INVESTMENT INSIGHTS
MAY 2020

FIVE CRUCIAL CURRENCY THEMES FOR 2020

The COVID-19 crisis of 2020 has offered up investment challenges which have not been seen since the Global Financial Crisis (GFC) of 2008/09, including in the sphere of the currency hedging program. While there have been challenges in currency returns, exchange rate volatility, market depth, and in particular, liquidity management, thankfully this episode has not included a major counterparty default.

This year's "Five Crucial Currency Themes" series marks the third year the QIC Liquid Markets Group has offered valuable insights to Australian investors to help navigate through all currency market environments, including a severe market downturn.

Individually, each research 'thematic' examines different aspects of how to effectively manage a currency overlay, particularly during adverse conditions. Collectively, these themes have demonstrated how challenging market conditions can be turned into an opportunity – putting investors in a position of strength with forward planning and a coherent, holistic approach.

- In 2018 we emphasised how foreign currencies provide defence during a downturn including additional analysis on how to enhance this defensiveness via the foreign currency composition. We also canvassed why the currency decision needs to be elevated in an asset allocation framework, and provided analysis on setting an optimal hedge ratio in an environment with no interest rate carry. You can view our 2018 report here.

- In 2019 we continued to emphasise the defensive nature of foreign currencies along with an analysis supporting a framework which focussed on risk management. There was also a timely look at how the AUD would react in response to anticipated quantitative easing from the RBA, and a study on how implementation techniques can differentiate between investors. You can view our 2019 report here.

This year's edition of "Five Crucial Currency Themes" carries on this legacy and looks at some of the most critical issues that investors should be considering for 2020.

1. Essentials of managing liquidity risk in a hedging program
2. How impactful is your FX policy in the COVID-19 crisis?
3. Trading at London 4pm and the illusory benefits of maximum liquidity
4. Re-visiting the importance of effective implementation, and
5. The price-insensitive market participants that may define the AUD low

We address each in turn.

1. Essentials of managing liquidity risk in a hedging program

Currency hedging programs do not normally hit the news, but this changed recently with the re-emergence of concerns around funding settlements for hedge losses, even before the introduction of the Australian Federal Government's measures allowing for the early release of superannuation. In normal market conditions, the primary hedging concern for the investor is managing exchange rate risk whereas in crisis conditions, the focus can shift to liquidity risk and ensuring the hedging program does not undermine investment opportunities across the entire portfolio.

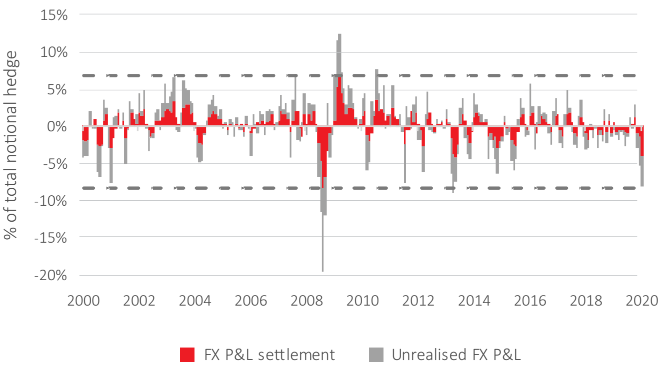
One of the most attractive elements of a hedging program is capital efficiency as derivatives can be used to change the nature of the fund while simultaneously remaining fully invested in underlying assets. Day-to-day exchange rate moves are embedded in the overall profit and loss (P&L) of the program (and associated fund), but it is at maturity of that contract whereby any gains or losses are realised. For Australian investors hedging back to the pro-cyclical Australian dollar, it is here where liquidity impacts arise.

We have highlighted over the past two years the heightened sensitivity (correlation) of the Australian Dollar (AUD) during periods of risk-asset drawdown. This generates a painful feedback loop whereby the AUD sells off in response to the initial equity move, and then depreciates further as investors scale back the hedging program to match the lower value of their underlying assets. Unrealised hedging losses build up alongside deteriorating asset values, and the investor may ultimately be required to liquidate some of their underlying assets at 'distressed' levels to fund the loss on the hedges. This practice is especially galling at a time when investors would prefer to have flexibility to pick-up these assets on the cheap. It is also where a hedging program inadvertently undermines the strategy across the entire portfolio.

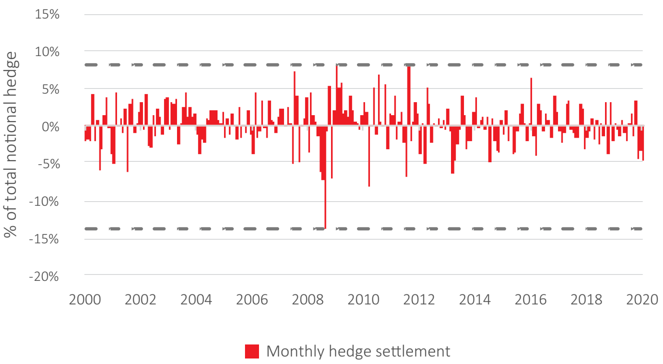
While we cannot eliminate the necessity of funding hedge losses short of eliminating the entire hedging program, there are some ways for investors to mitigate the effects. The first and most obvious is to spread out the maturity profile of the hedging program and ignore the standard of monthly rolls which are embedded in common industry benchmarks. A simple example of the impact here is to model the different liquidity requirements across two hedged global equity funds, identical except for the maturity profiles on the forward book.

Monthly FX settlements under alternative hedging profiles

Monthly FX hedge settlements: Laddered hedge



Monthly FX hedge settlements: 1-month hedge



Source: QIC, Bloomberg as at March 2020
Note: Dotted lines denote the maximum 1-month FX settlements under each strategy to emphasise the smaller monthly settlements under the laddered hedge approach

The chart to the top represents a fund with a laddered maturity profile equally spaced across the following three months. The second chart uses a 'bullet' approach of monthly settlements, and the red bars represent the monthly net settlements going back to 2000.

It is clear from this very simple example the variation in settlements is far lower using the laddered approach, and the grey bars representing the unrealised P&L help to smooth out the liquidity requirements. Digging deeper into the numbers highlights the standard deviation of realised settlements and the average negative settlement are over 70% higher for the fund with monthly rolls.

	Monthly FX settlements	
	1M hedge	Laddered hedge
Min	-13.86%	-8.39%
Ave -ve	-2.40%	-1.38%
Ave +ve	2.26%	1.19%
Max	7.95%	6.66%
Stdev of monthly FX settlement	3.01%	1.74%

Keep in mind also this is a relatively simple example, and the flexibility of the tenor profile is not limited to three months. More creative approaches can mitigate cash flow requirements further and this is especially important when hedging unlisted assets where holdings cannot be sold as readily as listed assets.

A more holistic approach is to have a checklist of measures which provides assurance throughout the cycle the investor will have the opportunity to capitalise on impaired market conditions rather than be handicapped by a cash call. Some measures which we think are appropriate for consideration are:

- Have a clear view of the fund's overall liquidity profile across all asset and derivative positions
- Regularly review sources of liquidity risk and vulnerabilities
- Stress test particularly malign outcomes for underlying assets and the Australian dollar, incorporating the prospect of member panic which sees a switching away from growth assets and into cash
- Develop a contingency plan to alleviate a potential liquidity crisis
- Elevate the impact of the hedging program into the formal board-approved liquidity management plan
- Position the hedging program in a way to mitigate liquidity risks, for example, by using a laddered approach
- Consider rolling positions early to crystallise any near-term losses at more tolerable levels
- Utilise indexation and rebalancing to naturally reduce hedge sizes during stressed environments
- Utilise an asset overlay capability to readily convert liquid assets into cash and replace that exposure through derivatives to maintain the Strategic Asset Allocation (SAA)
- Consider using high-quality liquid assets for exchange in a repo facility

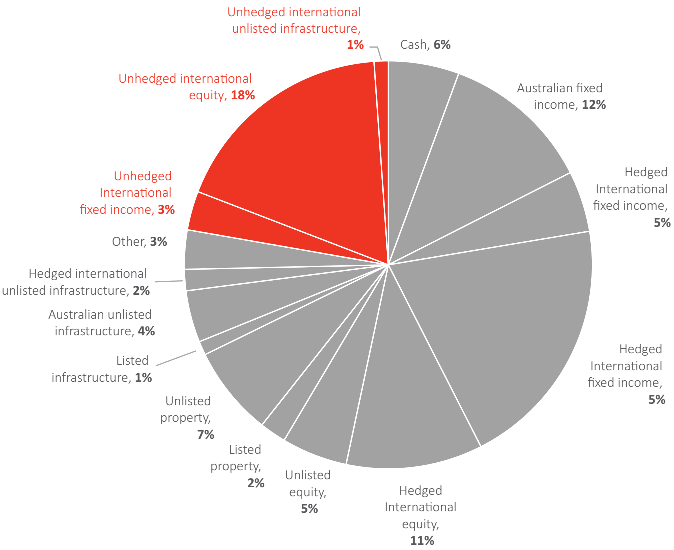
This is a whole-of-cycle approach, not just for crisis conditions when it is often too late to manoeuvre out of the way. It is also important to acknowledge mitigating lump-sum settlement requirements is an implementation issue, not necessarily impacting strategic currency allocation.

Do not let the tail wag the dog by rotating away from a desired currency exposure profile just to mitigate liquidity risk. Use the holistic approach to ensure you are well positioned for all market conditions and to gain a strategic advantage through periods of adversity.

2. How impactful is your FX policy during the COVID-19 crisis?

Two years ago, we advocated for elevating the currency decision in the asset allocation framework. Since then, neither the numbers nor the proposition have changed much. At the end of 2019, there remains over 20% of MySuper underlying exposure in foreign currencies largely through unhedged international equities as evidenced in the chart below.

MySuper asset allocation, December 2019

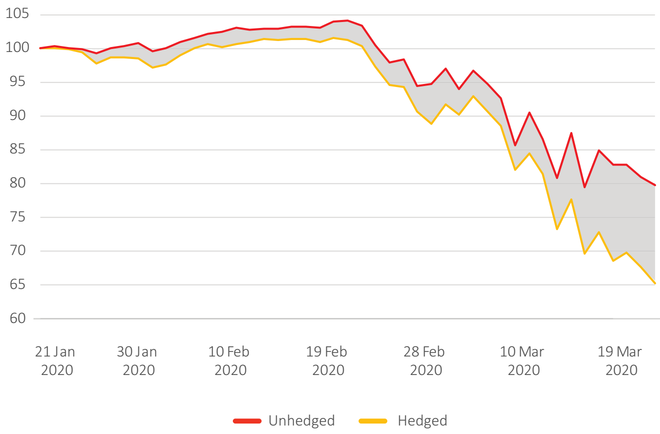


Source: APRA

Recall when assessing the elevated volatility of exchange rates compared to the more defensive asset classes, **currency exposure can easily represent the second biggest risk factor in a diversified portfolio after equities.** It is also proving to be one of the most reliable sources of diversification and a key differentiator in performance through this COVID-19 crisis.

Consider the performance of both unhedged and fully-hedged international equity returns from the perspective of an Australian investor. From January 21 before the lockdown in Wuhan, to the March 23 low in global equities, there was a 15% difference in returns attributable to exchange rate movements.

Hedged and unhedged global equity performance from Australian investor perspective



Source: QIC, Bloomberg. **Past performance is not a reliable indicator of future performance.**

This has represented a huge opportunity for investors who sought out the relative 'safety' of foreign currencies during turbulent market conditions. A 20% drawdown is far more digestible than a 35% plunge in value.

Now consider this at the level of the representative MySuper fund with a 29% allocation to listed international equities. For every 10% of unhedged international equity exposure, or close to 3% at fund level, it shelters the fund from over 40bps of losses.

At the fund level, the difference through this period is over 4.3% in returns at the two extremes, and this is constrained by the size of the listed international equity exposure. Considering currency as a separate asset class in its own right will facilitate a more unconstrained approach. While we are not advocating for a fully unhedged position, this example highlights the impact changes in hedging can have on a diversified portfolio.

Once you also consider the performance of competing defensive assets through the depths of the crisis, the impact of the currency decision becomes even more compelling, with precious metals and sovereign bonds going "off piste" just when their defensive qualities were required.

Then there is also the luxury of mitigating liquidity impacts from maturing hedges, enabling the investor to be considering their next move from a position of strength rather than weakness. We know in hindsight that March 23 represented an inflection point in the performance of both risk assets and the AUD, but "risking up" the portfolio at that point is easier to do from that position of strength, that is, outperformance, particularly if anxiety over liquidity is not escalated to the number one concern.

The starting point here is elevating the currency decision in the asset allocation process and recognising the material impacts it can have on investor outcomes. QIC's Strategic Currency Framework is a good place to start:

- Clearly defining the strategic hedge ratio and understanding the role that currency plays in a diversified portfolio – unique to the circumstances and priorities of the investor;
- Defining a process to change the hedge ratio dynamically throughout the cycle, capturing opportunities in mis-valuation; and
- Define a process for determining the foreign currency composition to support portfolio objectives, particularly in enhancing diversification.

BOX A: CHECKING IN ON THE SENSITIVITY OF THE AUD AND RISK ASSETS

The period from the end of 2017 through to March 2020 could barely have more of a contrast in market performance and central bank policies, but the one thing that has remained constant is the behaviour of the AUD.

Recall our previous observations of the AUD behaviour in a late-cycle environment:

- The AUD has an inherent sensitivity to negative equity moves, corresponding with each sell-off in global stocks
- The sensitivity to equity market rallies is more ambiguous with mixed performance in positive months for stocks

In short, foreign currencies become more defensive for Australian investors just when they need them; during adverse market conditions where they provide a source of stability or diversification.

Last year, we confirmed AUD behaviour adhered to expectations, and it was clear this pro-cyclical relationship still held. These observations reinforced our research from early-2018 that the relative stability in the AUD would not hold up in times of stress. Now, it is important to consider whether this pattern continued through 2019 and into 2020.

Even as global equities, as measured by the MSCI World ex-Australia (local) index, recorded a net total return of 27.4% in 2019, the AUD was practically flat for the year. True to form, the AUD sold off in the two months that stocks suffered but managed to perform more ambiguously when equities performed well. This year has seen the AUD sell-off sharply through each month in the first quarter, following equities lower.

Since the start of 2018 through to the end of March 2020, there have been nine months of negative performance from global equities, corresponding to nine falls in the AUD totalling around 26.7%. That is a great sign for Australian investors seeking diversification from foreign currencies.

In contrast, during the 18 months where stocks have rallied, the AUD has strengthened against the USD just over 60% of the time for a total gain of around 3.5%.

In spite of a narrative challenging the pro-cyclicality of the AUD, its behaviour is consistent and unchanged. The ongoing asymmetric reaction function continues to support a higher weight to foreign currencies as a (relatively inexpensive) defensive measure against risk-asset drawdown.

In this challenging investment environment, a more defensive hedging strategy has supported the twin objectives of higher investment returns and lower risk, and importantly, the evidence suggests that Australian investors can rely on foreign currencies to provide protection for some time yet.

2018/20	AUD/USD	MSCI World ex Australia Local
Jan	3.15%	3.88%
Feb	-3.64%	-3.63%
Mar	-1.07%	-2.26%
Apr	-1.94%	1.89%
May	0.50%	1.27%
Jun	-2.15%	0.25%
Jul	0.26%	3.19%
Aug	-3.17%	1.35%
Sep	0.49%	0.78%
Oct	-2.09%	-6.83%
Nov	3.29%	1.23%
Dec	-3.52%	-8.06%
Jan	3.18%	7.33%
Feb	-2.46%	3.27%
Mar	0.03%	1.63%
Apr	-0.68%	3.80%
May	-1.56%	-5.88%
Jun	1.18%	5.95%
Jul	-2.49%	1.15%
Aug	-1.64%	-1.95%
Sep	0.25%	2.34%
Oct	2.13%	1.93%
Nov	-1.90%	3.16%
Dec	3.81%	2.39%
Jan	-4.69%	-0.37%
Feb	-2.64%	-8.11%
Mar	-5.89%	-12.67%

Source: QIC, Bloomberg – effective March 2020. **Past performance is not a reliable indicator of future performance.**

3. Trading at London 4pm and the illusory benefits of maximum liquidity

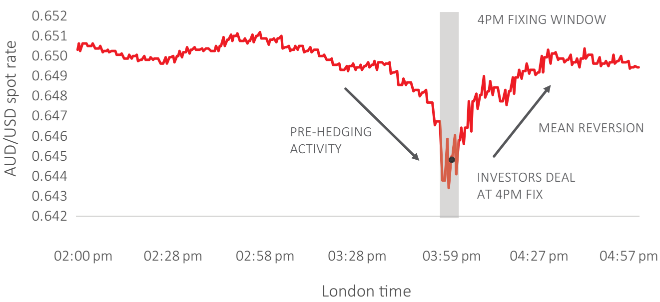
The WM/Reuters London 4pm fix ("fix") provides a transparent, industry-agreed reference point for a daily closing price in a market which otherwise does not have a natural close. Its ubiquity is reinforced by the wide adoption by both custodians and benchmark index providers as the singular source of exchange rates for the daily pricing of international asset portfolios, as well as perceptions of enhanced liquidity from wide market participation during the 4pm fixing window.[1] Investors who wish to minimise the tracking error of their international portfolios, minimise transaction costs, or are otherwise seeking to trade at a transparent benchmark price to generate scale in their currency management practices are often drawn to execute at the fix. It all sounds rather compelling, but now for the bad news.

While it is true trading volumes often peak and quoted bid-offer spreads tighten into the fix, what is not considered are the adverse market impacts that also take place; the unobserved cost of trading during this period of maximum liquidity.

"It is important to stress that trading at the fix price, even at the mid-rate, is not necessarily going to give best execution for a customer in the sense of the best possible price. In fact, trading at the fix leaves the client exposed to the price movements arising from the net order flow taking place at that point in time."[2] [Financial Stability Board]

Consider the example of the AUD spot rate heading into the 4pm fix on 28 February 2020 as shown below. It provides **a classic case study highlighting how the adverse costs of market impact vastly overwhelms any claimed liquidity benefits from 4pm fix trading.**

AUD/USD spot rate on 28-Feb-2020 and the WM/Reuters 4PM Fix

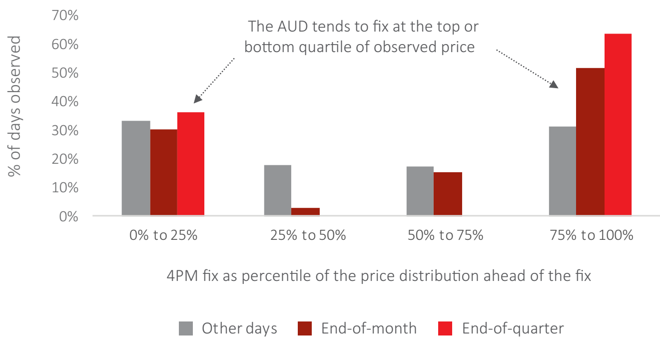


Source: Bloomberg, QIC

While the AUD remained in a stable trading range for most of the session, in the 30 minutes of trading ahead of the fix, pre-hedging activity from market makers and other participants pushed the AUD sharply lower by over 0.7%, culminating in an AUD fix near the lows just ahead of a sharp reversal. While any investor selling AUD at the fix may be able to claim zero tracking error relative to their benchmark, they have just worn a significant market impact cost.

The price action in March 2020 is littered with similar or even more egregious examples. In fact, we find this tendency for the AUD to peak or trough at the fix is commonly observed and persistent over time. The chart below shows the distribution of the AUD fix compared to its price range just ahead of the fix (3:45pm – 4:03pm)[3] with observations across each trading day from July 2017 to March 2020.

AUD tends to fix at the local price extremes, particularly at month and quarter ends



Source: QIC, Bloomberg

Essentially, relative to its trading range just ahead of the fix, the AUD has a strong tendency to fix near either the highs or the lows, represented by the high frequency with which the AUD fixes at either the top or bottom quartile of its price distribution. This highlights the influence from the market impact of fixing flows and this effect is significantly exacerbated at month-ends and quarter-ends when client volumes are elevated.

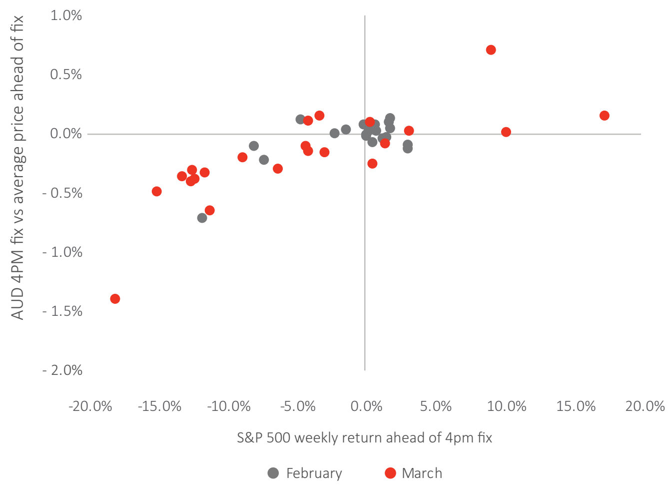
Knowing there is a tendency for the AUD fix to occur at a price extreme means at best, trading outcomes will tend to be binary and volatile: either benefiting or suffering depending on whether an individual investor's flow is trading in the same direction as other market participants during a fixing window. One may claim given we typically have no foresight to what the balance of client volume is on any given day, this volatility will reflect random noise that is not expected to cost over time.

However, for investors wishing to hedge their international investment portfolios, this claim is not quite true. Australian superannuation funds typically allocate a significant proportion of their investment portfolio in international equity markets, which generate currency hedging needs. As equity markets rise or fall, the foreign currency exposure from international equities will move out of alignment with their currency hedge, leading to a need to rebalance the hedge.[4] The requirement for rebalancing is typically elevated either after significant equity market moves or at popular rebalancing points such as month-ends, leading to a certain amount of predictability in some investor flows.

We can also demonstrate a clear co-movement between the 4pm fix and equities, an effect so prominent that in March 2020 during the period of extreme market volatility, prior equity returns became a clear predictor of the daily AUD trading patterns into the 4pm fix. Moreover, the significant swings in equity prices meant trading volumes from investor rebalancing also surged. The combination of elevated rebalancing episodes during this period, coupled with a larger than average market impact into the 4pm fix, meant investors dealing at the fix during the period incurred a massive and largely unrecognised trading cost.

While London 4pm does indeed experience a surge in market trading volumes, this only becomes a liquidity benefit for investors if that trading volume is balanced. For Australian investors in particular, they will often find herd behaviour systematically skews the market as their trading needs often coincide with other investors, leading to significant invisible market impact costs when dealing at the fix. **This calls for a more considered approach to achieve best execution and one which takes into account the market environment rather than methodically and naively trading at the fix.**

AUD trading bias into 4pm fix vs prior week equity return



Source: QIC, Bloomberg

BOX B: AGENCY ISSUES, INCENTIVES AND SUB-OPTIMAL RESULTS

Last year we wrote about responsible investing in the foreign exchange “FX” market and how the FX Global Code has been developed to level the playing field, improve conduct, and enhance operational and governance practices. With over 1000 signatories worldwide and an emergence of Super fund adoptees in Australia, the signs are very encouraging for a lift in standards across the industry.

However, we need to be careful to define where the Code stops and where more meticulous due diligence of a currency manager begins. A commitment to the Code helps to differentiate at a high level, ensuring an institutional currency manager strives for the highest ethical and professional standards and embeds a strong culture of conduct. But you really have to go beneath the surface to make the distinction between managers who have full alignment with the investor, and those who, for whatever reason, are not incentivised to deliver superior outcomes.

We wrote about this back in 2015[5] and believe the messages resonate just as much today as they did back then:

“The illiquid, volatile and opaque nature of over-the-counter FX markets have long left the onus on the investor to ensure their provider is working to find the best liquidity and pricing opportunities.”

It takes rigour to find the best liquidity and pricing opportunities, just as it takes rigour to generate outcomes that minimise costs, enhance returns, and mitigate risks.

Consider a very simple red flag where the distinction is blurred between acting as an agent and a principal to a trade; where essentially the agent (currency manager) to the trade is also the principal (counterparty) to the trade. While there is a heavy appearance of conflict of interest, with the right disclosures and an agreement between the parties, this is acceptable under the Global Code. However, the ‘incentive structure’ will likely work against the investor. For example, if there is a fixed spread for each trade, there is a clear incentive to have higher turnover, and no incentive at all to introduce competitive tension into the pricing.

Consider also the currency manager operating with huge scale – those often associated with standardised, inflexible processes to accommodate such scale – may represent the antithesis of full alignment with the investor. This includes standardisation in execution practices, standardisation in tenor selection, standardisation in rebalancing, and standardisation in reporting (amongst others). There is simply no incentive to deviate from their extremely scalable investment processes to head-off a sub-par outcome for the investor.

Only a manager with full alignment to the investor can generate the outcomes which represent best practice. We have covered a few issues in this and previous investment insights, including:

- The illusory benefits of execution at the London 4pm fix
- How returns can disappear with ineffective implementation
- The essentials of managing liquidity risk in a hedging program
- Strategic and tactical considerations to hedging emerging markets

But full alignment with the investor does not end there. It operates across a myriad of factors which generate more favourable outcomes across all aspects of the hedging program, and all in favour of the investor.

> *"The unregulated nature of currency markets places great responsibility on institutional clients to bestow this vital function to service providers with a fiduciary mind-set who consistently aim for best practice implementation[6]."*
> *[QIC, Transparency in FX trades is vital]*

While the FX Global Code is essential to represent high level practices across the institutional FX industry from sell-side to buy-side, when selecting a manager for your hedging program, a deeper dive is necessary. Full alignment between the manager and the investor is critical for material, repeatable and demonstrable advantages accruing to better returns, lower costs, and more effective risk management.

4. Re-visiting the importance of effective implementation

In a previous paper, Currency Hedging and the Unintended Risks in Implementation[7], we argued for the importance of taking a thoughtful and considered approach to currency implementation. The industry standard of rebalancing currency hedges at the end of month can lead to unintended and unmanaged currency exposures in between rebalancing events (see Box C). **This essentially represents a 'set and forget' approach which for Australian investors can lead to costly performance slippage, particularly during stressed market environments.**

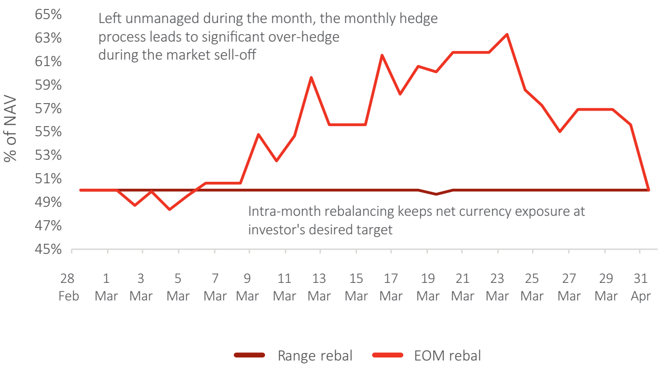
The fortunate news is this can be mitigated by taking a more thoughtful indexation strategy which considers intra-month variations in the underlying asset values, and only adjusts hedges when the unintended currency exposure exceeds the investor's risk tolerance threshold ('range rebalancing').

The events of 2020 provide another clear case study to ensure the expected benefits from thoughtful implementation hold up. Updating our simulations to the end of March shows that this is indeed the case.

As global markets sold-off through March, the "set and forget" strategy became increasingly over-hedged, while the range rebalanced portfolio maintained the efficacy of the program by reducing the currency hedge as the value of the international portfolio dropped.

Simulated net AUD exposure from alternative rebalancing approaches

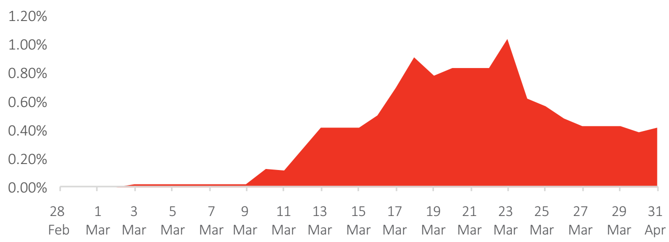
Net AUD exposure



Source: QIC, Bloomberg

The chart below shows the relative performance of the range rebalancing strategy compared to the benchmark monthly rebalanced portfolio during March. This modelling is based on the relative currency hedge return outcomes, assuming a 50% hedged international equity portfolio invested in the MSCI World ex Australia Index.

Relative hedge return: Range vs EOM rebalancing



Source: QIC, Bloomberg. **Past performance is not a reliable indicator of future performance.**

Importantly, this over-exposure to the Australian dollar in the benchmark approach is systematically harmful to investors, **ultimately resulting in an estimated underperformance of around 0.4% at the total portfolio level, compared to the more rigorous approach.**

This is very reminiscent of the GFC experience of October 2008 and serves to highlight the key risk management benefits from adopting the range rebalancing strategy in association with indexation of the underlying assets. Importantly also for investors, there is no trade-off required as the benefits of the improved rebalancing strategy mitigate uncompensated risks as well as boosting relative returns in the long run. **Alongside the avoidance of the London 4pm fix, this represents another implementation strategy where avoiding industry standards generates a materially better outcome.**

BOX C: WHY A PASSIVE BENCHMARK REBALANCING STRATEGY IS EXPECTED TO LOWER LONG-RUN EXPECTED RETURNS FOR AUSTRALIAN INVESTORS

Investors may believe that unintended currency exposures will even themselves out over time and should not influence long-term expected returns. However for Australian investors that is far from the truth. The procyclical nature of the Australian dollar will mean **domestic investors holding international equities will in fact end up incurring losses over time from the unmanaged currency exposures, or drifts, which arise from a 'set and forget' approach to currency rebalancing.**

As an example, consider a 50% hedged international equities portfolio from an Australian investor's perspective. As equity prices rise, so too does the foreign currency exposure from those equities. By not adjusting your currency hedge as that occurs, the portfolio ends up being underhedged leaving the investor under-exposed to the Australian dollar in a rising equity market. Conversely if equity prices fall, the investor will be over-exposed to the Australian dollar in a falling equity market.

With the Australian dollar positively correlated to risk assets, this means the tendency for the portfolio to be underweight Australian dollar in equity rallies and overweight Australian dollar in equity sell-offs will lead to a systematic return drag over time. Moreover, this relationship is not linear as the Australian dollar correlation to equities tends to be exaggerated during stressed markets, which in turn exacerbates the negative performance impact from unintended currency risk during adverse conditions.

Fortunately, a lot of this can be mitigated by considering the intra-month currency exposures from equity price moves ('indexation') and rebalancing currency hedges when those exposures exceed the investor's tolerance for tracking error ('range rebalancing'). The indexation strategy can significantly outperform the benchmark monthly rebalance strategy during trending market environments, and particularly in times of stress when every basis point counts.

5. The price-insensitive market participants that may define the AUD low

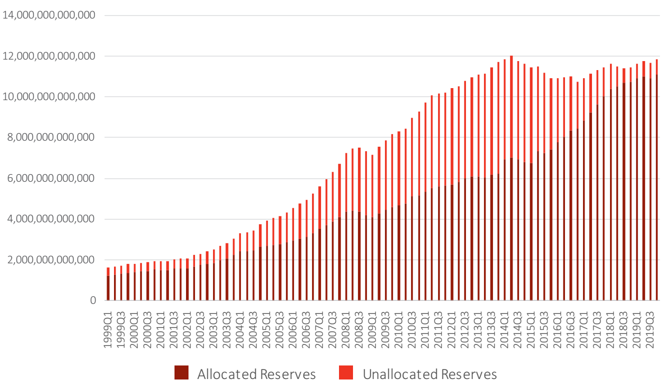
While turnover in the institutional FX market is immense at US$6.6 trillion per day[8], it doesn't rule out individual purchases and sales from having any influence on exchange rates. The huge amount of notional turnover belies a more balanced market of sellers and buyers, and the net imbalance at any one time is only a fraction of turnover.

Knowing this imbalance in advance, or at least contemporaneously, is what thousands of market participants attempt to do every day. Even more influential on exchange rates are market participants whose flows are persistent, either over minutes, hours, days or occasionally even weeks. Understanding these flows in advance could be the key in unlocking the direction of currency movements in the future.

One of the most influential collective flows in modern history was the build-up and diversification of sovereign reserve assets which had a profound influence on exchange rates between 2002-2014.

Aggregate foreign currency reserves

Total FX Reserves (USD)



Source: QIC, IMF

By converting USD receipts and savings into foreign alternatives on an almost uninterrupted basis throughout this period, it represented a persistent headwind to the USD exchange rate.

The list of the most significant holders[9] of reserve assets highlights some shared characteristics.

Authority	FX Reserves (USD Mil)
China	3,107,924
Japan	1,255,322
Switzerland	798,110
Saudi Arabia	488,255
Taiwan	478,130
Russia	428,792
India	426,880
Hong Kong	423,400
South Korea	397,235
Brazil	339,345
Singapore	276,508
Thailand	213,908
Mexico	170,514

These years were a time of abundance for emerging markets and oil exporters with abundant capital flows, energy prices, liquidity, and accumulation of reserves.

Along with Japan and Switzerland whose balance of payments positions saw immense inflows, there was a motivation to build savings while limiting upward pressure on their exchange rates.

Initially, the focus was on building up holdings of euros, but in the wake of the GFC there was a major broadening out of demand, including a very strong and palpable appetite for Australian assets.

It is no coincidence this occurred in parallel with a strong uplift in the value of the AUD, along with an extended plateau in the AUD exchange rate well above fair value while reserves were still being accrued. This is highlighted clearly in the graph on the next page overlaying the estimate of aggregate reserve holdings in AUD alongside the AUD/USD exchange rate.

When oil prices reversed and capital flows dried up, so did the demand for rebalancing reserves, and this marked the inflection point for the AUD on a trade-weighted basis after peaking against the USD two years earlier.

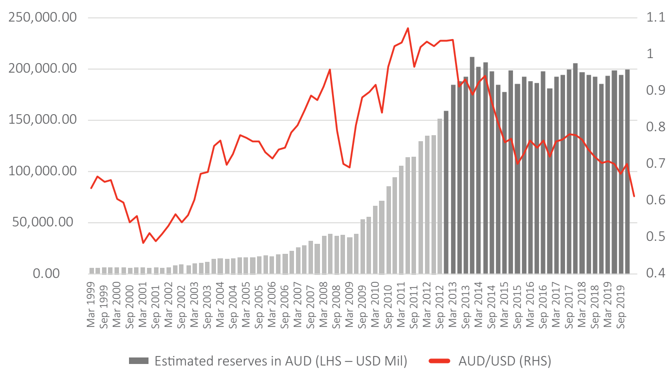
With an estimated US$200bn in Australian holdings, **investors now need to be watchful of the conditions that will lead to a repatriation of these flows and reversal of the exchange rate impact.**

Current economic conditions can barely be more polarised to those which accompanied the build-up of reserves. Oil prices have collapsed, capital flows are fleeing emerging markets, and budgetary holes need to be repaired across the globe.

There is already evidence of these repatriation flows occurring, from high-frequency reserve numbers to the liquidation of United States (U.S.) Treasury securities held in custody by the Federal Reserve on behalf of foreign official and international accounts.

If these flows remain persistent, they could again be the most profound influence on exchange rates. Just as the AUD buying helped define the highs for the previous cycle, they could also help define the lows for this one.

Estimated Aggregate Reserves in AUD*



*QIC estimates using Bloomberg (AUD/USD) and IMF reported 'allocated' or disclosed reserves, grossed up to represent total (aggregate) reserves. Lighter shading indicates an extrapolation from a period where the IMF did not discretely disclose AUD holdings and instead incorporated AUD holdings within the 'other' classification. Estimates may be affected by inaccurate assumptions and/or by known or unknown risks or uncertainties. Estimates may differ materially from actual holdings.

REFERENCES

1 See for example: Evans, M., O'Neill, P., Rime, D. & Saakvitne, J., "Fixing the Fix? Assess the Effectiveness of the 4pm Fix", Financial Conduct Authority Occasional Paper 46, October 2018.

2 Financial Stability Board – "Foreign Exchange Benchmarks – Final Report", September 2014

3 The WM/Reuters London 4pm fix is technically calculated over a window covering 2.5 minutes on either side of 4pm. Calibrating our sample to 4:03pm covers the entire fixing window. This study encompasses the AUD/USD fix each trading day from July 2017 to March 2020

4 See our investment insight on FX indexation for further discussion on this topic (linked here)

5 https://www.qic.com/knowledge-centre/gls-market-beat-20151126

6 https://www.qic.com/knowledge-centre/gls-market-beat-20151126

7 Implementation Matters- Currency Hedging and the Unintended Risks in Implementation, QIC Investment Insight – Sep 2018

8 https://www.bis.org/statistics/rpfx19.htm

9 Sources: IMF and Central Bank of the Republic of China (Taiwan), December 2019

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