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TITLE

Active Currency Management: Strategy for Australian Investors

AUTHOR

Rob Pereira – Research Associate, Capital Markets Research
Geoff Warren – Head of Australian Capital Markets Research

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ABSTRACT

This paper considers active currency management from an Australian perspective. Active currency management can take one of two forms: either an overlay designed to manage currency exposures arising from international asset holdings, or a pure alpha strategy aimed at generating returns. Our research suggests that A$ based overlays have added limited value on average, and their success tends to be conditional on A$ direction. A$ based overlays should be used selectively, perhaps for a particular purpose such as currency risk management. A stronger case emerges for pure currency alpha strategies, which face less constraints than overlays. While alpha from these type of strategies has been lower in recent times, there are good reasons to believe it will be sufficient going forward.

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1) Introduction

Nearly all Australian institutional investors have international exposure in their portfolios, currently estimated to average one third of superannuation fund assets.[1] Investors need to determine whether active currency management might be appropriate, and if so, how it should be implemented.

Active currency management is appealing on both theoretical and empirical grounds. Currency markets exhibit observable and persistent inefficiencies, and high liquidity coupled with low transaction costs that facilitate the exploitation of these inefficiencies.

Empirical evidence suggests that active currency managers have produced sufficiently high levels of alpha to justify active management. Russell research by Baldridge, Meath, and Myers (2000) demonstrated that active currency overlay managers for international equities delivered about 1.5% p.a. during the 10 years to 1999, averaged across a number of base currencies and strategic hedge ratios. Research on pure alpha currency managers provides evidence of a much higher level of alpha. Schneeweis and Gupta (2006) reported that the CISDM CTA Asset Weighted Currency Index produced a return of 8.9% over the 15 years to the end of 2005.[2] This represents an alpha of around 4.4% after adjusting for the cash rate over this period.

Active currency management might take two different forms – 'overlay' and 'pure alpha' strategies. These strategies are not mutually exclusive, and hence should be approached as two separate decisions.

The decision regarding whether to use an active overlay to manage foreign currency exposure arises from owning international assets. Relevant considerations include risk control; perceptions of manager skill; and perhaps views of currency direction. With regard to risk control, the type of benchmark should be considered when selecting managers. For unhedged benchmarks, managers might be favoured with styles that help protect the portfolio against A$ strength. Our analysis suggests that this feature is offered by the carry style, and to a lesser extent, the value style. For fully hedged benchmarks, where exposure to A$ weakness becomes the concern, the value style may also be favoured. However, the carry style seems somewhat redundant.

The decision of whether to employ unconstrained pure currency alpha managers should be based on the expectation that selected managers can add value, and the appetite for active risk. This decision can be made independently of the overlay structure – a pure currency manager may sit alongside an active overlay. Theoretically, pure alpha managers have a greater potential to outperform compared to currency overlay managers due to absence of constraints (particularly relative to polar benchmarks).

This paper is arranged as follows. Section 2 begins by considering the inefficiencies in currency markets that may create opportunities for skilful managers. Section 3 discusses how constraints and different currency styles relate to both overlays and pure currency alpha programs. Portfolio strategy is also considered. Sections 4 and 5 evaluate the performance of overlay and pure alpha managers, respectively. Section 6 concludes by addressing the portfolio implications for Australian investors.

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[1] Chant West Asset Allocation Survey, December 2006.

[2] Schneeweis, T and Gupta B (2006), "Diversification Benefits of Managed Futures", *Journal of Investment Consulting*, 8(1), pp 53–62.

2) Inefficiencies

There are plausible theoretical reasons to expect active currency management to deliver increased returns over passive management. Currency markets exhibit three essential ingredients for success in active management: observable inefficiencies, a basis for persistence of those inefficiencies, and low transaction costs/high liquidity.

Observable Inefficiencies

A market is "inefficient" if prices fail to reflect all available information rapidly and correctly. Discussed below are three potential inefficiencies in currency markets – momentum, forward rate bias, and mean reversion. Trading styles that attempt to exploit these inefficiencies are respectively referred to as trend, carry (or yield), and value.

1. Momentum

Exchange rates do not follow a random walk. At best they can be described as a biased random walk.[3] In the short run, currencies are prone to trending or momentum. Statistically this appears as positive autocorrelation in daily currency returns. It has been suggested that this reflects the presence of noise traders that employ technical analysis, as such trading approaches induce a feedback process that leads to trends in prices.

Russell research by Weigel (1991) provides evidence of trends in most of the major currencies over short holding periods of a week and a month, as well as over longer holding periods of one to three years duration. Okunev & White (2003) confirm that price trends also exist for the A$ against the other major currencies, and that moving averages may be used to exploit the observed autocorrelation.[4]

2. Forward rate bias

In theory, expected changes in exchange rates should reflect interest rate differentials. Currencies with high interest rates are expected to depreciate relative to currencies with low interest rates, thus equalising expected returns for unhedged investments across countries. In practice, this condition known as uncovered interest rate parity does not hold.[5] Instead, currencies with higher interest rates have tended to depreciate by a smaller amount than implied by interest rate differentials. The implication is that higher interest rate currencies generally earn a higher overall return than lower interest rate currencies.[6]

3. Mean reversion

The value of a currency is often associated with its purchasing power parity (PPP),[7] although various measures exist. Currencies tend to fluctuate around measures of fundamental value in a substantial and sustained manner. For instance, the standard deviation of the A$/US$ around PPP is estimated at about 13%–14%.[8] Although currencies have a tendency to revert to their PPP (referred to as mean reversion), this normally takes around 5 years, and in some cases beyond 10 years. Deviations around fundamental value may be exploited by investors with sufficiently long time horizons (or skill in anticipating the timing of reversion).

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[3] Goodhart, C. (1988), "The Foreign Exchange Market: A Random Walk with a Dragging Anchor", *Economica*, Vol 55, No. 220.

[4] Okunev, J and White, D (2003), "Do Momentum Based Strategies Still Work in Foreign Currency Markets?" *Journal of Financial & Quantitative Analysis*, Vol 38(2), 425-447.

[5] The failure of interest rate parity has been dubbed the forward rate bias. Pereira and Leung (2007) have considered the forward rate bias and interest rate parity in more detail in a Russell Research paper, "Revisiting Strategic Currency Hedge Ratios for Australian Investors".

[6] It is possible that differing expected returns across countries reflects the existence of risk premiums, rather than excess returns that amount to an 'anomaly' associated with market inefficiency.

[7] PPP is a relationship that posits that changes in exchange rates reflects change in the inflation rates.

[8] See Pease, A. (2007), *Russell Market Barometer*, October

Persistence of Inefficiencies

In many cases, market inefficiencies tend to be bid away over time, as a growing number of participants attempt to profit from the anomalies. However, this is less likely in foreign exchange market due to the involvement of participants with diverse motives and time horizons. There are two types of participants in the currency market, being total return investors and investors with other or additional motives. Total return investors are interested in currency trading in its own right, and include currency overlay managers, option traders, hedge funds and CTAs.[9] Investors with other or additional motives include central banks, corporations, asset managers, pension funds, insurance companies, and tourists. Trade in goods and services or financial settlements tend to motivate the foreign exchange transactions of the latter group. For instance:

- **Central banks** are typically concerned with ensuring macroeconomic stability. From time to time, central banks intervene to stabilise the currency market in response to volatility. There is empirical evidence that central bank intervention was strongly associated with the profitability of foreign exchange trading for the major currencies during the 1980s and 1990s.[10]

- **Corporations** are interested in achieving their business objectives, such as buying a factory in another country, trade in goods and services, or repatriating profits. Exchange rates typically do not affect the implementation of these decisions. If a corporation deems currency risk unacceptably high, they will use currency hedging rather than delaying their implementation due to exchange rate concerns.

- **Asset managers, pension funds and insurance companies** invest abroad mainly for the purpose of diversification and increasing the investment opportunity set. These participants are often more concerned with security, sector and country selection than currency issues.

Such participants tend to be relatively exchange rate (or price) insensitive. Nevertheless, it is unwise to assume that all these participants behave in a price insensitive fashion at all times. Apart from tourists, participants with additional motives can and do behave at times in a manner consistent with attempts to profit from currency movements. For example, some large corporations have treasury departments that are considered profit centres.

It is difficult to estimate accurately the proportion of participants that are price insensitive. According to survey data from the Bank for International Settlements (BIS), participants that might not have a pure profit motive undertake at least 20% of foreign exchange transactions (see Figure 1).[11] The BIS breaks down total turnover into three categories: reporting dealers (or interbank market); non-financial institutions; and other financial institutions. Interbank transactions are primarily a function of overall transaction volumes and thus are liquidity driven. However, from time to time these banks may act with a profit motive. This can occur when a bank maintains an outright exposure in one or more currencies. Non-financial institutions represent corporates and tourists that might not be foreign exchange profit seekers. Other financial institutions include asset managers, hedge funds, CTAs and central banks. Some of these participants are foreign exchange profit seekers, while others are not.

[9] CTAs or Commodity Trading Advisers are licensed futures markets representatives that can trade listed derivatives contracts, primarily futures. The assets range from commodity to financial assets such as interest rate stocks, stock index futures and currencies.

[10] Szakmary & Mathur (1997), "Central bank intervention and trading rule profits in foreign exchange markets" *Journal of International Money & Finance*, 16(4), 513-535.

[11] Triennial Central Bank Survey of Foreign Exchange and Derivative Market Activity in April 2007: Preliminary Global Results, Monetary and Economic Department, *Bank for International Settlements*, September 2007. The final report is expected to be released in late 2007 and therefore was unavailable at the time of publication of this research paper.

FIGURE 1 | **Foreign Exchange Turnover by Counterparty**

Percentage of Total Daily Turnover

● Other Financial ● Non-financial ● Interbank
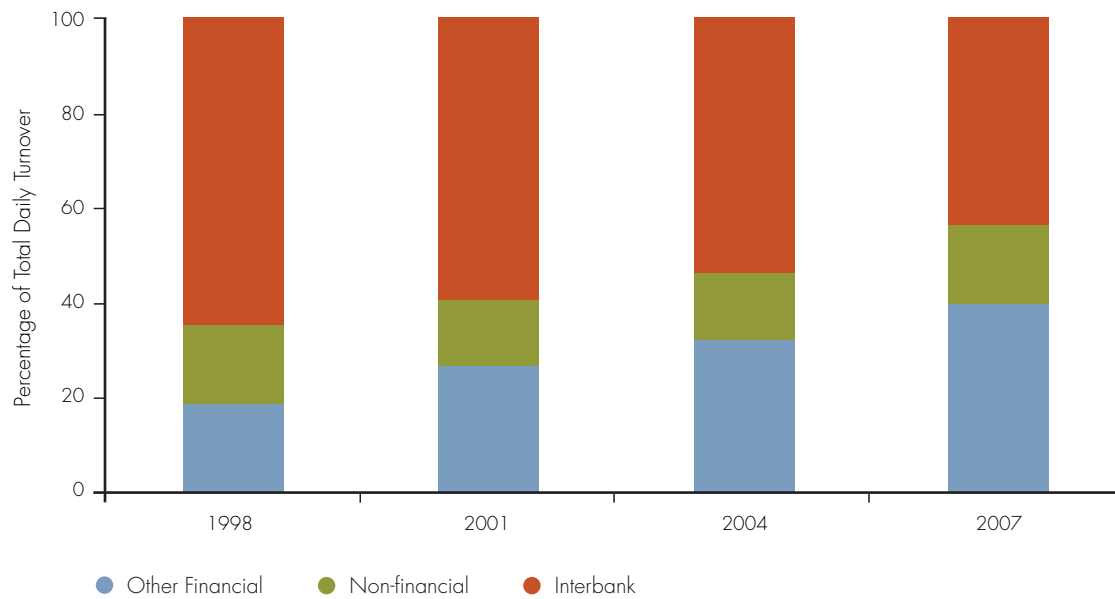
Source: Russell Investment Group, BIS

Transaction Costs and Liquidity

The foreign exchange market is the most liquid of all financial markets. Daily foreign currency trading is US$3.2 trillion according to BIS.[12] As a result, transaction costs are low relative to other financial markets. Bid-offer spreads for both spot and forward contracts average 1 to 3 basis points for the major currencies, and 8 to 10 basis points for emerging market currencies. High levels of trading volume provide substantial capacity to absorb large trades without incurring significant market impact costs. Low transaction costs aid the effective implementation in active currency management, including high turnover momentum-based strategies.

[12] Ibid

3) Strategies

Mandates

The two main types of currency mandates are overlay and pure alpha. Overlays manage currency exposure arising from a portfolio's international investments around some policy benchmark. Pure currency alpha involves taking long/short positions in various currencies in an attempt to generate value, regardless of the international exposures in the portfolio.

Overlays

Overlay managers work towards a benchmark usually tied to the strategy of the underlying securities. Overlays involve a predefined strategic hedge ratio, base currency, exposure limits, and other constraints. They may be either passive or active. A passive overlay aims to maintain the strategic currency position. An active overlay attempts to add value by taking positions that deviate from the strategic position. Active strategies may consist of return seeking, risk control, or both. Return-seeking strategies will employ a technical, fundamental or hybrid approach. Risk control focuses on adding value by reducing risk.

Pure alpha

Pure currency alpha strategies sit separately from the international asset exposures in the portfolio. They may involve limited net investment, typically employing both shorting and leverage. Furthermore, these strategies are not constrained to any base currency, do not relate to any benchmark, and have minimal currency exposure constraints. This management approach suits high-conviction managers. There are two ways to gain exposure to pure currency alpha. Direct access can be gained through an active currency program managed by a currency specialist, hedge fund or CTA (Commodities Trading Adviser). Alternatively, indirect exposure may be obtained via GTAA (Global Tactical Asset Allocation) with a significant allocation to active currency strategies.

Constraints on Overlays

Pure overlay strategies are constrained in two ways. First, the direction of available positions may be asymmetric, depending on the particular strategic benchmark. Second, the ability to take positions is limited by the underlying physical investments. As pure alpha strategies are not subject to these constraints, their potential to add value should be greater.

Constraints Related to Strategic Benchmarks

Asymmetry in the opportunity set is most marked under 'polar' benchmarks of either unhedged or fully hedged (i.e. 0% or 100% strategic hedge ratio). With an unhedged benchmark, an overlay manager can only choose to hedge, i.e. selling forward contracts on foreign currencies versus the base currency. This makes it difficult for an overlay manager to add value when the A$ is depreciating versus foreign currency, as they are typically not permitted to increase the foreign currency exposure above 100%. The best a manager can do is to hold the benchmark position. Conversely, under a fully hedged benchmark, the manager cannot add value when the A$ is appreciating. Therefore, the performance of mandates with polar benchmarks will be affected by the direction of the base currency.[13]

The forward rate bias may also create performance distortions. Overlay mandates with a 0% strategic hedge ratio are better placed to outperform over a full currency market cycle, as they capture any positive interest rate differential in favour of the A$ when they deviate from the benchmark. In contrast, the interest rate differential leans against all active positions taken by managers with a fully hedged benchmark. Pereira & Leung (2007) have estimated that the forward rate bias since the A$ float in December 1983 has yielded approximately 2% p.a.

The potential to add value from active overlays can hence be limited under polar benchmarks, especially for fully hedged A$ benchmarks to the extent that the forward rate bias persists.

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[13] Russell research papers by Baldridge, Meath and Myers (2000), and Ooi and Ansley (2004) provide empirical evidence to support these statements.

Investment Universe Constraints

Identified below are ways in which a pure overlay strategy is constrained by the underlying asset exposures. The overall theme is that overlay managers face a limited universe, and are hence restricted in the breadth of positions they can adopt.

1. The universe of potential positions is defined by the weights in the index used to benchmark the underlying physical securities. This limits the active position size, especially with the currencies that have a smaller weight in the index. For example, the currencies of Denmark, Norway, Sweden, Hong Kong, New Zealand and Singapore are traded actively, but their equity markets are 2% or less of the world index. A manager that has a very strong conviction regarding any of these currencies is restricted to a relatively small active position. Performance of overlay managers becomes affected greatly by their ability to correctly predict the direction of the US$ against the A$.

2. Overlay managers are usually restricted from trading currencies outside the benchmark. This reduces the breadth of positions.

3. Typically leverage and/or shorting are not permitted. The inability to short sell a currency is a particularly acute impediment, as it limits the ability to add value on the downside, especially for currencies that have a low benchmark weight. The impact of an asymmetric ability to add value is well documented for stocks.[14]

Implications

The constraints identified above apply to overlay strategies, particularly under polar benchmarks. While asymmetry of available positions is alleviated under a partially hedged benchmark (e.g. 50%), the constraints arising from the investment universe will remain. However, none of these constraints applies to pure alpha strategies. Hence, the most efficient path to add value from active currency management may be to separate active currency positions from any underlying international asset exposures. This can be achieved through managing the strategic currency position via either a passive or risk control-focused overlay, coupled with pure alpha strategies.

An active overlay strategy may still be useful for risk control, even though it may not be the best way to add value through returns. For instance, an investor may not be able to rely on a pure alpha manager to protect their total portfolio from a mean reversion in the A$ towards PPP, as any A$ positions may be relatively minor within their portfolio.

Style

Active currency managers can be classified by their style of management: trend, carry, value, dynamic and multi-strategy.[15]

1. Trend

The trend style aims to exploit momentum in currency markets. Exchange rate trends may have a periodicity of about one day up to several months. Most managers employing this style use technical analysis. A commonly used technical indicator is the moving average. This style works best in markets that trend and are not prone to quick reversal. The worst type of market environment for the style is a 'choppy' range trading or trend-less market. Anecdotal evidence suggests that the periodicity of trends has reduced substantially over the last 10 years, and that counter-trending occurs more often.

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[14] Dales and Meese (2003) outline the effect of the short selling constraint on active currency management in the paper, "Currency Management: Strategies to Add Alpha and Reduce Risk", *Investment Insights*, BGI.

[15] Our classification outlines the main styles, but is not exhaustive. For example, there are managers that focus on other styles, such as judgemental/thematic factors, volatility or capital flows.

Russell Research

TITLE	Active Currency Management: Strategy for Australian Investors
SECT	Strategies
PAGE	8

Russell

2. Carry

The carry style aims to exploit the forward rate bias. It gets its name from 'carry trades', which involve borrowing in low interest rate countries, and investing the proceeds in high interest rate countries. The style is implemented by going short (selling) the low interest rate currency, and long (buying) the high interest rate currency. Carry trades tend to provide stable returns for reasonably long periods lasting up to several years. The biggest risk is an unfavourable geopolitical or macroeconomic event that triggers a flight to quality. Thus, this strategy tends to deliver small stable returns until an unfavourable episodic event that culminates in a large drawdown.

3. Value

Value strategies attempt to exploit mean reversion to 'fair value'. Value measures can vary across managers, and may include aspects like PPP,[16] links to long-term relative economic or productivity growth, exchange rates consistent with balance of payments equilibrium, and so on. A value strategy could be expected to lose money until the long (or short) currency position has reached a point where undervaluation (overvaluation) becomes so extended relative to fundamental factors that capital flows reverse, and the currency's fortunes flip. An important feature of any value-based strategy is the ability to filter out "noise". A successful process should consider appropriate levels of deviation from fair value beyond which positions should be adjusted.

4. Dynamic

The dynamic style consists of risk management strategies. The most popular method is dynamic hedging, which involves mechanically varying the hedge in response to exchange rate movements. This approach synthetically replicates an option-like payoff using currency forward contracts. Other approaches alter currency exposure based on measures of risk such as value at risk, skew, etc. Dynamic hedging tends to have a high correlation with the base currency. Success hinges on the base currency not moving too sharply, since it becomes difficult if not impossible to hedge effectively. This strategy also performs poorly in choppy markets.

5. Multi-strategy

As the name suggests, multi-strategy refers to a blend of different currency strategies. This style is expected to have low variability compared to the individual styles. However, it is relatively rare for individual managers to have substantial skill across a wide range of styles.
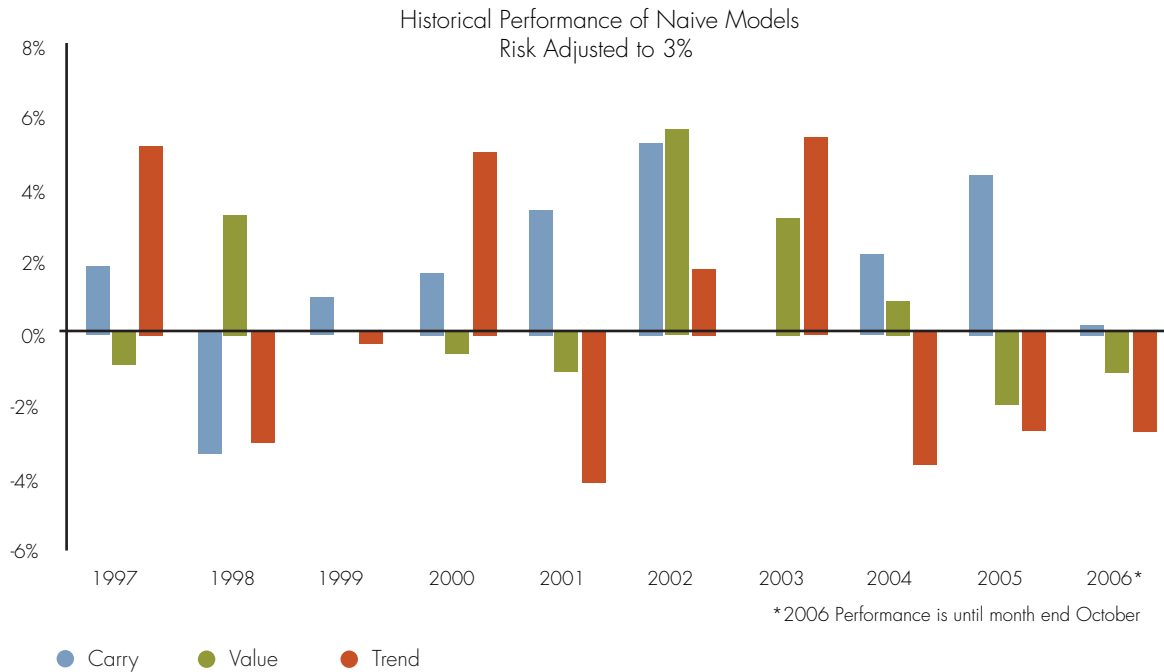
Performance of Style

Russell's Investment Management & Research (IM&R) team in London has a series of in-house models to replicate returns from the three most popular individual styles: trend, carry and value.[17] Returns simulated from these models provide some insight into how the three different styles might have performed historically. Figure 2 plots simulated returns over the last ten years. Carry has performed particularly well, with an information ratio (IR) of 0.83 relative to value at 0.30 and trend at 0.01. The low risk environment of the last ten years has underpinned the performance of carry. The last three years have proved difficult for the trend style due to lack of currency market volatility of the appropriate type. A weighted average of these three styles has returned an alpha of approximately 1.1% p.a. with an information ratio of 0.48.

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[16] Strong-form PPP signals, which hypothesise that prices of similar goods converge across currencies, have received mixed reviews from academics. Issues include the long term horizon of such models; the extent to which currencies can deviate from fair value; the difficulty in defining the same traded goods across countries; and the frictional transport costs/political and tax implications of trade. These issues are even more exaggerated for most emerging market currencies.

[17] The carry strategy overweights the highest yielding currencies and underweights the low yields. The value strategy overweights the most undervalued currencies and underweights the most overvalued (based on real effective exchange rates). The trend model uses a series of moving average cross-over rules to determine which currencies are trending and which to over and under-weight. The returns from these three models have been standardised to produce a risk of 3% p.a.

FIGURE 2 | **Performance of Currency Return Factors**

Historical Performance of Naive Models
Risk Adjusted to 3%

*2006 Performance is until month end October

● Carry   ● Value   ● Trend

Source: Russell Investment Group

It is dangerous to conclude from this limited history that carry is the best style and trend the worst. Over a much longer period from 1975 to 2005,[18] Binny (2005) finds trend to be the best performing style with the highest IR. The worst period for trend (which was 2005) is still better than the worst year for other strategies over the full 30-year period. The variability in performance across strategies provides a strong argument for style diversification. Table 1 reinforces the argument by revealing that the correlation between styles has been very low historically. While the correlation between value and carry is often negative, there are periods during the cycle when we would expect this correlation to be positive.

TABLE 1 | **Historical Correlations of Russell's Naïve Currency Models**

	Value	Carry	Trend
Value	1.00		
Carry	-0.34	1.00	
Trend	0.03	0.06	1.00

Source: Russell Investment Group

Note: Based on 10 years of simulated performance, up to 31/10/06

[18] Binny, J. (2005), "Currency Management Style through the Ages", *Journal of Alternative Investments*, Winter Vol. 8, No. 3.

Portfolio Strategy

When developing a currency strategy, Australian investors need to resolve three questions:

1. Should an active currency overlay be used?

2. If so, how should overlays be structured?

3. Should an investment be made in pure currency alpha strategies?

Role for Active Overlays

The role for active overlays depends on whether there is sufficient evidence of past alpha net of costs, and whether any alpha is expected to persist. Section 4 will shed some light on this issue by examining the historical performance of A$ based overlay managers. An investor also needs to determine their own propensity to accept active risk.

Overlay Structure

When structuring an active currency overlay, the strategic hedge ratio needs to be taken into account. This is particularly important with polar benchmarks, where particular styles may be better suited to add value or provide risk control.

1. Unhedged Benchmark – Carry & Value Preferred

Russell believes that in the long run, fully hedged investors will earn a currency risk premium arising from the forward rate bias, perhaps worth up to 1% – 2% p.a. (see Pereira and Leung 2007). Therefore, it is important that an investor with a strategic hedge ratio of 0% use an overlay manager with a carry bias in their strategy. Investors should also consider the use of overlay managers that employ the value strategy, given the propensity of currencies to significantly overshooting their fundamental long-term value. Investors with polar benchmarks face greater risks from mean-reversion relative to more symmetric benchmarks.

2. Partially Hedged Benchmark – Broad Range of Styles Suggested

Given the relative symmetry of a partially hedged benchmark, it is recommended that investors build a portfolio with exposure to a broad range of styles.

3. Fully Hedged Benchmark – Value Preferred

The biggest currency risk for an investor with a 100% hedged benchmark is depreciation in the A$ (or conversely, appreciation in foreign currencies). This risk might be mitigated by employing a value approach. Unlike the case with a 0% hedged benchmark, there is probably no need to employ the carry style, as this would be effectively doubling up the risk that arises from the carry trade.

Role for Pure Currency Alpha

As discussed above, polar benchmarks create constraints that inhibit active management. Rather than adopt an active approach, investors with polar benchmarks may want to employ a passive or risk-control approach to overlay management, coupled with pure currency alpha exposure. Risk control can be achieved by employing overlay managers with a dynamic style. Although the primary focus of this style is reducing risk, these managers also aim to add modest amounts of alpha. This allows investors to spend their risk (and possibly fee) budgets more efficiently.

Pure currency alpha managers can also be justified in their own right in parallel with any overlay strategy, providing there is sustainable alpha net of costs. Performance of currency alpha managers is evaluated in Section 5. The decision to use pure currency alpha managers should be made at the overall portfolio level. Such an approach allows investors to evaluate properly all potential alpha opportunities simultaneously, with allocations possibly derived from risk budgeting.

4) Performance of Overlay Managers

This section reviews the historical performance of active overlay managers, including an update and extension on previous research. No convincing case emerges for appointing active currency overlay managers to A$ based accounts as a matter of course. On average, active returns have been modest and have eroded with the passage of time. They also seem related to A$ direction, with a positive correlation between alpha and A$ movements in many instances. The analysis suggests that overlay managers should be contemplated for specific reasons such as risk control, or evidence of outstanding manager skill.

Previous Research

There have been several active currency performance studies since the late nineties. These studies have focused on active currency overlays tied to international equities mandates and different strategic hedge ratios. Furthermore, these currency overlays have been restricted in terms of cross currency exposure, leverage or short positions. Nevertheless, the studies have found that the median active currency manager has added value. Appendix 1 contains a summary of the findings from previous studies. The main points are:

1. Active currency overlays have added about 1.4% p.a. on average over the last 15 years, with an average information ratio of roughly 0.5;

2. A$ based results are significantly lower than for other currencies; and

3. Performance appears to have diminished through time.

Data

Our research extends previous Russell research using an updated version of the data set used by Baldridge et al (2000) and Ooi and Ansley (2004).[19] This data focuses on separately managed overlay accounts, based on international equities mandates for institutional clients. It excludes accounts that are based on leverage and/or employ short selling, such as hedge funds and CTA accounts. Fixed income based currency overlays are also excluded, as these managers usually take less aggressive positions compared to equity portfolios. While the data set may not be comprehensive, it suffices to identify any capacity to add value that exists amongst active currency overlay managers.

As with all performance studies there exists the possibility of survivorship bias. By not removing the terminated accounts from our dataset, survivorship bias is reduced. Unfortunately, it is more difficult to mitigate self-selection bias, which inflicts all manager databases to some extent, as reporting performance data to database providers is voluntary.

We focus on accounts categorised by benchmark hedge ratio and base currency. Table 2 shows the number of accounts across these different categories. In total, we analyse 741 accounts of 32 managers during the period of December 1988 through to end March 2007.[20]

TABLE 2	Distribution of Currency Accounts by Hedge Ratio & Base Currency				
	Account Hedge Ratios				
Base Currency	**0%**	**50%**	**100%**	**Other**	**Total**
A$	51	34	3	19	107
US$	169	118	40	36	363
Other	136	65	44	26	271
Total	356	217	87	81	741

Source: Russell Investment Group

[19] For references, see 'Further Reading' section towards the end of this paper.

[20] Our analysis ends in March 2007 as many managers provide the required data with some lag.

Ooi & Ansley (2004) previously considered this data from an Australian investor's perspective. We update the results to March 2007, and address the following questions:

1. Do active currency A$ based overlay managers display predictive ability?

2. Have these managers been able to add value in the past?

3. Does the base currency and/or benchmark hedge ratio affect the results?

4 Do the results vary across time?

5. Do the results vary across style?

Predictive Ability and Value-Added

Table 3 shows that A$ based overlay currency accounts and manager composites display predictive ability. The average success rates over the life of the account are mostly well in excess of 50%, with 57% of accounts having experienced positive alpha. These results vary across strategic hedge ratios. The highest success rate (62%) occurs under symmetric benchmarks, providing one piece of evidence in their favour. Only 33% of accounts with a fully hedged benchmark experienced a positive alpha (before fees). However, these results are based on only three accounts from two managers and must be interpreted cautiously.

TABLE 3	Predictive Ability and Value-Added by A$ based Currency Overlay Managers							
	All		0% Hedged		50% Hedged		100% Hedged	
	Separate Accounts	Manager Composites	Separate Accounts	Manager Composites	Separate Accounts	Manager Composites	Separate Accounts	Manager Composites
Panel A: Predictive Ability								
Total Number	107	14	51	13	34	9	3	2
Number Positive	61	9	28	9	21	7	1	1
Success Rate over Life of Account (%)	57	64	55	69	62	78	33	50
Months of data	4,460	1,231	2,010	822	1,708	805	55	51
Number positive	2,186	630	1,000	437	838	400	27	27
Monthly Success Rate (%)	49	51	50	53	49	50	49	53
Average Gain per Month (in basis points)	45	41	41	42	50	46	15	15
Average Loss per Month (in basis points)	-38	-35	-36	-36	-40	-37	-21	-17
Panel B: Value-Added								
Alpha (% p.a.)	0.30	0.44	0.80	0.81	0.29	0.45	-0.03	-0.05
Tracking Error (% p.a.)	1.82	1.80	1.83	1.71	1.87	1.73	0.84	0.73
Information Ratio	0.16	0.24	0.44	0.47	0.16	0.26	-0.04	-0.07

Source: Russell Investment Group

Russell Research

| TITLE | Active Currency Management: Strategy for Australian Investors |
| SECT | Performance of Overlay Managers | PAGE | 13 |

As the results for separate accounts are weighted towards managers with a greater number of accounts, the equally weighted manager composite[21] may give a better representation of an investor's opportunity set. The success ratios over the life of account for these manager composites are more favourable compared to individual accounts. For instance, 64% of managers have outperformed (versus 57% of accounts).

When calculated by month, the success ratio is lower compared to the success ratio measured over the life of accounts (except for fully hedged mandates). Across all benchmarks in total, the success ratio drops from 57% to 49%. Higher success rates over account life are explained by managers having larger average gains than losses, as confirmed by the last two rows in Panel A of Table 3. These results are not unique to A$ based accounts. The success ratio by month for US$-based and other currency bases are only 51% and 49%, respectively. More importantly, the success ratios over the life of accounts for US$-based and other currencies are 73% and 64% respectively.

Ooi & Ansley (2004) found that over the ten years and six months to the end of December 2003, the average manager produced an alpha of 0.66% p.a. with an information ratio of 0.35. Results updated to March 2007 reveal that both alpha and information ratio have declined to 0.44% p.a. and 0.24 respectively. Again, results vary widely across different strategic hedge ratios. Active overlay managers with an unhedged mandate have produced the best results on average. To some

extent this can be explained by the strength of the A$, which rose 28% against the trade-weighted index during the evaluation period. A$ strength would have made it hard for fully hedged overlay mandates to outperform. In addition, the existence of a positive forward rate bias for the A$ would have assisted managers with unhedged versus fully hedged benchmarks. Over the evaluation period, the forward rate bias on the A$ has been 2.5% for the basket of currencies underlying the MSCI World ex Australia index.

Table 4 reveals that A$ based active overlays have added less value compared to other base currencies. Differences in alpha across benchmarks is least extreme for the 'all currencies' subset. Note that value added increases in moving from fully hedged to 50% hedged to unhedged benchmarks, across all currency bases. A priori, this is surprising since 50% hedged overlays would be expected to outperform polar benchmarks due to less constraint on active positions.

In interpreting the empirical results, bear in mind the influence of time period, benchmarks, guidelines and risk levels for the different accounts. As estimates may not be constant over time, it is dangerous to extrapolate the averages into the future. Ooi and Ansley (2004) confirm this notion by showing that average alpha is time varying. The statistics largely describe the performance that investors have experienced historically. To gain a better understanding of currency alpha, it is necessary to examine how and why alpha has varied.

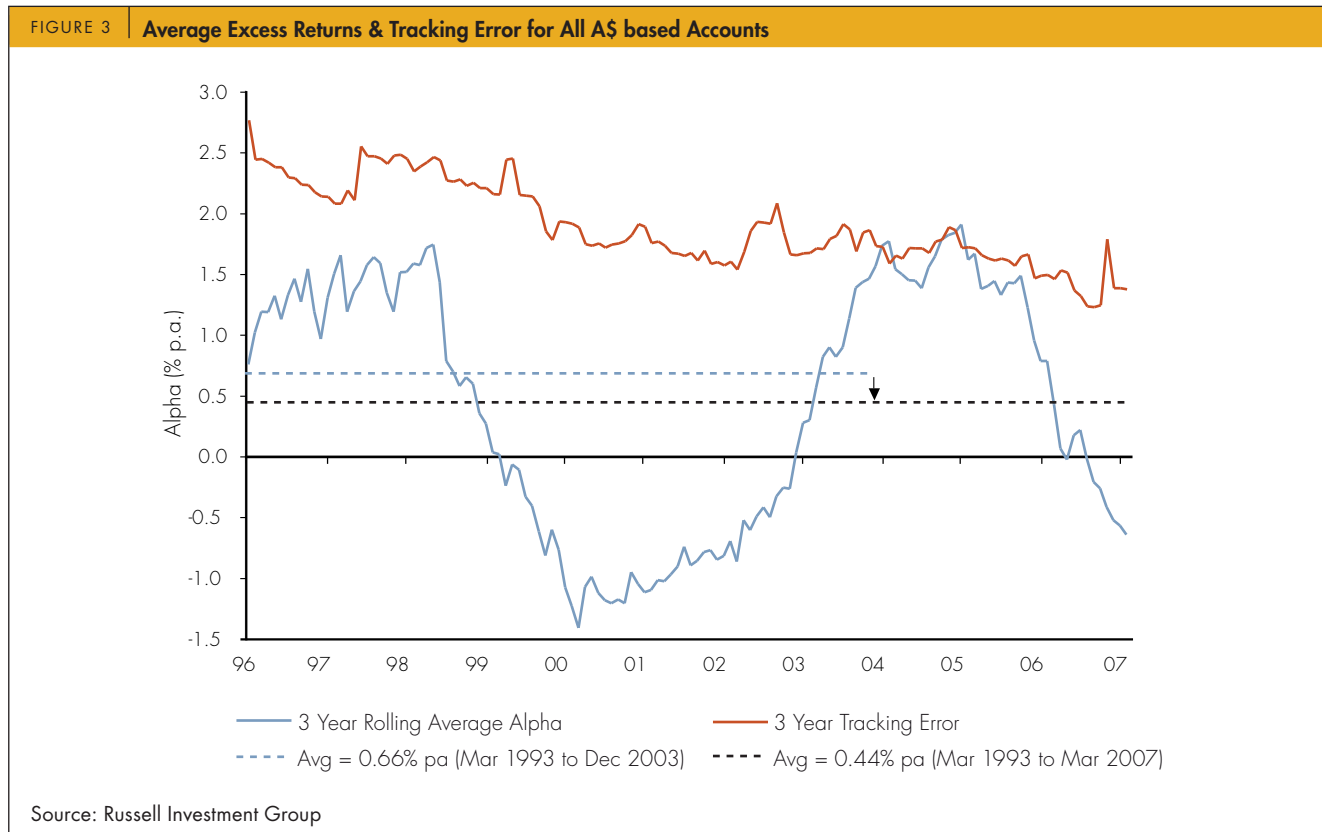| TABLE 4	Value Added of A$ based Overlay Accounts Compared to other Currency Bases			
Average Alpha (% p.a.)	All	0% Hedged	50% Hedged	100% Hedged
A$ based	0.30	0.80	0.29	-0.03
US$ based	1.39	1.59	1.31	0.86
All Currencies	1.36	1.58	1.24	1.07

Source: Russell Investment Group

[21] Our manager composites are calculated by first equally weighting returns across accounts by manager and then equally weighting across time.

Time Variation

Figure 3 shows that 3-year rolling average alpha for A$ based overlays has been negative in recent years. The important question is whether this is just part of a temporary alpha cycle, or whether it represents a permanent change. There is some evidence that the decline in alpha has coincided with a reduction in tracking error, which implies the possibility of less risk taking by the managers. This may be part of the reason why average alpha since inception has diminished from 0.66% p.a. as at end-2004 to 0.44% p.a. as at end-March 2007.

FIGURE 3 | **Average Excess Returns & Tracking Error for All A$ based Accounts**

3 Year Rolling Average Alpha — 3 Year Tracking Error
Avg = 0.66% pa (Mar 1993 to Dec 2003) — Avg = 0.44% pa (Mar 1993 to Mar 2007)

Source: Russell Investment Group

Time variation in alpha generation for A$ based overlays appears to be linked to currency movements. Figure 4 reveals three distinct phases for the A$ (relative to the MSCI basket of foreign currencies) – a bull market between March 1993 and April 1997; a bear market until September 2001; followed by another bull market to the end of our evaluation period. Active overlays have tended to generate positive alpha in bull markets, and negative alpha in bear markets. This aspect is most clear for unhedged overlays.

It is also interesting to note the dispersion in performance across accounts from year to year. Figure 5 shows how manager performance variability changes over time. Hence, it is important to diversify across managers to reduce some of this variability in returns. Figure 5 also demonstrates the much higher levels of alpha that accrue to investors that can successfully identify skilful managers. The top managers in each calendar year have been able to produce a positive alpha.

FIGURE 4 | **Relationship between A$ & Active Currency Overlay Performance**

- All – cumulative alpha
- 50% Hedged – cumulative alpha
- 0% Hedged – cumulative alpha
- Exchange rate (RHS)
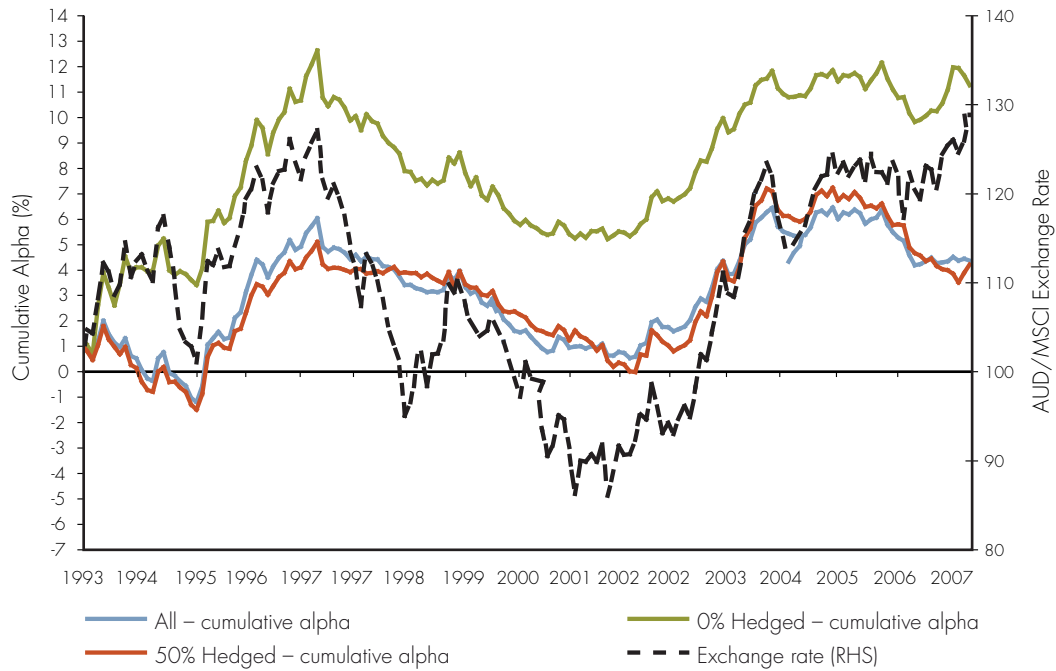
Source: Russell Investment Group

FIGURE 5 | **Dispersion of Performance Across Accounts and through Time**

- Average
- Minus 1 Standard Deviation
- Plus 1 Standard Deviation
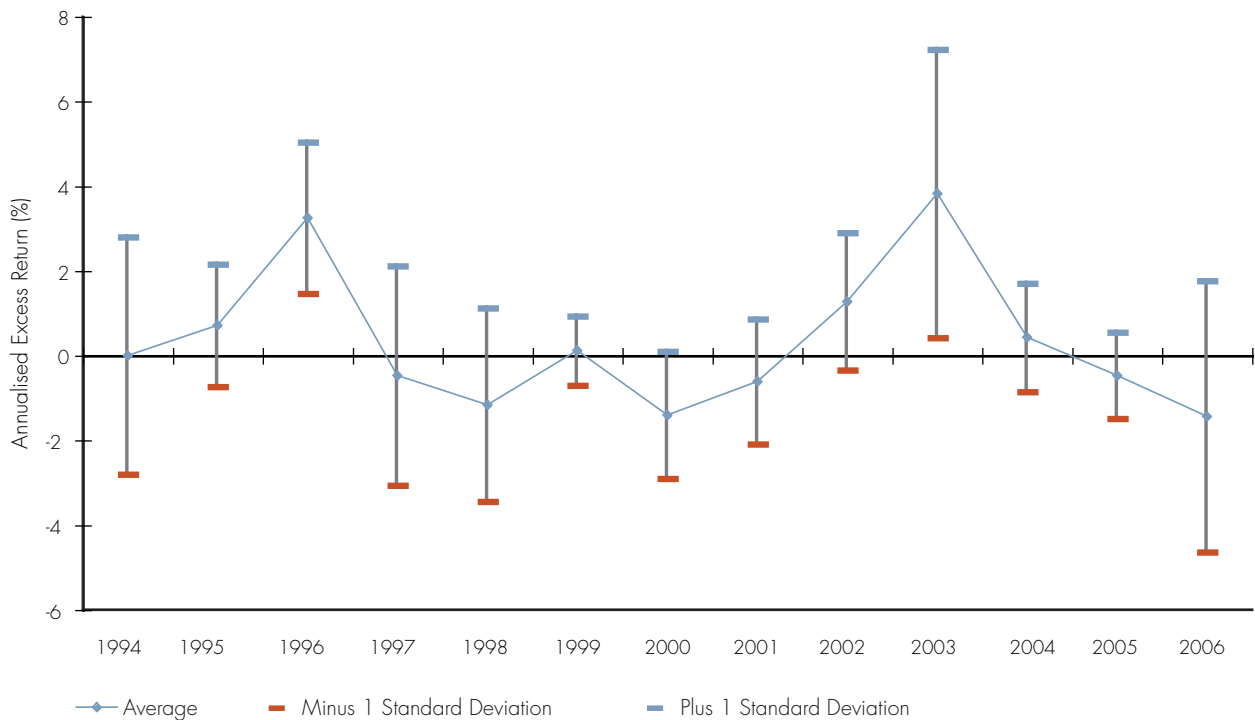
Source: Russell Investment Group

Performance by Style

Table 5 examines the time variation in alpha across style for A$ based overlays.[22] The value and carry styles have added the most value overall, while trend has lost value. Mandates with 0% and 50% hedged benchmarks have delivered about 0.5% p.a. over the full evaluation period. Fully hedged mandates have not fared so well, losing 0.6% p.a. (on a very small sample size).

Alpha estimates for the three sub-periods confirm that a relationship with the A$ exists for most styles, except for multi-strategy and perhaps trend. Value and carry have performed well during the A$ bull markets, while multi-strategy and trend tended to perform better in the bear market. The fact that the sample contains two bull and one bear market may be a contributing factor to style-based alphas over the period, including the better performance from value and carry versus trend.

Table 5 confirms the notion that overlays with unhedged polar benchmarks produce value that is conditional on A$ direction. These overlays outperformed during the A$ bull markets, and underperformed during the A$ bear market.

However, the relation with the A$ is not in line with expectations for fully hedged benchmarks, although the small sample size of only 5 accounts and 2 managers suggests the results are unreliable.

In terms of monthly correlations with the A$, carry has the highest coefficient of 0.71. This reinforces that this style may be relatively more valuable for unhedged mandates. Value has a correlation of 0.30 with the A$ on average, but this varies significantly across hedge ratios. For 0% and 50% hedged benchmarks, the correlation of value style alpha with the A$ is 0.33 and 0.44, respectively, while for the fully hedged benchmark it is -0.37. In addition, there was no data for value with a fully hedged benchmark until November 2000. If the correlation estimate is calculated for the value style across all three benchmarks from November 2000 onwards it is -0.18.

The correlation of alpha with returns on a 'typical' 70/30 balanced portfolio[23] is also presented in Table 5. In general, these correlations are low; especially for the value style and 100% hedged benchmark.

TABLE 5	Performance of A$ based Overlay Accounts By Style and Hedge Ratio							
			Average Alpha (% pa)				Alpha Correlation with	
	No. of Accounts	No. of Managers	Mar 93 to Mar 07	Mar 93 to Apr 97	Apr 97 to Sep 01	Sep 01 to Mar 07	A$/MSCI	Balanced Fund
Panel A: By Style								
Carry	29	4	0.60	2.49	-2.12	1.45	0.71	0.23
Dynamic	34	3	0.32	1.09	-1.26	1.02	0.51	0.17
Multi-strategy	8	2	0.23	n.a.	0.55	0.07	0.40	0.27
Trend	17	3	-0.23	-1.34	0.27	-0.02	0.23	0.17
Value	19	2	0.90	3.35	-0.32	0.71	0.30	0.06
Panel B: By Hedge Ratio								
0%	60	13	0.53	3.39	-1.78	0.51	0.73	0.29
50%	42	11	0.49	1.06	-0.45	0.82	0.57	0.25
100%	5	2	-0.63	-3.05	-0.97	0.38	-0.11	-0.07
Panel C: All Accounts								
	107	14	0.30	1.39	-1.18	0.67	0.67	0.26

Source: Russell Investment Group

[22] Managers are classified according to their dominant style. Although some managers may use more than one style, they may nonetheless tend to focus on one particular style. Only the managers that did not focus on any one style in particular were classified as multi-strategy.

[23] Portfolio weightings are 32% Australian equities, 30% international equities, 8% Australian listed property, 15% Australian fixed income and 15% International fixed income.

Alpha Curvature

Another way to evaluate the ability of overlays to add value is to examine the *curvature* of their alpha with respect to the A$. For an unhedged benchmark, the preferred position would be for a disproportionately higher alpha when the A$ rises compared to when it falls. Mathematically this relationship is referred to as convexity. The implication of convexity and a positively sloped relationship is that the overlay does the job of protecting portfolio performance against the potential drag from A$ strength. For a hedged benchmark, the opposite curvature (or convexity with a negatively sloped relationship) would be desirable, i.e. protection against A$ weakness.

The scatter plots for each style and benchmark combination along with the linear and polynomial trend lines appear in Appendix 2. The main results derived from these charts are:

- There does appear to be some evidence of convexity for different styles, particularly for trend and value.

- The multi-strategy style displays concavity; i.e. does not generate value during larger currency movements.

- Across different hedge ratios, overlays appear to have added conditional value (slope) as well as displaying some convexity. It is interesting to note that overlays with a 50% hedged benchmark appear to produce the greatest level of convexity.

- The carry style has a relatively high positive slope, confirming its potential benefit for 0% hedged benchmarks.

- Value has a negative slope, pointing to potential benefits for 100% hedged benchmarks

Fees

The overlay manager return data that has been analysed is gross of fees. On average, fees for currency overlays range from 20 to 30 basis points for account sizes ranging from US$25 to US$250 million. Since these fees are charged on a sliding scale, much larger accounts over US$500 million would pay much lower fees of around 15 basis points. In addition, risk-control overlays would generally attract lower fees of 10 to 25 basis points, depending on the size of the account.

Summary & Implications

The performance results for A$ based active currency overlay managers are not as favourable as for US$ based or other currencies. The alpha from A$ based overlays also seems dependent on the direction of the A$. It appears that most overlays find it easier to add value when the A$ rises, and struggle to add value when the A$ falls.

Why has the value added by A$ based overlay managers been so modest? Ooi and Ansley (2004) report that anecdotally some managers have commented that the A$ is harder to forecast than other currencies. Another possibility is that the Reserve Bank of Australia (RBA) is more successful in its foreign currency intervention than other central banks. A recent RBA working paper provides empirical evidence in favour of successful RBA currency interventions, with the RBA generating substantial profits from its currency trading.[24]

In conclusion, we recommend that Australian investors only embrace active overlays on a selective basis. One such reason may be risk control. Our analysis of alpha across styles suggests there may be merit in appointing carry managers for funds with 0% hedged benchmarks, as they may protect the portfolio against A$ strength. Similarly, value managers might be considered for funds with 100% hedged benchmark, to protect against situations where the A$ may weaken from over-valued levels. Indeed, the latter seems particularly relevant at present. Alternatively, dynamic managers may be employed to reduce risk regardless of the strategic benchmark. Another reason to appoint active overlay managers might be a belief they have outstanding skill. As our analysis focuses on the average manager, it ignores the ability to add value from manager selection. In any case, investors need to identify a good reason to appoint an active overlay manager for A$ based accounts, rather than making such appointments as a matter of course.

[24] Becker, C & Sinclair, M (2004), "Profitability of Reserve Bank Foreign Exchange Operations: Twenty Years after the Float", *RBA Working Paper,* 2004–06.

5) Performance of Pure Alpha Managers

In contrast to A$ based overlay managers, stronger evidence emerges of the ability of pure alpha managers to add value. This is consistent with the notion that pure alpha managers are less constrained. Accordingly, consideration should be given to adding pure alpha active currency managers to enhance portfolio returns.

Data

The performance of pure alpha currency managers is investigated by considering the CISDM[25] Asset Weighted CTA Currency Index. This index has a reasonably long history, calculated from reported US$ returns of active currency managers every month. The index commenced on the 31 December 1989. As at 30 September 2007, it included about 60 CTA currency managers. The criteria for inclusion are at least a one-year track record and a minimum of US$500 million under management for at least one account managed by the manager.

As with all manager performance databases there is the possibility of survivorship, self-selection and back-fill biases. These biases may artificially increase the average alpha to a level higher than the actual performance an investor could ordinarily achieve. Fung and Hsieh (2002) have shown that large biases are the consequence of both sampling from an unobservable universe of hedge funds, and from the methodologies used in collecting return information.[26] Several aspects of the CISDM Currency Index reduce the potential for inaccuracies:

- Controlling the self-selection bias is made easier by the fact that CTAs must be registered with Federal government authorities. Hence, it is possible to define more accurately the universe of advisers.

- Backfill bias is limited by using an asset-weighted index, which reduces the performance in the early part of a manager's history when assets under management are low.

- All defunct funds, which have failed or stopped reporting, are maintained in the database going forward as one way to reduce survivorship bias.

- CISDM has a comprehensive coverage, being the largest and oldest hedge fund/CTA database. It has tracked the performance of managed futures funds since 1979. This also helps to reduce survivorship bias.

The performance of currency strategies within GTAA is not considered, as data is not readily available, and the available history is too short for proper statistical analysis.

[25] CISDM was previously known as MAR/Hedge.

[26] Fung, W and Hsieh, D (2002), "Hedge-Fund Benchmarks: Information Content and Biases", *Financial Analysts Journal*, Vol. 58, No. 1.

Predictive Ability and Value-Added

Performance based on the CISDM currency index has been strong over the last 17.5 years (see Figure 6). There are a few points worth mentioning:

- A substantial portion of the gains arise from the early years. We conjecture that this may be a one-off event, and not reflective of normal conditions.

- Performance is episodic. There are sporadic periods of volatility and high magnitude returns (both positive and negative), with much lower returns in between.

- Returns over the last few years have been moribund.

| FIGURE 6 | **Cumulative Returns of the CISDM Asset Weighted Currency Index** |

Range bound period during 2004 to 2006

Source: Russell Investment Group

To capture pure alpha, raw returns need to be adjusted by the risk-free rate. Figure 7 displays the cumulative alpha by adjusting for 1-month US LIBOR. This shows more clearly the episodic nature of returns, and the strong initial alpha. Table 6 displays the performance results quantitatively. Over the full sample, excess returns over cash have been strong at 3.51% p.a. High alpha has not been sustained in more recent years, with negative excess returns of -0.80% p.a. over the 3 years to June 2007. The high standard deviation, skew and kurtosis over the full sample compared to the more recent years suggest that the nature of the alpha returns have changed substantially since the early 1990s.

FIGURE 7 | **Cumulative Alpha of the CISDM Currency Index**
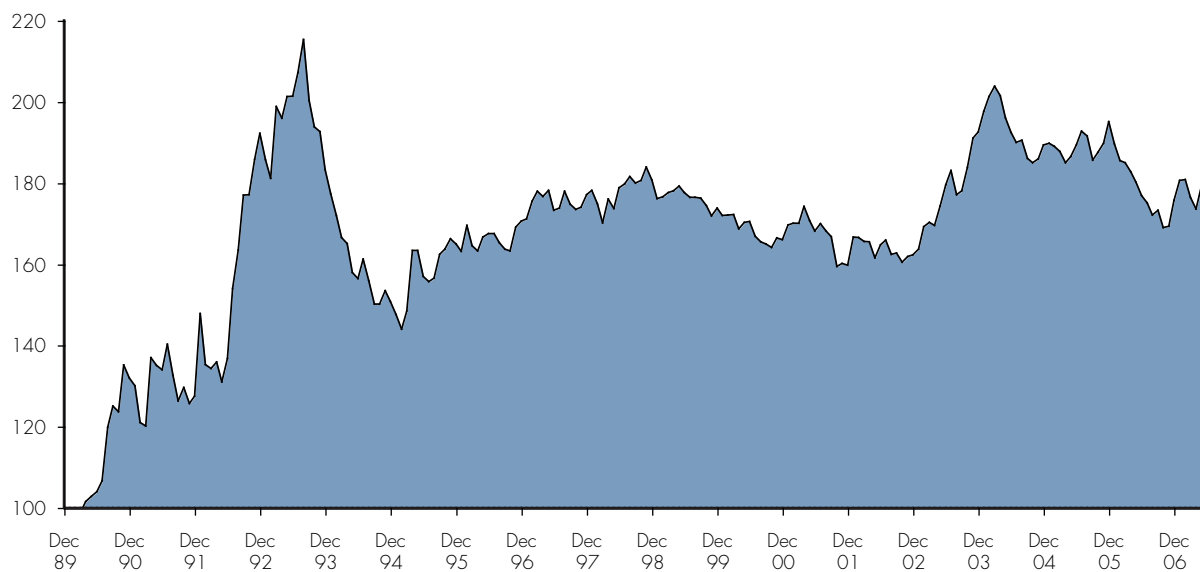
Source: Russell Investment Group

TABLE 6 | **Performance Statistics for Alpha from CISDM Currency Index**

	Jan 1990 to Jun 2007	Jun 2002 to Jun 2007	Jun 2004 to Jun 2007
Average alpha, % per annum	3.51	2.21	-0.8
Standard deviation, % per annum	11.15	6.67	6.3
Skew	1.55	0.13	0.30
Kurtosis	5.54	-0.92	-0.74
Sharpe ratio	0.37	0.36	-0.10
Success rate, %	52	57	50
Average win, % per month	1.25	0.91	0.7
Average loss, % per month	-0.91	-0.70	-0.8

Source: Russell Investment Group

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| TITLE | Active Currency Management: Strategy for Australian Investors |
| SECT | Performance of Pure Alpha Managers | PAGE | 21 |

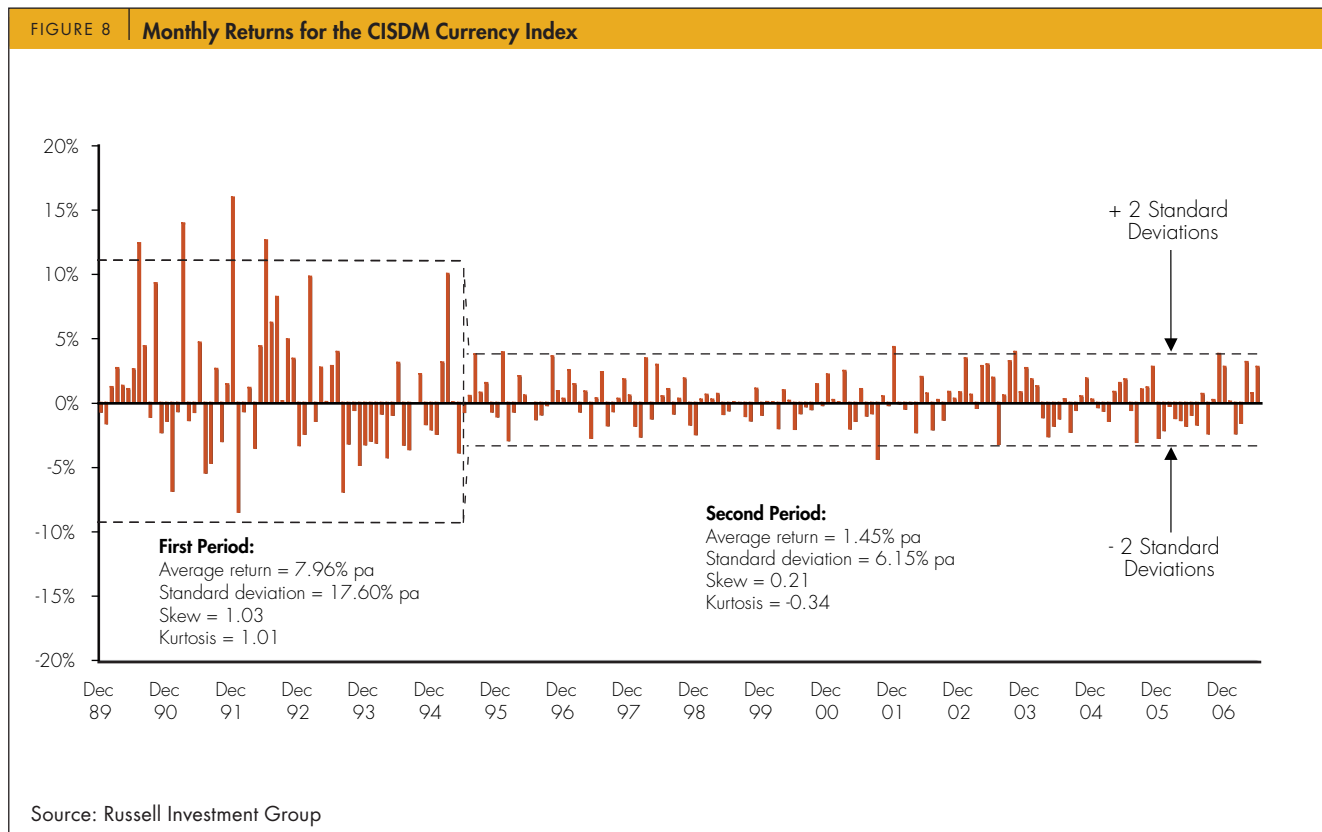## Time Variation

Based on the observations made above, it is conjectured that there has been a structural break in alpha around the mid 1990s. This is confirmed by splitting the sample into two sub-periods, with a break at end-June 1995. A structural break is apparent from the ±2 standard deviation bands for the two sub-periods overlayed in Figure 8.

The structural change may have occurred due to learning by some of the non-currency profit motivated participants such as central banks and corporations, who could have become more currency savvy. It also

coincides with a large increase in the number of hedge fund and CTA currency managers trading in the foreign exchange market. Empirical studies indicate weak or little evidence of profitability from central bank intervention in the eighties and early nineties. The level of profitability has increased over the last 10 years, as central banks have become more secretive and successful in their intervention.[27] However, there is weaker evidence of successful intervention and hence profitability in emerging economies.[28] As the evidence seems sufficient to conclude that the reduction in alpha is associated with a permanent structural change, investors should focus on data after June 1995.

FIGURE 8 | **Monthly Returns for the CISDM Currency Index**

+ 2 Standard Deviations

- 2 Standard Deviations

First Period:
Average return = 7.96% pa
Standard deviation = 17.60% pa
Skew = 1.03
Kurtosis = 1.01

Second Period:
Average return = 1.45% pa
Standard deviation = 6.15% pa
Skew = 0.21
Kurtosis = -0.34

Source: Russell Investment Group

[27] Sarno, L & Taylor, M (2001), "Official Intervention in the Foreign Exchange market: Is it Effective and, If so, How does it Work?", *Journal of Economic Literature,* 39, 839–868.

[28] Pereira, R & Cem, K (2005), "The Empirics of Foreign Exchange Intervention in Emerging Markets: The Cases of Mexico and Turkey", *IMF Working Papers,* 4/123.

Russell Research

TITLE	Active Currency Management: Strategy for Australian Investors
SECT	Performance of Pure Alpha Managers

PAGE 22

Figure 9 reveals that alpha has been negative on a rolling three-year basis since May 2006. Why has alpha declined? Is it just the transitory, cyclical nature of alpha, which in this particular cycle is due to an unfavourable macro economic environment? Part of the story may relate to low volatility, with limited opportunities for active management.
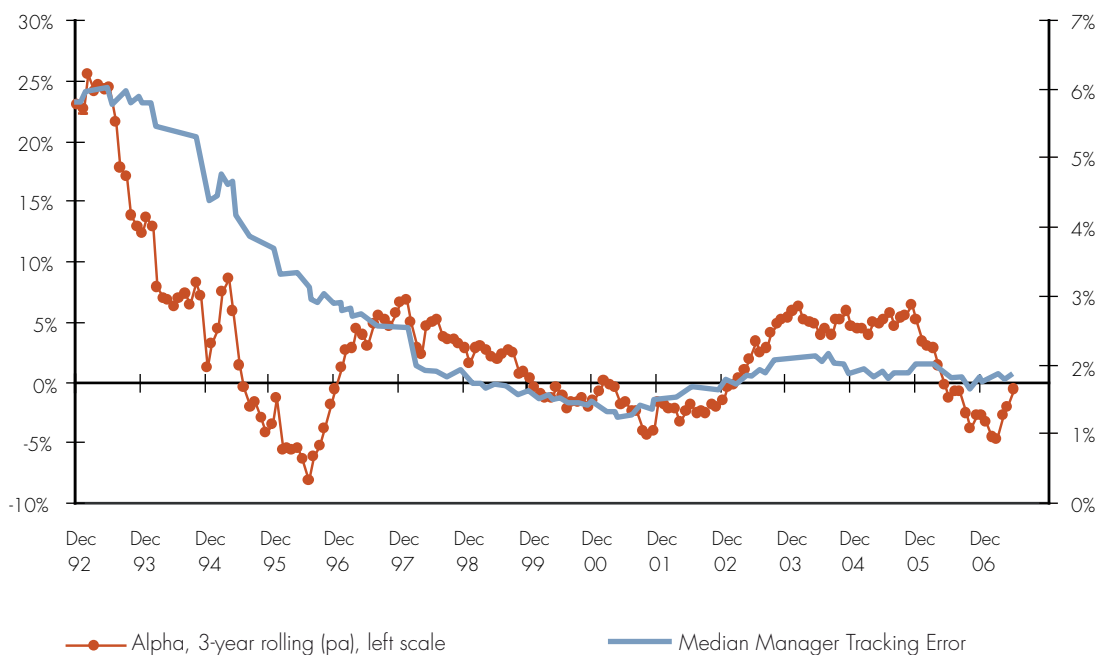
It may be that currency managers have been unwilling to take a lot of risk in the current market environment due to a lack of opportunities. However, this notion is disputed by Figure 9, which reveals that tracking error has remained relatively consistent at near 2% since about 1996.

On the other hand, there is evidence of a decrease in the opportunity set. Figure 10 reveals that cross-sectional volatility (CSV) of the major currencies has been relatively low over recent years. Apart from a breakdown in the relationship between alpha and CSV during the period of 1999 to 2004, these two variables have moved in unison.

One potential reason for a breakdown in the relationship is that the CSV series as plotted in Figure 10 does not capture the opportunity set for all the different styles of managers. In particular, the value-add opportunity for styles that operate over longer time horizons (e.g. value, carry) may not be captured by a monthly volatility measure. Accordingly we also examined average volatility across *cumulative* 3-year returns. This CSV measure was found to have a much stronger association with alpha over the period 1999 to 2004.

To access a more effective measure of alpha potential, we regressed 3-year rolling median manager alpha against tracking error plus the two CSV measures, i.e. based on monthly and 3-year cumulative returns respectively. All three variables were significant, and together explained 58% of the variation in alpha. Figure 11 depicts the relationship by plotting alpha against the values predicted by the model. Notably, the model helps explain the low level of alpha in recent years.

FIGURE 9	**Alpha & Tracking Error (% p.a.) of CISDM Currency Index**

Source: Russell Investment Group

Russell Research

TITLE	Active Currency Management: Strategy for Australian Investors
SECT	Performance of Pure Alpha Managers

Russell

PAGE 23

FIGURE 10 | **Alpha & Cross-Sectional Volatility (% p.a.) of the Major Currencies**

— ● — Alpha, 3-year rolling (pa), left scale

—— 36-month moving average of monthly cross-sectional volatility
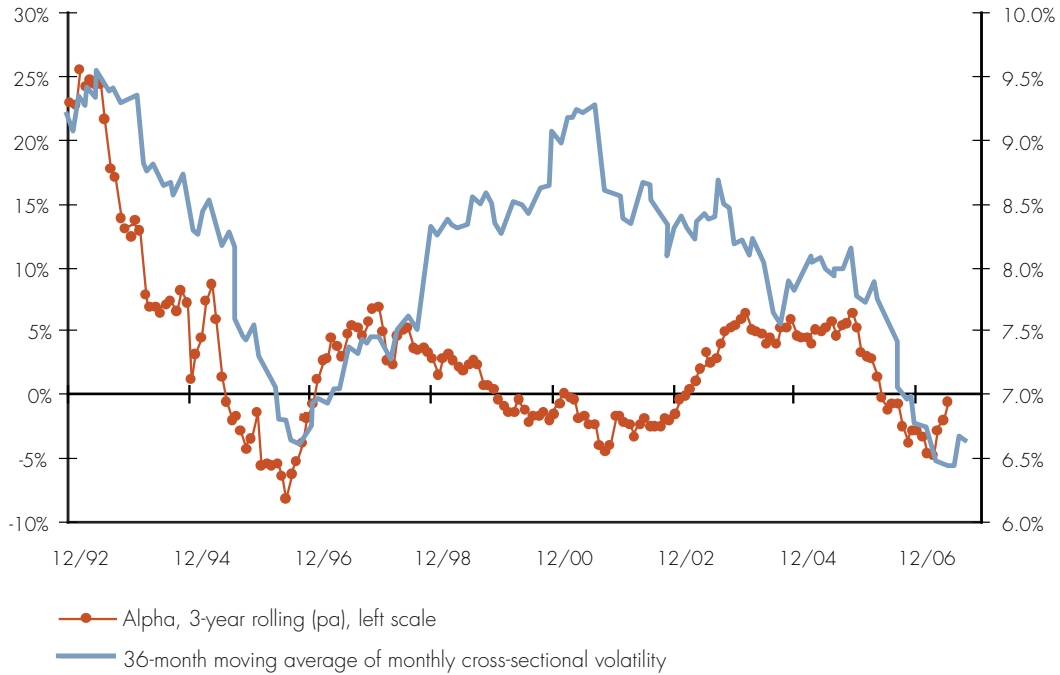
Source: Russell Investment Group

FIGURE 11 | **3-Year Rolling Alpha: Actual & Regression Model**

— ● — Alpha, 3-year rolling (pa)　　—— Predicted Value from Regression
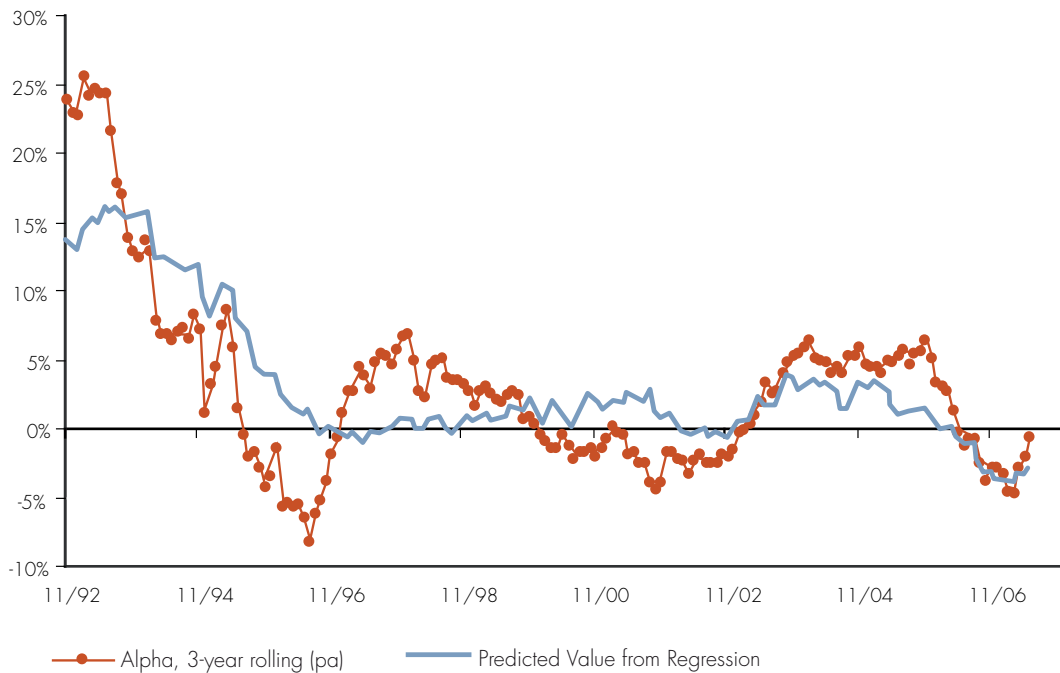
Source: Russell Investment Group

There are two reasons to expect alpha to improve going forward. First, the recent low level of CSV is unlikely to be sustained. There is a reasonable possibility that alpha may increase in the future along with higher currency volatility. Second, a hint of a currency alpha cycle with duration of about 3 to 4 years can also be seen in Figures 9–11. Given that the down part of the current cycle is about 1.5 to 2 years along, the negative part of this cycle may be approaching its end (if the cycle continues). Table 7 shows that some impressive returns have been achieved in the years after the low point in the currency alpha cycle.

TABLE 7	Bounce Backs in Alpha Cycles (Rolling 3-Year Alpha, % pa)			
Median Manager Underperformance (% pa)		Subsequent Alpha (% p.a.)		
Low Points	1 Year u/perf	Year 1	Year 2	Year 3
Jul 1996	-8.40	4.5	5.1	2.2
Oct 2001	-4.50	-2	4.7	5.1
Mar 2007	-4.80	?	?	?

Source: Russell Investment Group

The National Australia Bank survey of major superannuation funds reveals that the portion of funds using external active currency managers has fallen sharply, from 44% in 2005 to only 16% in 2007.[29] This coincided with a period of negative alpha (refer Figures 9–11). It is intriguing to note a rise in the proportion of superannuation funds using active management between the 2002 and 2005 surveys, which coincided with a period of strong performance. Hence, it is dangerous to consider short periods of performance when deciding whether to use active currency management.

Fees

The pure currency alpha manager return data that has been analysed is gross of fees. Fees on pure currency alpha programs are structured similar to hedge fund and other alpha funds. There is a base fee of about 1% to 2%, plus a performance fee that is usually 20% but can vary between 10% and 35%. Typically, higher risk funds will charge a base fee of around 2%, while lower risk funds will charge a base fee of around 1%. Some of the traditional investment managers operating these funds have the base fee on a sliding scale, such that the base fee might work out to be about 75 basis points for large accounts.

Summary & Implications

Historical performance data for pure currency alpha managers provides a more compelling case for active management than for A$ based overlays. While it is likely that there has been some permanent decline in available alpha since the mid-1990s, we suggest the absence of alpha over the last few years is likely to prove cyclical and hence temporary. There appears to be a hint of alpha cycles in the data, with the recent deterioration in performance coinciding with lower volatility. A reasonable likelihood exists that volatility will pick up, and the alpha cycle can enter an upswing in the years ahead. Indeed, the existence of long-term inefficiencies in currency markets (see earlier discussion) suggests that positive alpha can be expected through time. Net alpha (after fees) should be sufficiently high enough going forward to justify inclusion of pure alpha currency mandates in the portfolio, providing the investor is willing to accept active risk.

[29] nabCapital Superannuation FX Survey 2007, released October 2007. The level of hedging mentioned in this paragraph refers to the total portfolio.

6) Conclusion

Successful active management in any asset class is a difficult endeavour. But some markets or asset classes seem more predisposed to providing alpha than others. Conceptually currency markets appear to exhibit the necessary preconditions for being a good potential source of alpha. They offer observable and persistent inefficiencies, plus low transaction costs and high liquidity.

An active currency strategy involves two key decisions. The first decision is whether to use active currency overlays. Our analysis suggests that active overlays should not be used as matter of course, given that alpha generated from A$ based overlays has been limited on average, and tends to occur only in certain circumstances (e.g. during periods of A$ strength). Relevant considerations in deciding whether an active overlay is appropriate include risk control, assessments of manager skill, and perhaps views of currency direction. With regard to risk control, the interrelationship between type of benchmark and style should be considered when selecting managers. Our analysis suggests that investors with an unhedged benchmark may favour managers using a carry style and to a lesser extent the value style, which offer protection against A$ strength. For fully hedged benchmarks which are exposed to A$ weakness, the value style also seems appropriate, while carry appears to be redundant. Alternatively, a dynamic style might help control risk, regardless of the nature of the strategic benchmark.

The second decision is whether to employ unconstrained pure currency alpha managers. These managers may be appropriate for investors with appetite for active risk. This decision can be made independently of the overlay structure – a pure currency alpha manager may sit alongside any currency overlay. Theoretically, pure alpha managers have a greater potential to outperform compared to overlay managers due to the absence of constraints (particularly relative to polar benchmarks). Our empirical analysis of historical performance presents a much stronger case for pure alpha management than for overlays. There is some evidence that alpha from unconstrained currency specialists has decreased through time, and has been negative over the last few years. Nevertheless, we believe that alpha generation will recover over the years ahead, and will be more than adequate to justify the inclusion of pure currency alpha managers in an investor's portfolio.

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Appendix 1.
Results from Previous Performance Studies

	All Accounts	All Composites	US$ based*	A$ based*	Non-US$ based*	0% hedged*	50% hedged*	100% hedged*
Strange (1998)	152 accounts across 14 managers over a 8-year period, ending 1997							
Value added	1.90	1.75	1.80		2.00	n/a	1.20	2.20
Success ratio	60	62	60		62	n/a	60	60
Information ratio	0.54		1.03		1.18	n/a	0.61	1.93
Hersey & Minnick (2000)	200 accounts across 20 managers over a 10-year period, ending 1999							
Value added	1.55		1.52		0.93	0.25	1.20	1.60
Success ratio	50		50		45		55	45
Information ratio	0.69		0.68		0.26	0.06	0.55	0.68
Balridge et al (2000)	241 accounts & 18 manager composites over a 10.5-year period, ending Jun 1999							
Value added	1.06	1.48	1.06			2.19	1.17	0.52
Success ratio	54	56	56			57	59	50
Information ratio	0.55	0.63	0.55			1.00	0.64	0.10
Ooi & Ansley (2004)	82 accounts & 10 manager composites over a 10.5-year period, ending Dec 2003							
Value added			1.72	0.66		1.15	0.58	n/a
Success ratio			77	52		56	71	n/a
Information ratio			0.94	0.41		0.62	0.42	n/a
Taylor & Farstrup (2006)	131 accounts & 13 manager composites over a 15.75-year period, ending Sep 2005							
Value added	0.96	1.09				1.33	0.84	0.60
Success ratio	46	51				48	53	44
Information ratio	0.36	0.46				0.46	0.37	0.21
Summary Statistics for Value Added								
Average	1.37	1.44	1.53	0.66	1.47	1.23	1.00	1.23
Minimum	0.96	1.09	1.06	0.66	0.93	0.25	0.58	0.52
Maximum	1.90	1.75	1.80	0.66	2.00	2.19	1.20	2.20
Summary Statistics for Success Ratio								
Average	53	56	61	52	54	54	60	50
Minimum	46	51	50	52	45	48	53	44
Maximum	60	62	77	52	62	57	71	60
Summary Statistics for Information Ratio								
Average	0.54	0.55	0.80	0.41	0.72	0.53	0.52	0.73
Minimum	0.36	0.46	0.55	0.41	0.26	0.06	0.37	0.10
Maximum	0.69	0.63	1.03	0.41	1.18	1.00	0.64	1.93

Notes: * Based on composites. Yellow highlighted cells refer to USD based accounts or composites. Green highlighted cells refer to A$ based accounts or composites.

Appendix 2.
Correlation of Currency Styles with A$ (MSCI-Based)

FIGURE 12 | **Correlations by style**

Carry

$y = 0.0033x^2 + 0.1806x + 0.0088$
$R^2 = 0.5211$

$y = 0.1818x + 0.0757$
$R^2 = 0.5156$

AUD

Dynamic

$y = 0.0039x^2 + 0.1482x - 0.0791$
$R^2 = 0.4414$

$y = 0.1495x - 0.0005$
$R^2 = 0.4315$

AUD

Neutral

$y = -0.0031x^2 + 0.0387x + 0.0413$
$R^2 = 0.134$

$y = 0.0377x - 0.0213$
$R^2 = 0.1092$

AUD

Trend

$y = 0.0209x^2 + 0.0706x - 0.5014$
$R^2 = 0.2777$

$y = 0.0731x - 0.0939$
$R^2 = 0.0731$

AUD

Value

$y = 0.0054x^2 + 0.0532x + 0.0573$
$R^2 = 0.1807$

$y = 0.0539x + 0.1769$
$R^2 = 0.1348$

AUD

FIGURE 13 | **Correlations by hedge ratio**

0% Hedge Ratio

$y = 0.0047x^2 + 0.1545x - 0.0703$
$R^2 = 0.5953$

$y = 0.1561x + 0.0231$
$R^2 = 0.5778$

AUD

50% Hedge Ratio

$y = 0.0095x^2 + 0.1215x - 0.1421$
$R^2 = 0.5701$

$y = 0.1246x + 0.0476$
$R^2 = 0.4787$

AUD

100% Hedge Ratio

$y = 0.005x^2 - 0.0112x - 0.2006$
$R^2 = 0.0899$

$y = -0.0124x - 0.0927$
$R^2 = 0.0207$

AUD

FIGURE 14 | **Correlations by style and hedge ratio**

Dynamic with Hedge Ratio of 100%

$y = 0.0115x^2 + 0.0569x - 0.5066$
$R^2 = 0.5967$

$y = 0.0452x - 0.3421$
$R^2 = 0.3331$

AUD

Value with Hedge Ratio of 100%

$y = 0.0016x^2 - 0.0493x + 0.1098$
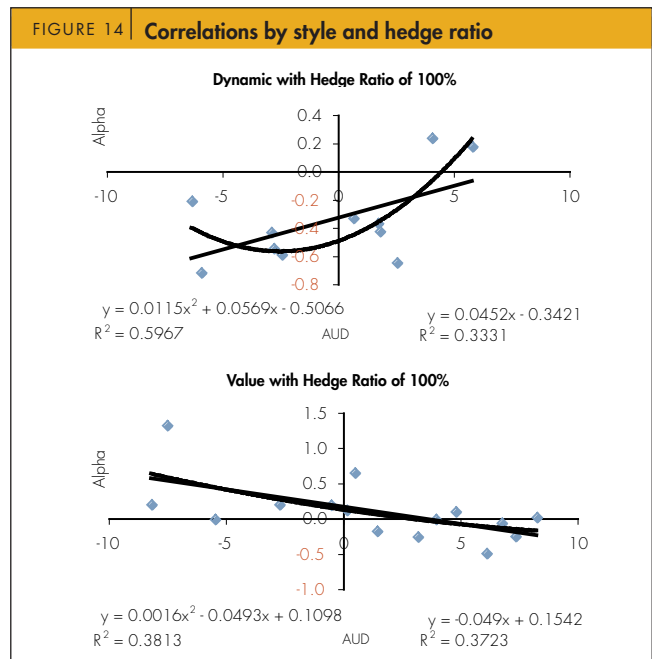$R^2 = 0.3813$

$y = -0.049x + 0.1542$
$R^2 = 0.3723$

AUD

FIGURE 14 | **Correlations by style and hedge ratio continued...**

Carry with Hedge Ratio of 0%

$y = 0.0055x^2 + 0.2179x - 0.0927$
$R^2 = 0.4941$

$y = 0.2199x + 0.0198$
$R^2 = 0.4839$

Carry with Hedge Ratio of 50%

$y = 0.0002x^2 + 0.1546x + 0.118$
$R^2 = 0.5218$

$y = 0.1547x + 0.1217$
$R^2 = 0.5218$

Dynamic with Hedge Ratio of 0%

$y = 0.0018x^2 + 0.1941x + 0.0105$
$R^2 = 0.5483$

$y = 0.1944x + 0.0478$
$R^2 = 0.5466$

Dynamic with Hedge Ratio of 50%

$y = 0.0052x^2 + 0.1271x - 0.0882$
$R^2 = 0.335$

$y = 0.1287x + 0.0151$
$R^2 = 0.3182$

Neutral with Hedge Ratio of 0%

$y = -0.0075x^2 + 0.0857x - 0.0376$
$R^2 = 0.3002$

$y = 0.0815x - 0.1848$
$R^2 = 0.2499$

Neutral with Hedge Ratio of 50%

$y = 0.074x^2 + 0.2201x - 0.3059$
$R^2 = 0.5269$

$y = 0.2013x + 0.1136$
$R^2 = 0.3594$

Trend with Hedge Ratio of 0%

$y = 0.0055x^2 - 0.0163x - 0.1702$
$R^2 = 0.0969$

$y = -0.0126x - 0.0558$
$R^2 = 0.0111$

Trend with Hedge Ratio of 50%

$y = 0.0228x^2 + 0.0847x - 0.5619$
$R^2 = 0.3198$

$y = 0.0877x - 0.1001$
$R^2 = 0.0976$

Value with Hedge Ratio of 0%

$y = 0.0066x^2 + 0.0549x - 0.0293$
$R^2 = 0.2332$

$y = 0.0559x + 0.1169$
$R^2 = 0.1583$

Value with Hedge Ratio of 50%

$y = 0.0071x^2 + 0.1093x + 0.1446$
$R^2 = 0.4135$

$y = 0.1075x + 0.3073$
$R^2 = 0.3588$

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