is affected by US yields given the almost perfect correlation between US and SG yields.

Observation 4: Useful forecast indicators are in line with results from the earlier exercise on shocks. In other words, CNY is relatively more responsive to shocks in JPY, world GDP growth rates and US inflation and so on.

Model Implied Forecasts for Each Currency

We then turn our attention to the forecasts implied by these models and compare them to our official forecasts. For each currency, we compare whether our forecasts are more bullish or less bullish than the model-implied. In addition, we check to see how close our forecasts are versus model-implied and how well our forecasts fit within the confidence intervals implied by the models.

For charts (a) and (b) shown below, every line of different colour represents a different model. A list of the models used is in the Annex.

For charts (c), every line corresponds to a parameter specified in the legend of the chart. Note that model implied forecasts are in light blue and Maybank forecasts are in red and thicker. Other lines correspond to their respective confidence intervals.

Data sources for all charts related to the models are from Macrobond and Maybank FX Research and Strategy.

CNY

Model implied CNY forecasts generally suggest that the CNY is flat or stronger against the USD (Chart 5a, 5b, 5c). Our own forecasts for CNY lie within the 95% confidence intervals implied by the models and are fairly close to the model implied forecasts. In terms of differences, the model is implying a relatively flatter CNY trajectory. Model implied forecasts start off more bullish but then taper off and imply a relatively flat USDCNY.

To recap our USDCNY forecasts are based largely on a view that USD goes broadly weaker. We continue to look for CNY TWI to fall because of China's growth fragility. We think that CNY TWI can continue to decline into 2025, given that most non-USD currencies should appreciate faster than the CNY over this period.

In terms of risks ahead for our CNY forecasts, the US presidency may be one of the largest. Kamala Harris has been silent on China while Trump has been hawkish. A Harris victory would therefore be relative better than a Trump victory, which we expect would continue to weigh on the CNY.

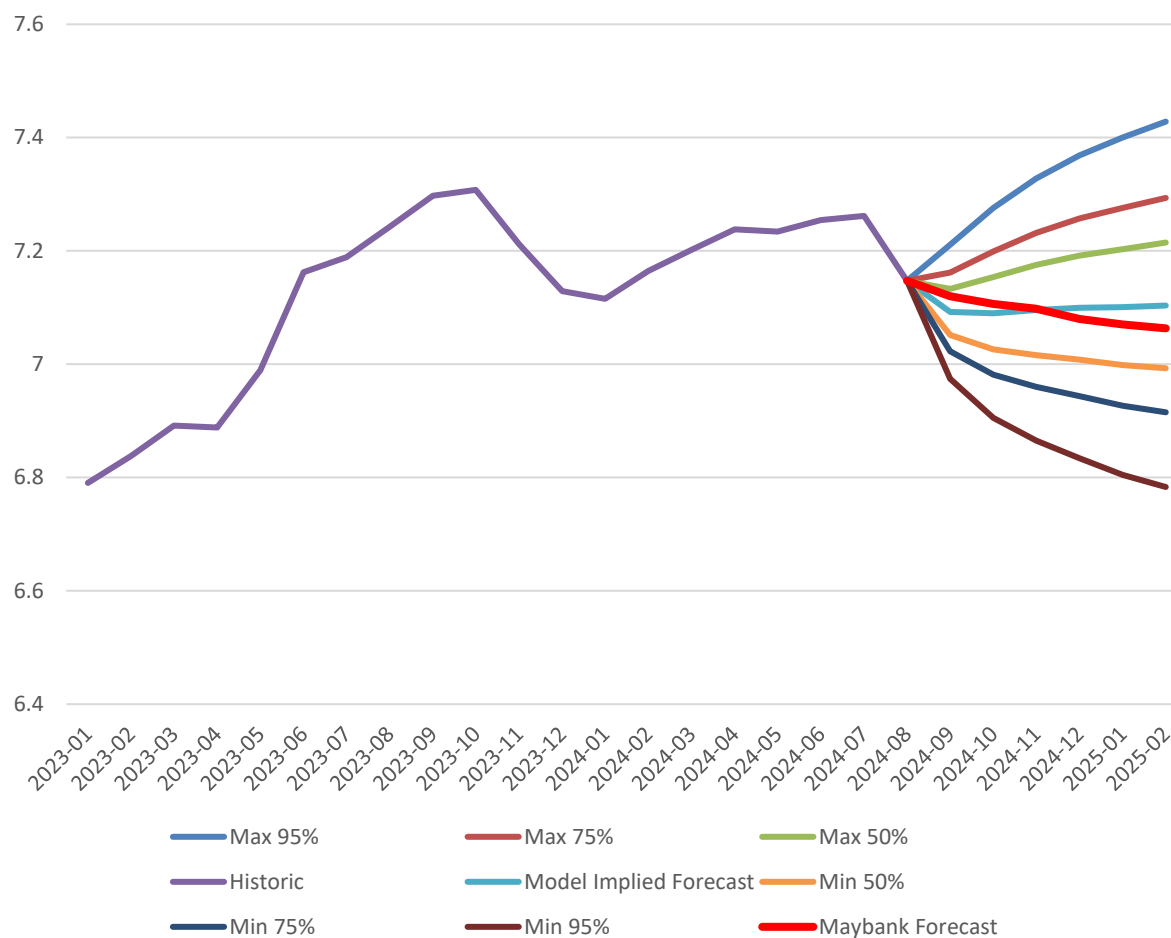
Chart 5a: Univariate forecasts for USDCNY



Chart 5b: Multivariate forecasts for USDCNY



Chart 5c: Weighted forecasts for USDCNY (with Confidence Intervals)



JPY

JPY models are broadly suggesting that the JPY is flat or stronger against the USD (Charts 6a, 6b, 6c) with the exception of 3 univariate models that suggest that JPY could go weaker (Chart 6a). Our own forecasts for JPY lie within the 95% confidence interval implied by the models and are more bullish than the model implied forecast. The weighted model suggests that JPY could be flat against the USD, whereas our forecasts imply JPY stronger against the USD over the next six months.

To recap, our motivations for USDJPY are based on shifting market expectations for a global easing cycle. More specifically, Fed rate cuts are broadly being anticipated by the markets. Meanwhile, the BOJ is set to be the only DM central bank to raise rates over this period which is ultimately bullish for the JPY. The models show that the yield differential is ultimately one of the main drivers for the JPY, which is consistent with our own view of the JPY and the Fed and BOJ moving in opposite directions should compress the yield differential in favour of the JPY. These factors are likely not accounted for in the models, which are not well suited to account for shifts in central bank stances and therefore the models are not as bullish on the JPY as we are.

In terms of risks for our JPY forecasts, the main risk is that the BOJ has to delay hikes either because of high market volatility or disappointing Japanese data. The Fed is expected commence easing soon and delays on that front are unlikely.

Chart 6a: Univariate forecast for USDJPY

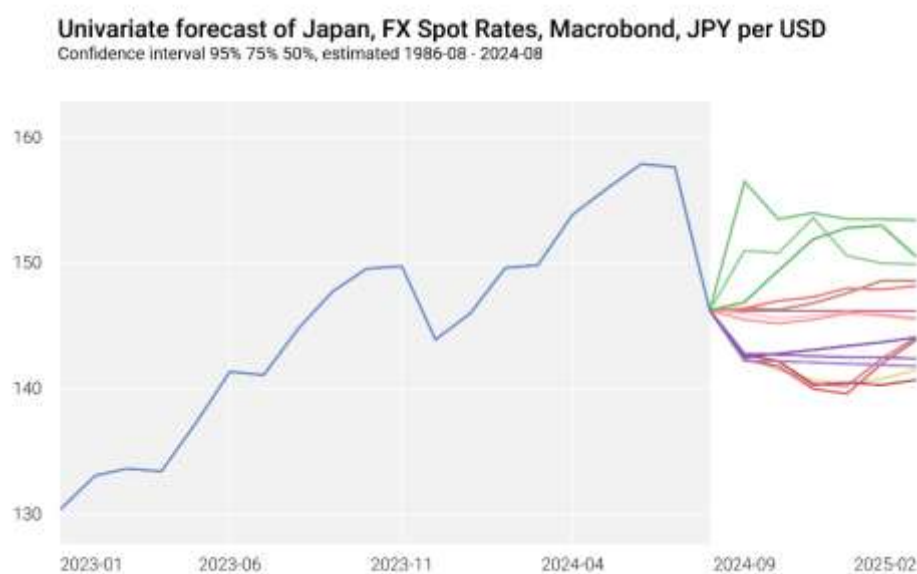


Chart 6b: Multivariate forecast for USDJPY

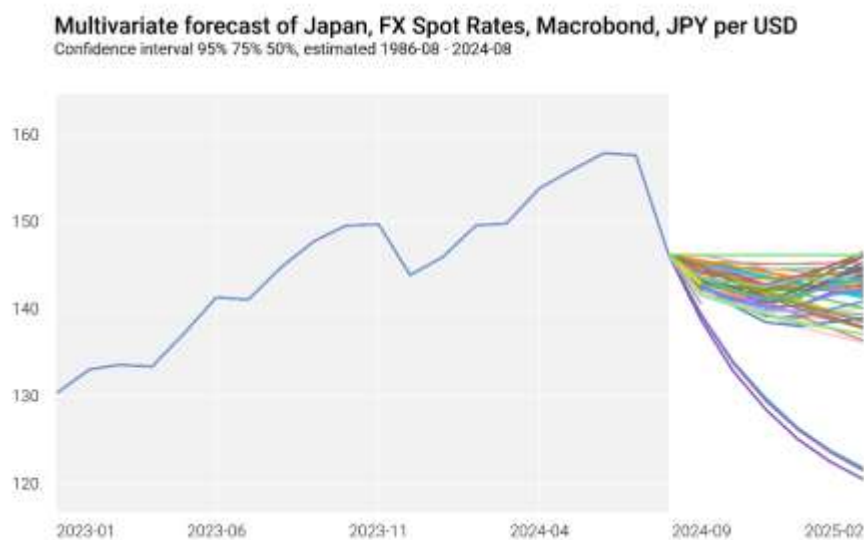
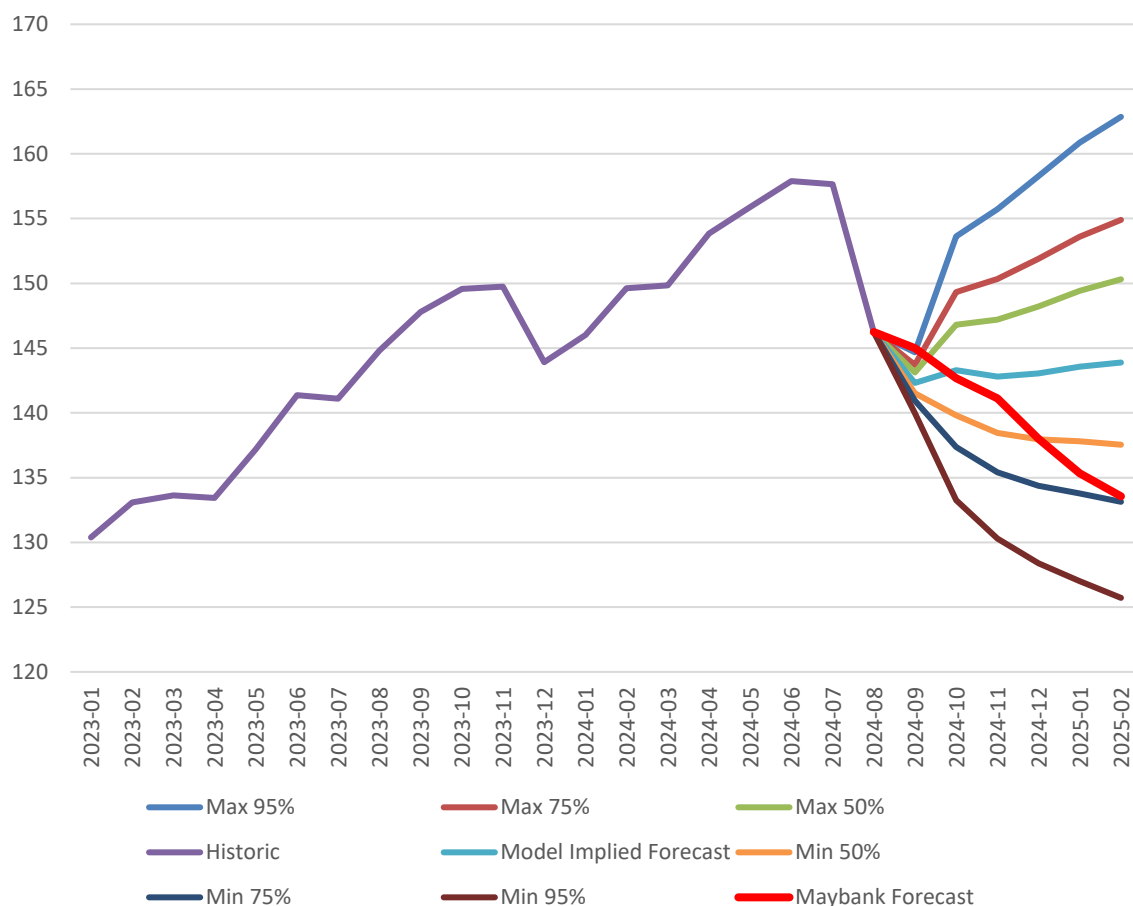


Chart 6c: Weighted forecast for USDJPY (with Confidence Intervals)



IDR

IDR models are implying that the IDR will be broadly flat against the USD over the next six months (Charts 7a, 7b, 7c). There are a total of 3 models (1 univariate and 2 multivariate) that suggest that IDR will be stronger against the USD. Our forecasts for IDR are more bullish than the model implied forecasts. At the start, our forecasts lie outside the 95% confidence interval implied by the models, however our forecasts fall within the 95% confidence interval after two months.

Our IDR forecasts are based on a bumpy near term followed by a stronger medium term. As the Fed starts to ease, there could be more support for the IDR alongside lower US yields. Sentiment for EM currencies such as the IDR could also improve as a soft landing starts to become clearer. We expect BI to cut only after the Fed and this should continue to support the IDR. It is likely that the models are not accounting for the shift in the Fed towards cuts given how high Fed interest rates have been for an extended period and therefore our forecasts are more bullish than the model implied one.

Key risk would include Trump victory that can raise tensions regionally and more economic weakness in China. A global hard landing or recession would also weigh on appetite for EM risk and the IDR.

Chart 7a: Univariate forecast for USDIDR



Note: Green line is a Theta model implied forecast which decomposes a time series into trend, seasonality and noise. Rapid decline is due to the noise factor.

Chart 7b: Multivariate forecast for USDIDR

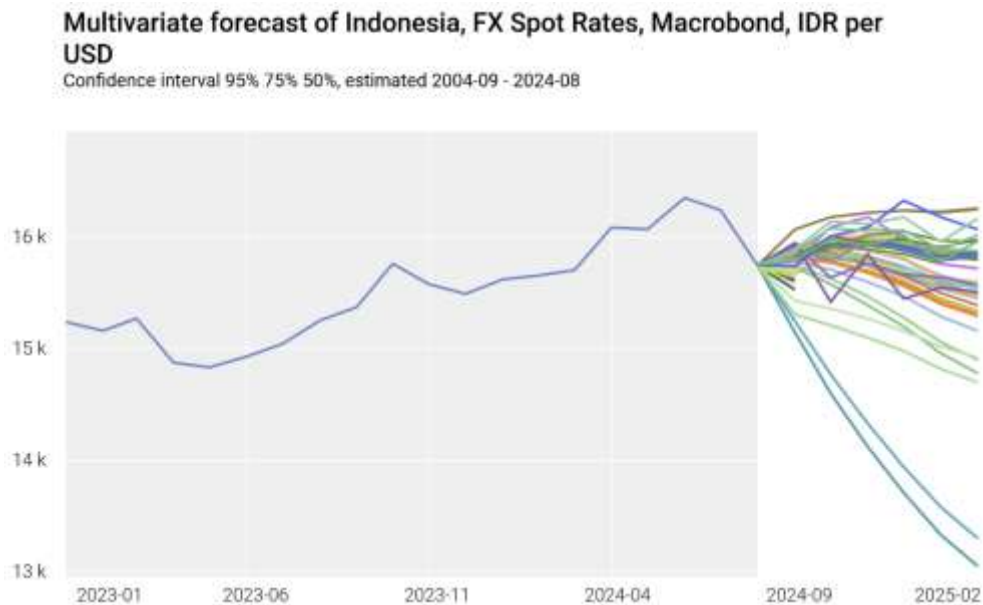
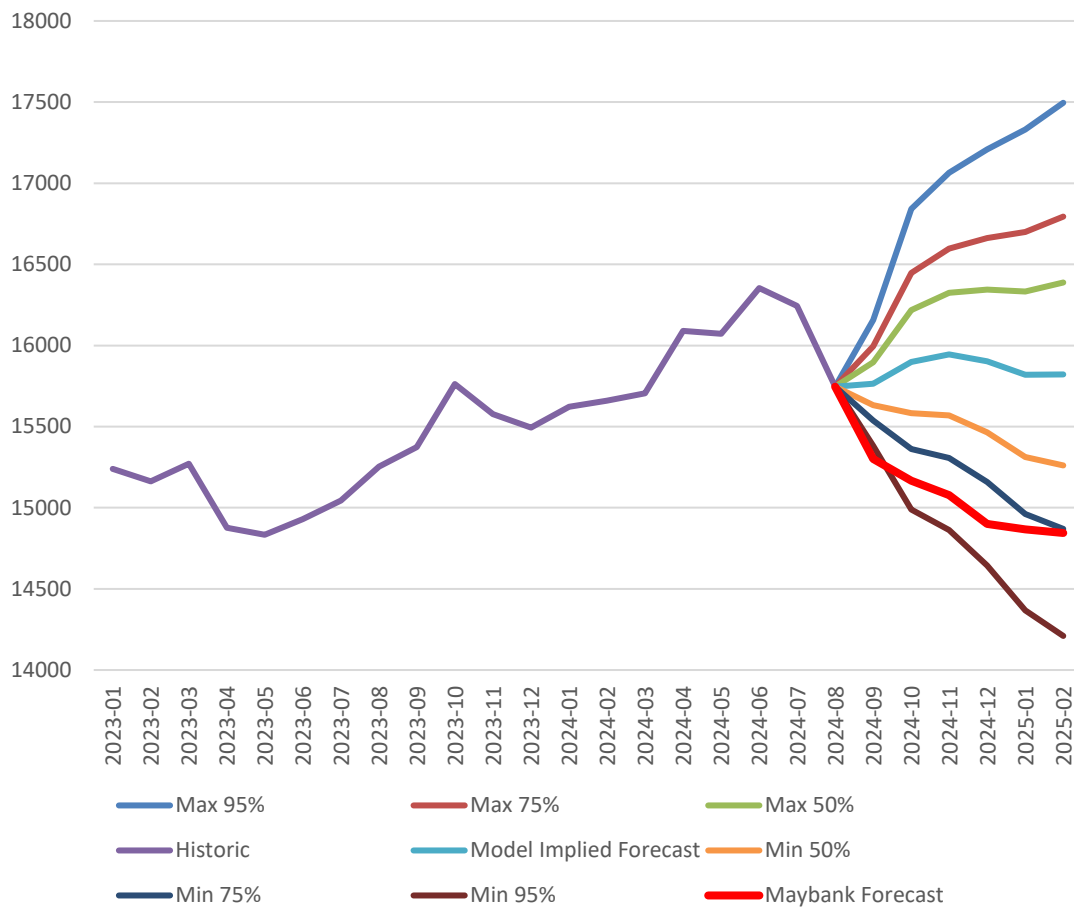


Chart 7c: Weighted forecast for USDIDR (with Confidence Intervals)



MYR

Models are suggesting that MYR is broadly flat to stronger against the USD over the next six months. Our own forecasts lie within the 95% confidence interval implied by the model and are more bullish than the model implied forecasts.

Our MYR forecasts are motivated by continued resilience and outperformance of the MYR. YTD the MYR is the best performing currency bar none in the universe of currencies that we cover. Fed cuts which are well anticipated are also likely to set in and provide the MYR with more room to appreciate. The models are not accounting for the shift in the Fed towards cuts given how high Fed interest rates have been for an extended period and therefore our forecasts are more bullish than the model implied.

Key risks for the MYR include the US election where extended US strength could hurt the MYR.

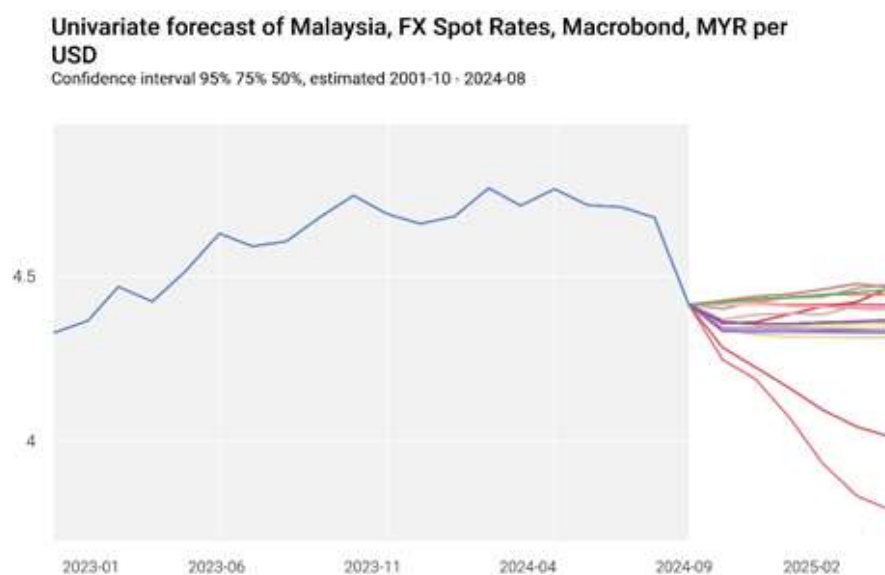
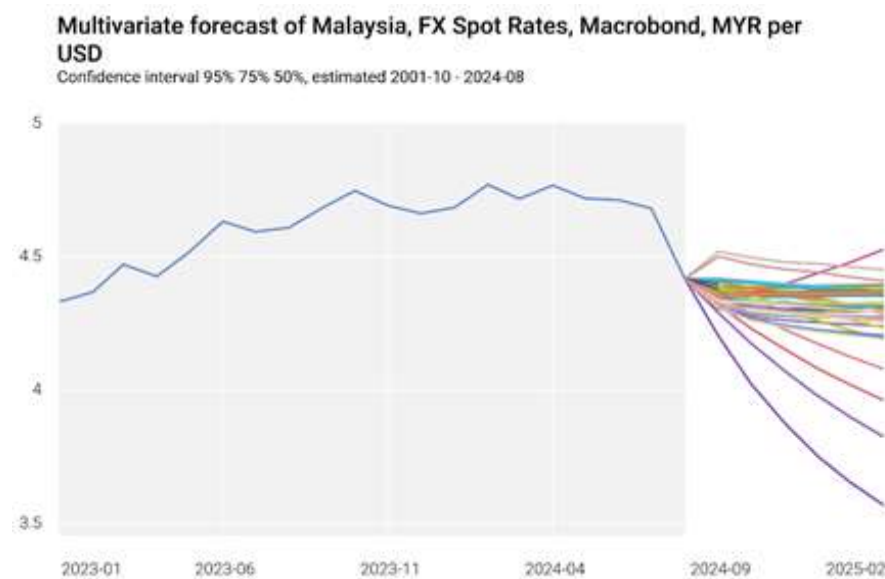
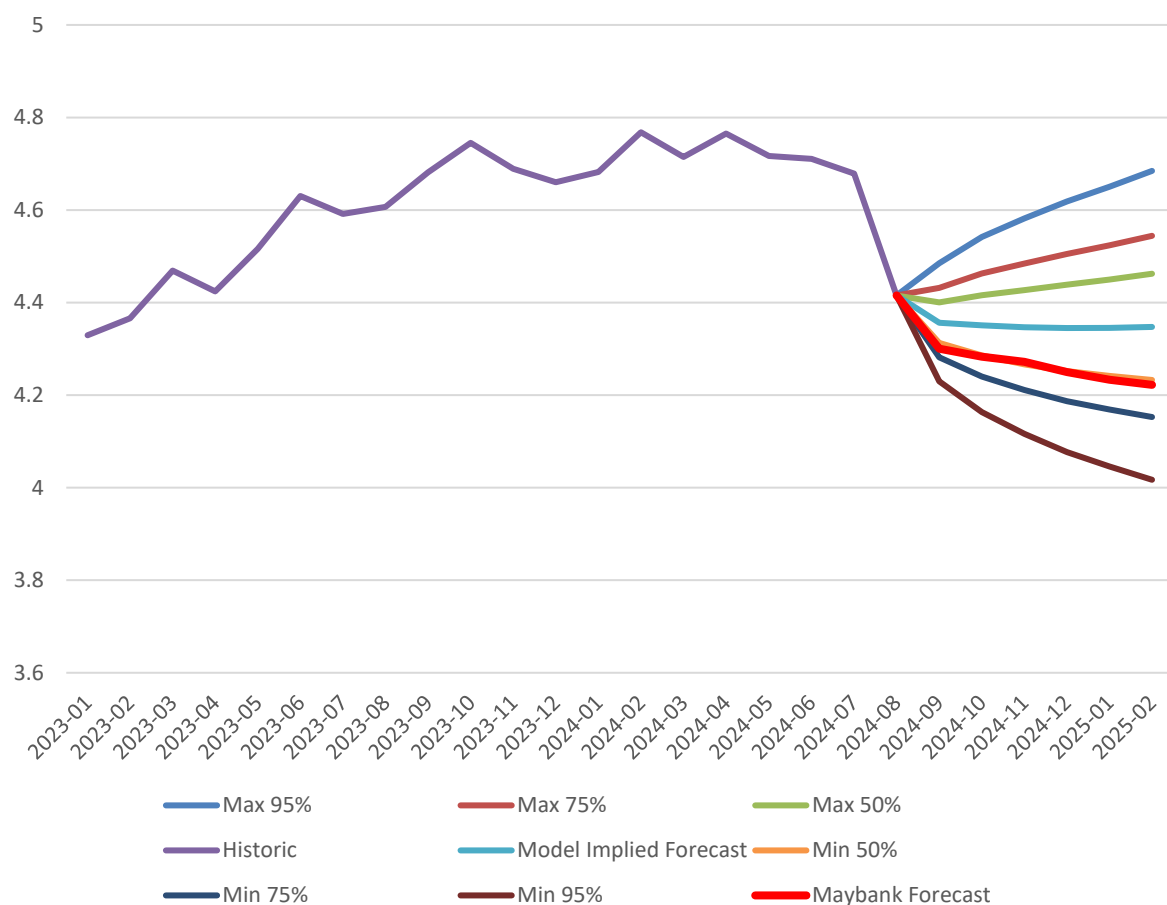
Chart 8a: Univariate forecast for USDMYR**Chart 8b: Multivariate forecast for USDMYR**

Chart 8c: Weighted forecast for USDMYR (with Confidence Intervals)



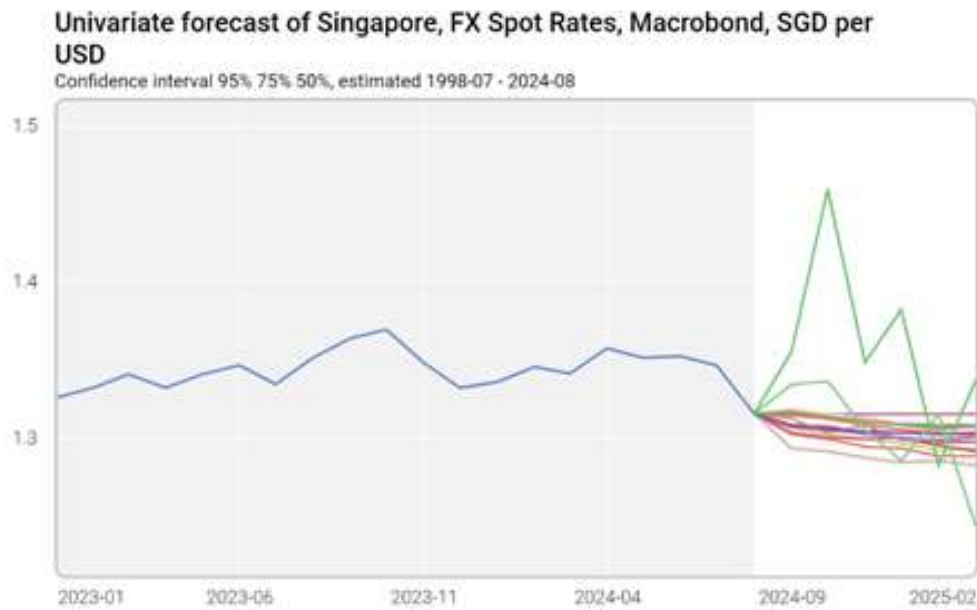
SGD

The models are implying a SGD that is unchanged over the next six months (Charts 9a, 9b, 9c). However, we note that the weighted forecasts is implying an SGD that is stronger over the next six months. The SGD has an appreciating trend that the models have detected and this is likely due to MAS policy which is by default on some positive level of appreciation. Our own forecasts for the SGD are more bullish than the model implied one and lie within the model implied 95% confidence interval.

Our motivations for the SGD are largely based on the USD going weaker against a backdrop of Fed rate cuts and a global soft landing. SGD resilience will likely also continue amid MAS holding policy, inflation coming off and growth improving. The model is likely less bullish than our forecasts given that it cannot properly account for future Fed rate cuts given how rates have remained high for an extended period.

Key risk for the SGD are if the global economy significantly worsens. The USD would be stronger and the SG economy which is trade reliant would be worse off. We expect the SGD to be weaker in such an environment.

Chart 9a: Univariate forecast for USDSGD



Note: Green line is a Theta model implied forecast which decomposes a time series into trend, seasonality and noise. The noise factor in this case causes the odd shape.

Chart 9b: Multivariate forecast for USDSGD

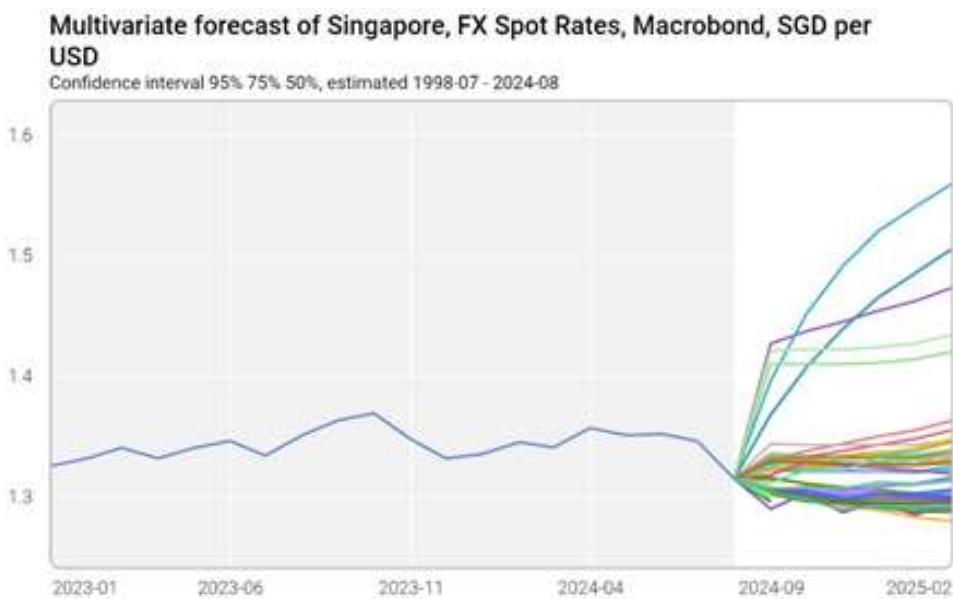
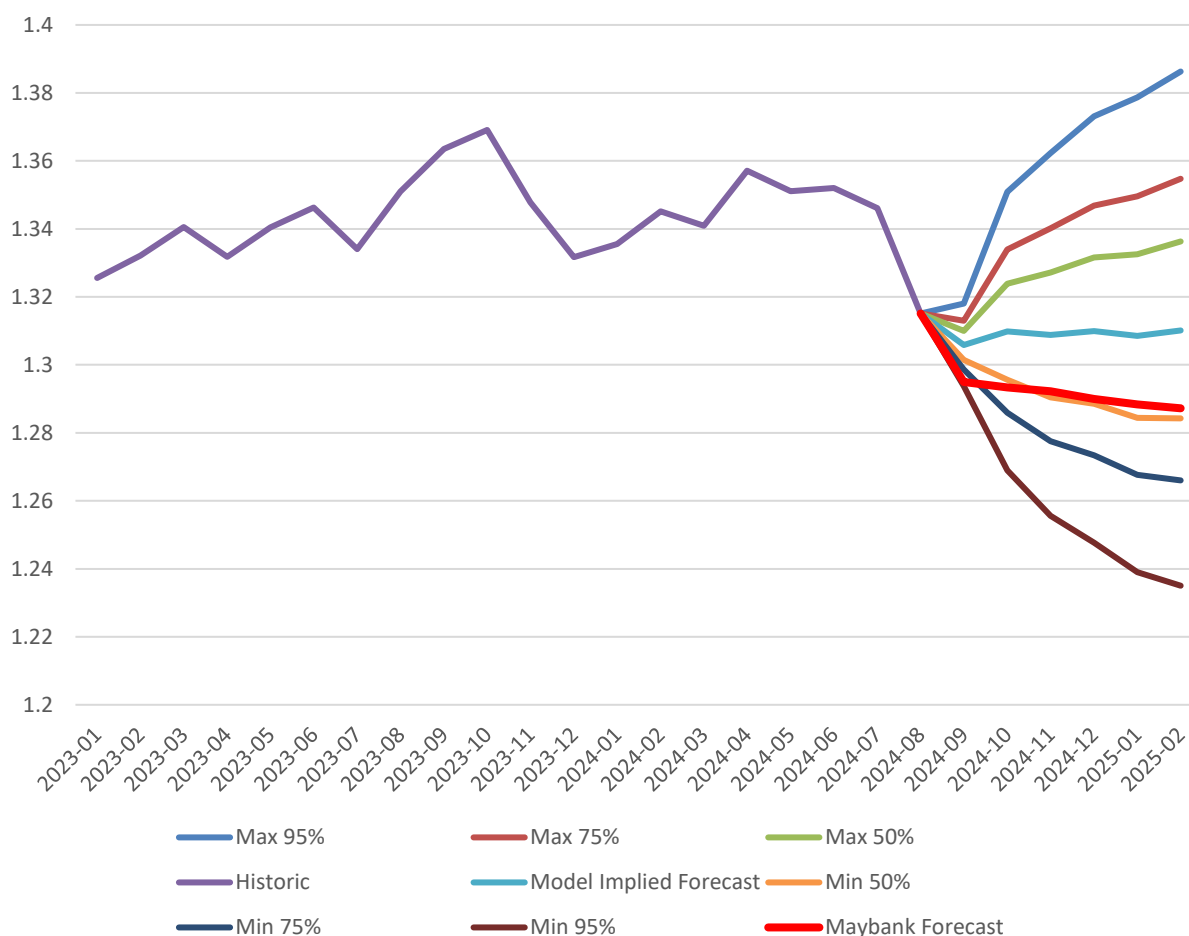


Chart 9c: Weighted forecast for USDSGD (with Confidence Intervals)



THB

Apart from two multivariate models, the trajectory for THB is broadly flat to stronger against the USD (Charts 10a, 10b, 10c). Our forecast for THB is more bullish than what is implied by the model and it lies within the 95% confidence interval implied by the model.

We see the THB stronger against the USD on impending Fed rate cuts and also an indirect boost from higher gold prices. We believe these factors will persist and provide THB a boost over the next six months. It is unlikely that the models are properly accounting for a shift in the Fed's stance after an extended period of high Fed policy rates and are therefore less bullish than our forecasts.

Key risk for the THB are likely to come from weaker growth that could spur the central bank to cuts rates for support.

Chart 10a: Univariate forecast for USDTHB

Univariate forecast of Thailand, FX Spot Rates, Macrobond, THB per USD

Confidence interval 95% 75% 50%, estimated 1999-10 - 2024-08

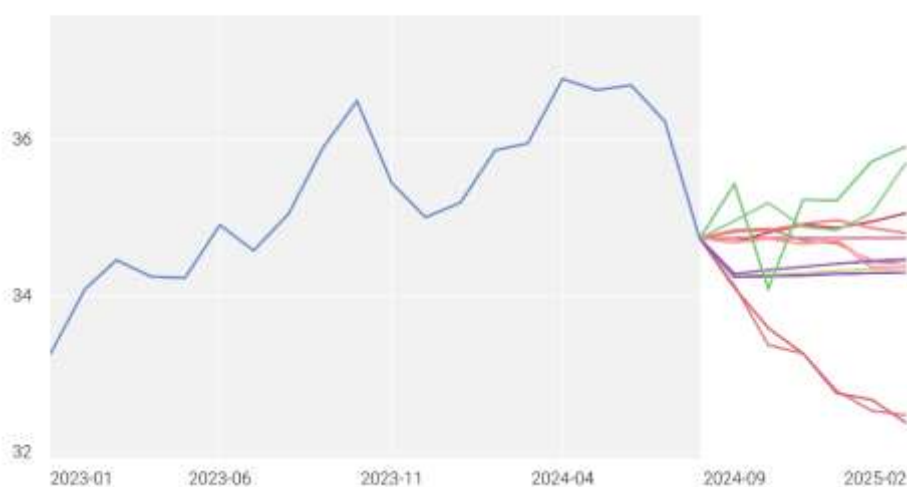


Chart 10b: Multivariate forecast for USDTHB

Multivariate forecast of Thailand, FX Spot Rates, Macrobond, THB per USD

Confidence interval 95% 75% 50%, estimated 1999-10 - 2024-08

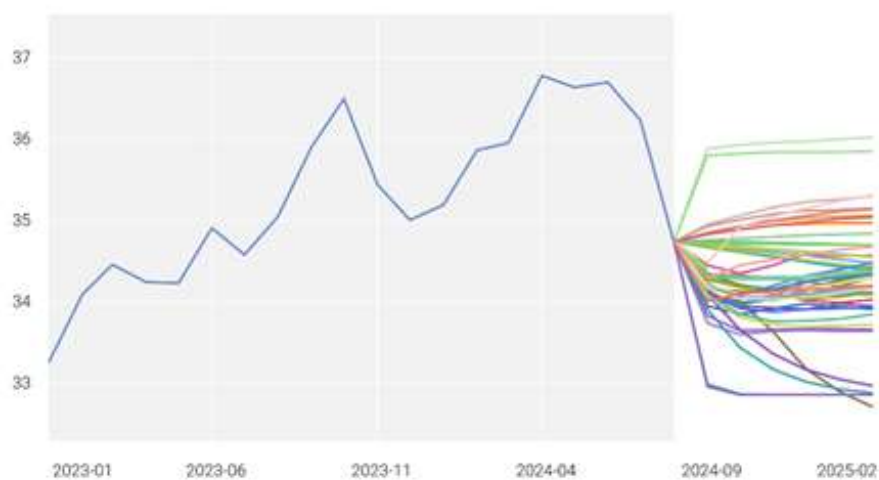
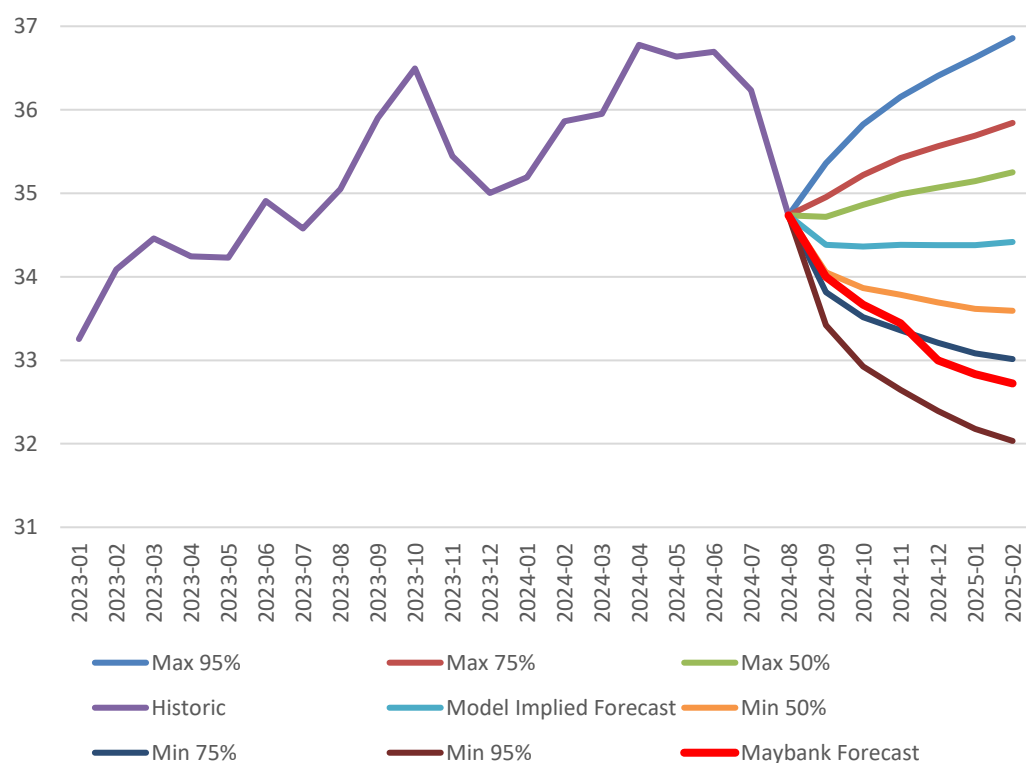


Chart 10c: Weighted forecast for USDTHB (with Confidence Intervals)



PHP

Models are implying a PHP that is flat to slightly stronger against the USD over the next six months. Our own PHP forecasts are more bullish than the weighted model implied and lie within the 95% confidence interval implied by the model.

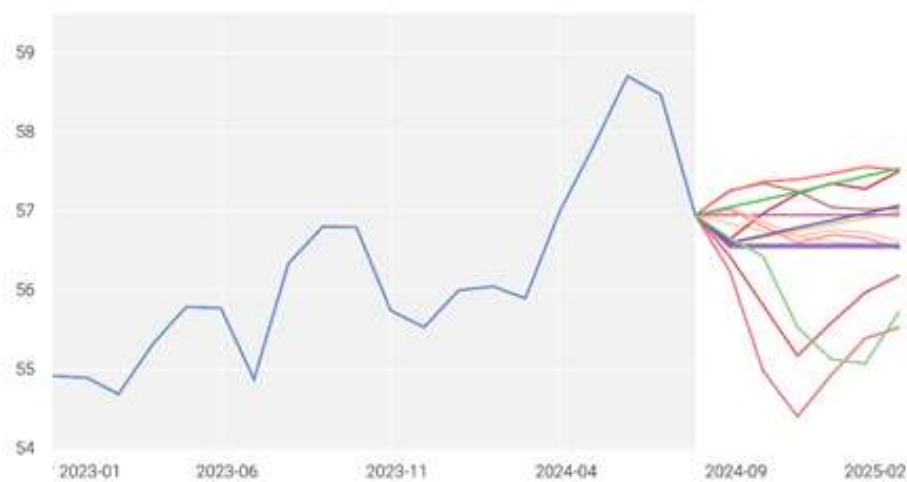
Our PHP forecasts are predicated on better market sentiment in the EM space amid eventual Fed rate cuts. It is likely that the models are less bullish than our forecasts because they are not properly accounting for the shift in the Fed towards cuts after an extended period of high rates.

Main risks for our PHP forecast include a spike in oil prices due to geopolitical tension which could weigh on the country's external position as an oil importer.

Chart 11a: Univariate forecast for USDPHP

Univariate forecast of Philippines, FX Spot Rates, Macrobond, PHP per USD

Confidence interval 95% 75% 50%, estimated 2007-02 - 2024-08

**Chart 11b: Multivariate forecast for USDPHP**

Multivariate forecast of Philippines, FX Spot Rates, Macrobond, PHP per USD

Confidence interval 95% 75% 50%, estimated 2007-02 - 2024-08

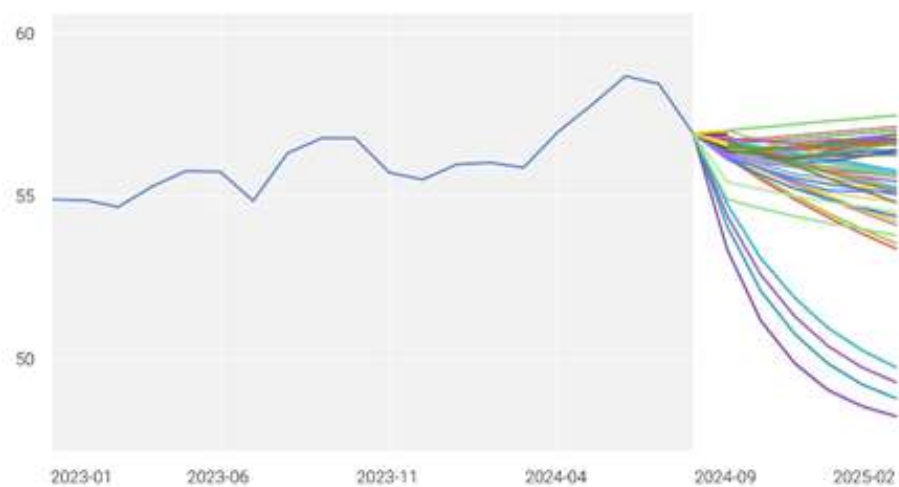
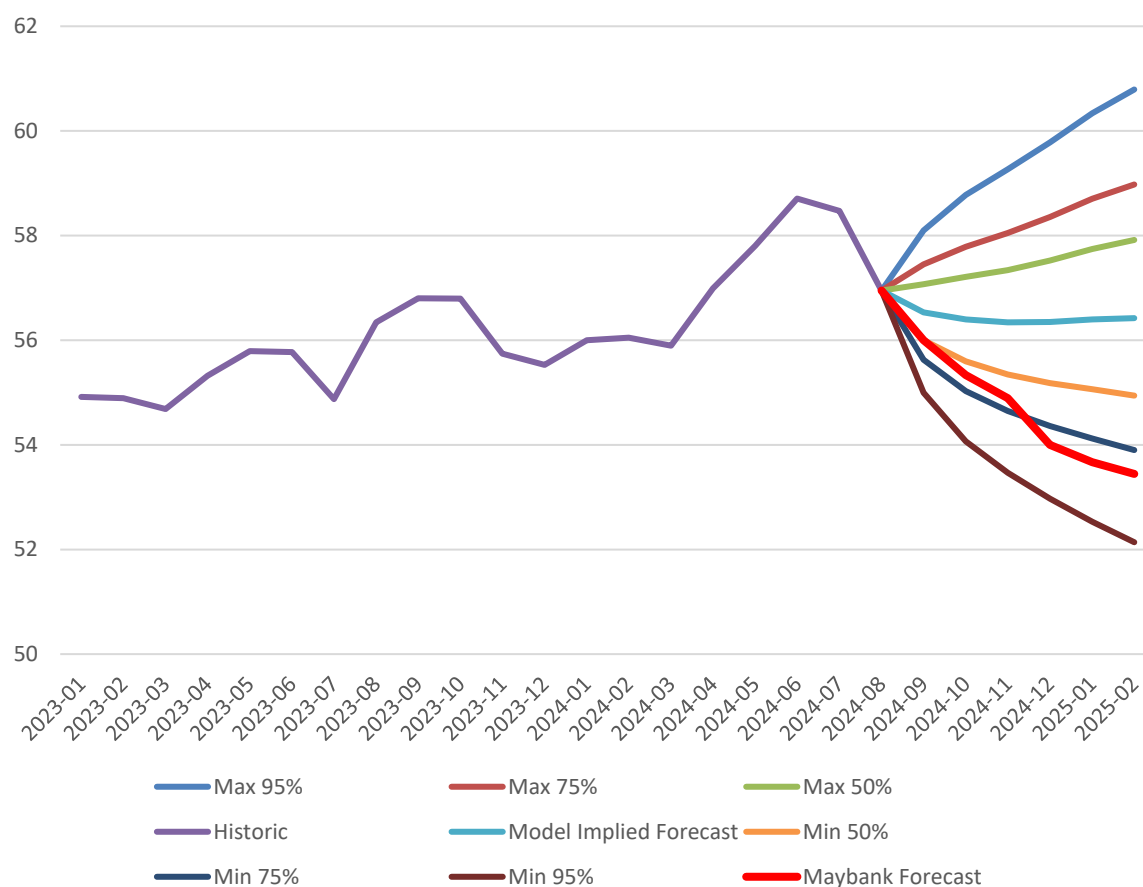


Chart 11c: Weighted forecast for USDPHP (with Confidence Intervals)



BEER Model Update

In addition to the models that we have run above, we updated our Maybank Behavioural Equilibrium Exchange Rate (BEER) model to the latest available data (2Q2024). As of Aug 2024, the BEER model implies that most non-USD currencies (apart from AUD and TWD) are trading close to their fair values (Charts 12a, 12b). The USD remains the most overvalued currency and this suggests that there could be more room for the USD to fall as the Fed embarks on its rate cutting cycle. Given how close most currencies are against their fair values, there is also the potential for dislocations to occur in the short term. As we have mentioned, with US elections looming and expectations for central bank rate cuts adjusting, there is ample opportunity for volatility.

Note that our BEER model suggests that JPY and MYR are no longer as undervalued as they were earlier. However, we do anticipate that these two currencies could extend their gains against the USD. JPY appreciation is underpinned by a hiking BOJ against an easing Fed. MYR appreciation could continue given Malaysia's robust economic fundamentals and market sentiment for EM assets improving amid a global soft landing. Note that MYR is YTD the best performing currency against the USD. The models are also broadly supportive of continued MYR resilience and outperformance, which is in line with our own view for the MYR.

Chart 12a: Most Non-USD Currencies Are Now Trading Close to Their Fair Values

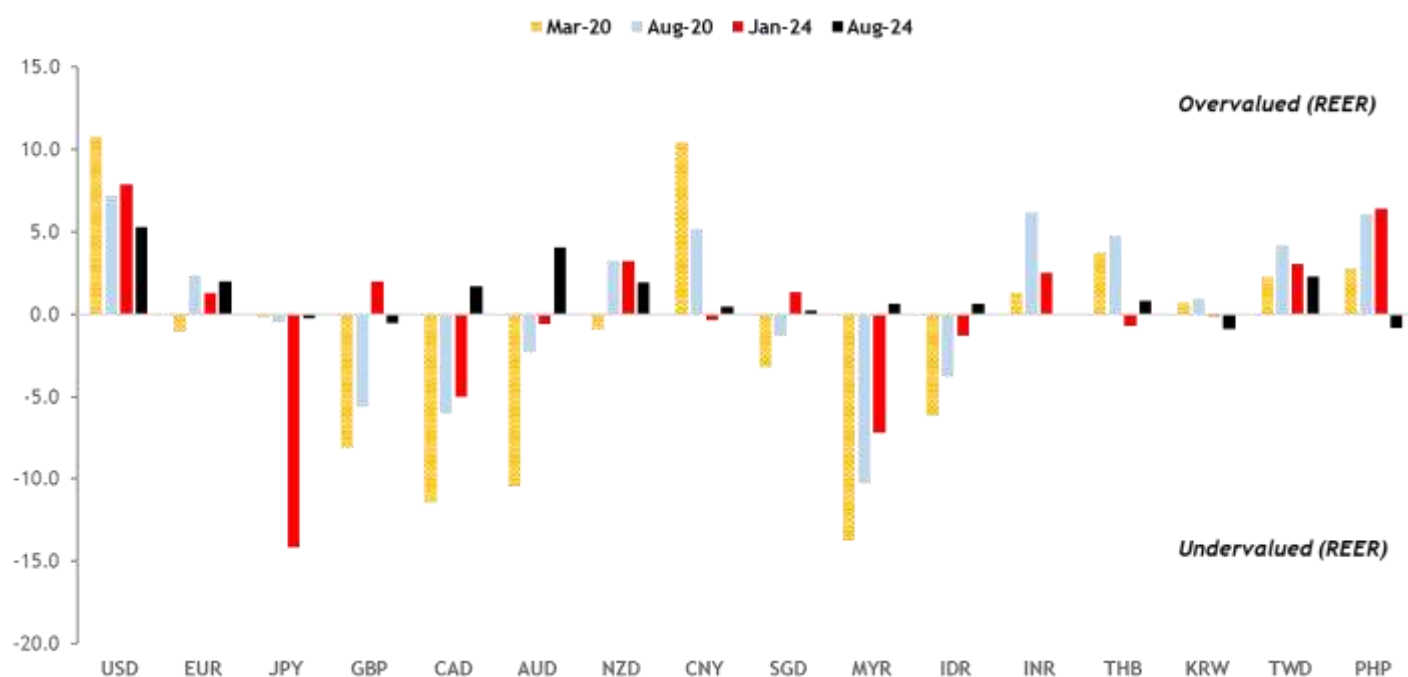
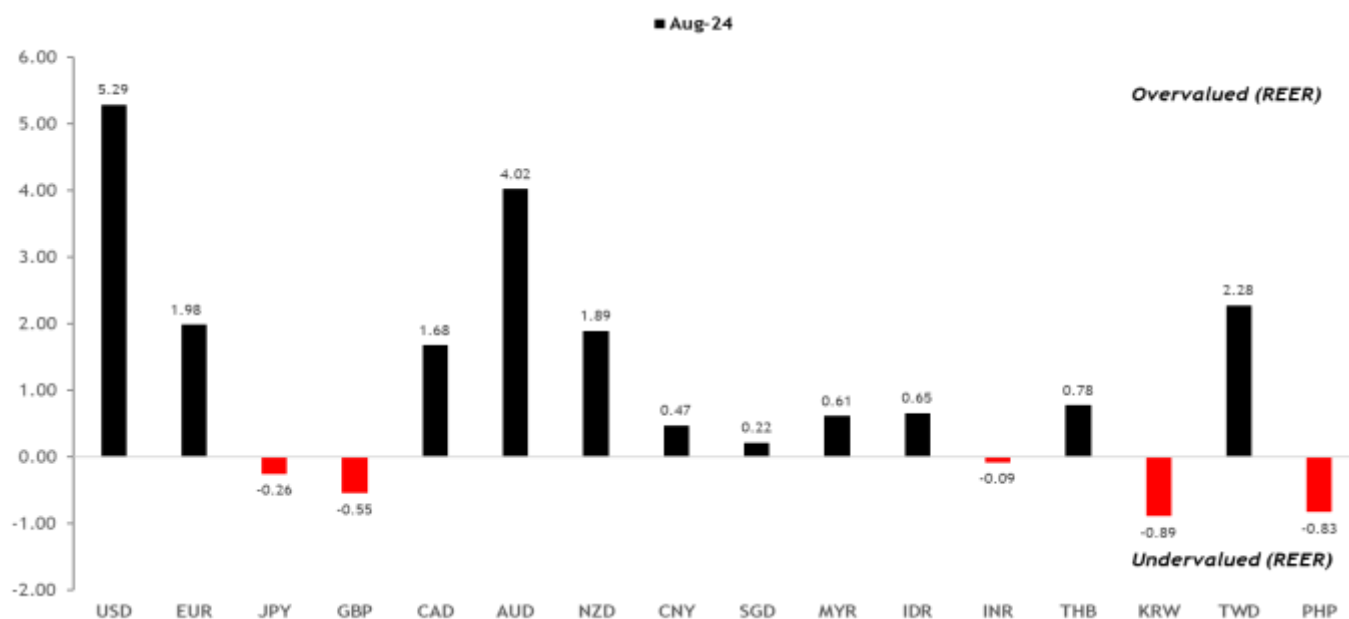


Chart 12b: USD, AUD and TWD Are Now Among the Most Overvalued Currencies



Conclusion

Our base case is for a soft landing, Fed rate cuts and a broadly weaker USD over the next 12 months. Over the next 6 months, we do see risks for the USD to remain stronger. The models suggest that the best currencies to hold as hedges against this particular risk is the CNY. However, we think that the CNY is likely to underperform other currencies and should be weaker on a trade-weighted basis. We also see a stronger case for a weaker USD and therefore less of a need to hedge against USD strength. As such, we do **see potential for JPY and MYR to outperform**. As suggested by the models, **the JPY is the most resilient Asian currency to shocks, which is unsurprising given its safe haven status. The MYR can also continue its outperformance as long as the soft landing narrative remains intact**. While the models suggest that SGD is the most resilient currency in the ASEAN space, our expectations are for the SGDNEER strength to taper as Fed rate cuts set in. As such, while the SGD may be a good hedge, it is also unlikely to outperform its peers in the SGDNEER index against the USD.

Annex

Models Used and a Brief Description

Univariate Models

ARIMA (AutoRegressive Integrated Moving Average):

Summary: ARIMA models are used for forecasting time series data by capturing different aspects of the data's patterns. They combine autoregressive (AR) terms, differencing (I) to make the series stationary, and moving average (MA) terms. ARIMA is suitable for time series data that exhibit linear trends and seasonality can be handled through seasonal differencing or seasonal ARIMA variants.

ETS (Error, Trend, Seasonal):

Summary: ETS models decompose a time series into error, trend, and seasonal components. They use exponential smoothing techniques to model these components, which makes them effective for capturing various types of seasonality and trends. ETS is particularly useful for data with strong seasonal patterns or where trends change over time.

Theta:

Summary: The Theta model is a forecasting method that combines different smoothing techniques and decomposes the time series into components. It leverages a combination of exponential smoothing and a special transformation called the Theta method, which can improve forecast accuracy by addressing different types of trends and seasonality.

STL (Seasonal and Trend decomposition using Loess):

Summary: STL is a robust decomposition technique that splits a time series into seasonal, trend, and remainder components using locally weighted regression (loess). This method is flexible and can handle complex seasonal patterns and irregular trends, making it useful for a wide range of time series data.

TBATS (Trend and Seasonal BATS):

Summary: TBATS extends the BATS (Box-Cox transformation, ARMA errors, Trend, and Seasonal components) model to handle complex seasonal patterns, including multiple and non-integer seasonalities. It uses a combination of a Box-Cox transformation, a Fourier series for seasonal effects, and ARMA errors to improve forecasting accuracy.

Neural:

Summary: Neural network models for time series forecasting use artificial neural networks to capture complex, non-linear relationships in data. They can model intricate patterns and interactions in the data, making them suitable for time series with complex seasonality and trends, though they typically require more data and computational resources.

Prophet:

Summary: Prophet is a forecasting tool developed by Facebook that models time series data by decomposing it into trend, seasonal, and holiday components. It is designed to handle missing data, outliers, and robustly forecast time series with strong seasonal effects and holidays. Prophet is user-friendly and effective for many practical forecasting problems.

Naive:

Summary: The Naive forecasting method simply assumes that the future value of a time series will be the same as the most recent observed value. It's a straightforward and often effective approach for short-term forecasting, especially when the series is relatively stable or in the absence of strong trends or seasonality.

Multivariate Models

1. **VAR (Vector Autoregression):**

- **Summary:** VAR models generalize autoregressive models to multiple time series. They capture the linear interdependencies among multiple variables by modeling each variable as a linear function of its own past values and the past values of other variables in the system. VAR is widely used for forecasting and understanding the dynamic relationships between time series.

2. **VECM (Vector Error Correction Model):**

- **Summary:** VECM is used for analyzing the relationship between non-stationary time series that are cointegrated. It models both short-term dynamics and long-term equilibrium relationships. By incorporating error correction terms, VECM helps understand how deviations from long-term equilibrium are corrected over time.

3. **VARX Lasso:**

- **Summary:** VARX Lasso combines the VAR framework with Lasso regularization to handle multiple time series with additional exogenous variables. Lasso regularization helps in selecting important predictors and improving model interpretability by enforcing sparsity in the coefficients.

4. **VARMA (Vector AutoRegressive Moving Average):**

- **Summary:** VARMA models extend the VAR approach by including moving average terms along with autoregressive terms. They capture both the past values and past forecast errors of multiple time series to model their joint dynamics. VARMA is suitable for stationary series.

5. **ARDL (AutoRegressive Distributed Lag):**

- **Summary:** ARDL models are used to analyze the relationship between variables in a time series framework, considering both short-term and long-term dynamics. They model the dependent variable as a function of its past values and the past values of other variables, making them flexible for different integration orders of the variables.

6. **VARX Lag Group Lasso:**

- **Summary:** This approach extends VARX models by applying group Lasso regularization to the lagged terms of the exogenous variables. It enhances model selection and sparsity by grouping lagged variables together and selecting relevant groups while excluding others.

7. **VAR Elastic Net:**

- **Summary:** VAR Elastic Net combines the VAR framework with Elastic Net regularization, which blends Lasso and Ridge penalties. This approach balances the benefits of both techniques, improving variable selection and handling multicollinearity among predictors in the model.

8. **VARX Endogenous-First:**

- **Summary:** VARX Endogenous-First models prioritize endogenous variables over exogenous variables in the estimation process. It focuses on capturing the primary relationships within the endogenous variables before incorporating the effects of exogenous variables.

9. **HVAR Componentwise Lasso:**

- **Summary:** HVAR models extend the VAR framework by incorporating hierarchical structures. Componentwise Lasso applies Lasso regularization to each component or part of the hierarchical model, helping to select important components and improve interpretability.

10. **VARX Own/Other Group Penalty:**

- **Summary:** This model applies different group penalties to own lags and lags of other variables in VARX models. It allows for separate regularization strengths for different types of lags, improving model flexibility and interpretability.

11. **VARX Own/Other Sparse Group Penalty:**

- **Summary:** This approach applies sparse group penalties to own and other variable lags in VARX models. It encourages sparsity within groups of lags, facilitating variable selection and reducing overfitting.

12. **HVAR Own/Other Lasso:**

- **Summary:** HVAR models with Own/Other Lasso regularization apply Lasso penalties separately to own and other lags. This helps in selecting relevant lags for each type of relationship, enhancing model clarity and performance.

13. **HVAR Elementwise Lasso:**

- **Summary:** HVAR with Elementwise Lasso applies Lasso regularization at the individual element level within the hierarchical VAR model. This allows for fine-grained control over the inclusion of specific elements or coefficients.

14. **VAR Weighted Lag Lasso:**

- **Summary:** VAR Weighted Lag Lasso applies Lasso regularization with different weights to lagged terms. This approach allows for more

flexibility in regularizing different lags, potentially improving model performance by emphasizing certain lags over others.

15. **VECM Lasso:**

- **Summary:** VECM Lasso combines VECM with Lasso regularization. It helps in selecting significant cointegrating relationships and improving model interpretability by penalizing less relevant components.

16. **VAR Minimax Concave Penalty:**

- **Summary:** This model applies Minimax Concave Penalty (MCP) to VAR models. MCP is used to induce sparsity while retaining the ability to model complex relationships, balancing between Lasso and Ridge penalties.

17. **VAR Smoothly Clipped Absolute Deviation:**

- **Summary:** VAR models with Smoothly Clipped Absolute Deviation (SCAD) penalty use SCAD regularization, which provides a flexible approach to sparsity. SCAD penalizes coefficients in a manner that allows for some coefficients to be exactly zero while others are shrunk, enhancing model accuracy.

18. **ANN (Artificial Neural Networks):**

- **Summary:** ANN models use neural network architectures to capture complex, non-linear relationships in multivariate time series. They consist of layers of interconnected nodes (neurons) and are capable of learning intricate patterns from data.

19. **GRU (Gated Recurrent Unit):**

- **Summary:** GRU is a type of recurrent neural network that simplifies the architecture of traditional RNNs by using gating mechanisms to control the flow of information. It is effective for modeling time series data with long-term dependencies and reducing issues like vanishing gradients.

20. **LSTM (Long Short-Term Memory):**

- **Summary:** LSTM is a type of recurrent neural network designed to learn long-term dependencies in time series data. It includes special units called memory cells that help preserve information over long periods, addressing issues of vanishing and exploding gradients.

21. **Steady-State BVAR (Bayesian VAR):**

- **Summary:** Steady-State BVAR models use Bayesian methods to estimate VAR models, incorporating prior distributions to handle issues of overfitting and parameter estimation. The steady-state approach ensures the model remains stable over time.

22. **Minnesota BVAR:**

- **Summary:** Minnesota BVAR models are a Bayesian approach to VAR modeling with a specific prior structure. This method applies shrinkage to the VAR coefficients to stabilize estimates, particularly useful when dealing with many variables or short time series.

23. ****TVP BVAR with SV (Time-Varying Parameters Bayesian VAR with Stochastic Volatility):****

- ****Summary:**** TVP BVAR with SV models extend Bayesian VAR by allowing parameters to vary over time and incorporating stochastic volatility. This approach captures evolving relationships and changes in volatility within the time series.

24. ****Markov Switching VAR:****

- ****Summary:**** Markov Switching VAR models incorporate regime-switching mechanisms to capture changes in the relationships between variables based on different states or regimes. The switching is governed by a Markov process, allowing the model to adapt to shifts in dynamics.

25. ****MIDAS (Mixed Data Sampling):****

- ****Summary:**** MIDAS models are designed to handle data sampled at different frequencies. They combine high-frequency and low-frequency data to improve forecasting and capture dynamic relationships across different time scales.

26. ****Unrestricted MIDAS:****

- ****Summary:**** Unrestricted MIDAS models use mixed frequency data without imposing specific restrictions on the structure of the relationship between variables. This flexibility allows for capturing complex interactions between high-frequency and low-frequency data.

27. ****MIDAS Sparse Group Penalty:****

- ****Summary:**** MIDAS models with Sparse Group Penalty apply regularization to encourage sparsity in the relationship between high-frequency and low-frequency data. This helps in selecting relevant predictors and reducing model complexity.

28. ****MIDAS Lasso:****

- ****Summary:**** MIDAS Lasso combines MIDAS modeling with Lasso regularization, applying penalties to the coefficients to promote sparsity and improve model selection when dealing with mixed frequency data.

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