

The Impact of Hedge Funds on Financial Markets: Lessons from the Experience of Australia

Bob Rankin

1. Introduction

Recent discussions on the impact of hedge funds on financial markets have mainly focused on the prudential risks they pose to lenders and counterparties, or, in extremis, the risks they pose to financial system stability (see Reserve Bank of Australia (1999a) for an overview of these issues). In contrast, the effects of hedge funds on particular market prices and on the integrity of those markets has received little attention to date.

The present paper examines the behaviour of the market for the Australian dollar during 1998, when hedge funds were active in the market. It concludes that the activities of hedge funds came to dominate the market during the middle of the year, affecting the dynamics of price discovery for the period while this dominance continued. This occurred despite the fact that the Australian dollar is floating, so that there was no fixed exchange rate to attack as there was in Hong Kong or, many years earlier, in the UK in 1992.

The possibility that market participants can engage in ‘herding’ behaviour is now well recognised in the academic literature. This behaviour can result from a number of factors, including the pattern of information acquisition in markets (where traders with short horizons will focus on trying to learn what other traders know rather than on trying to learn new information) and the tendency of traders in many markets to try to emulate the results of other traders (chasing common benchmark returns). The literature also demonstrates that markets which display herd behaviour may also feature overshooting of prices – that is, prices can move away from ‘correct’ values for short periods of time (I am here referring of course to ‘model time’ rather than real time).

The academic literature also recognises the potential for there to be circumstances in which a speculative attack in a market may be self-fulfilling. The mechanism for this is that there may be multiple equilibria in the market; the initial level of price in the market may be sustainable in the absence of a speculative attack, but such an attack may drive the price to a different equilibrium level with no automatic tendency for the price to return to where it was even after the speculators have left the market. (This might not matter much if multiple equilibria tend to be closely bunched together, but there is no strong reason to believe that they would be.) Again, it seems likely that the risk of such an event would be increased by the presence of position-takers who are large enough to move the market and who might expect to profit by precipitating a speculative attack.

Combined with the possible existence of multiple equilibria, herd behaviour can lead to price destabilisation over significant periods.

The existence of herd behaviour suggests that it can be rational to bet on an existing trend movement in markets, and undermines the traditional view that profitable speculation must be stabilising. That view was based on the assumption that profitable speculation must involve buying when the price is low and selling when the price is high. But, in markets characterised by herd behaviour, selling when the price is already low can be profitable if it induces others to follow and thereby cause the price to fall further.

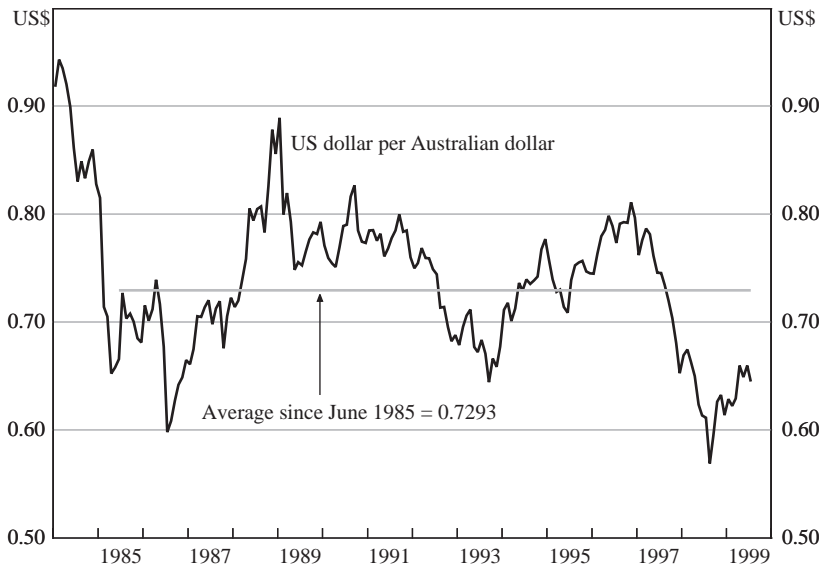
The problem may be particularly acute where there are players large enough to exert a noticeable influence on the market. There is less in the academic literature about the possible effects on markets of the presence of large dominant traders, although some models of currency attacks focus on such issues. Of course, this is not wholly independent of the above issues: we might expect smaller traders to focus their information gathering on learning what the large traders are doing, so that the presence of large traders would increase the prospects for herd behaviour.

Hedge funds have found themselves in a strong position to exploit such trading strategies following their success in the UK devaluation of 1992. The publicity generated by that event gave them enormous standing in financial markets and many traders adopted strategies which mimicked those of the hedge funds. In the foreign exchange market, in particular, banks and investment banks systematically keep their better clients informed of the hedge funds' daily trading strategies. Combined with the willingness of some hedge funds to use leverage to build very large positions, this status places hedge funds in the position of market leaders, with the ability to influence the behaviour of others in markets.

2. The Experience of Australia

First, it is useful to describe the background to the Australian dollar market. The Australian dollar was floated in 1983, and has since then fluctuated with demand and supply in the market. For a small, open economy which is subject to real external shocks in the form of shifts in the terms of trade, a floating exchange rate should help to insulate the domestic economy from the effects of those shocks. The Reserve Bank generally does not intervene in the foreign exchange market when the currency moves up or down, allowing it to perform its function as an insulator. However, the Bank does intervene when there is a reason to believe that the exchange rate is overshooting – that is, moving more than can be justified on underlying economic grounds. Typically, this is unlikely to occur until the exchange rate has moved a considerable way in either direction. The result of this approach has been that in recent years the Australian dollar has fluctuated in a wide cyclical band around a mean of about US73 cents; movements from peak to trough have been around 30 per cent or so. The cyclical pattern closely follows the cycle in commodity prices.

Figure 1: Australian Dollar
Monthly



When the Asian financial crisis erupted in mid 1997, the Australian dollar was already falling from its peak but was still around its mean level. With widespread expectations that the crisis would lead to slower growth in Asia and further weakness in commodity prices, as well as a direct worsening of Australia's trade position because of the high proportion of trade that was with Asia, it seemed appropriate that there be further depreciation of the currency. The Bank intervened only a little in 1997 and early 1998 as the currency fell, during short-lived episodes of extreme uncertainty which caused liquidity to dry up (such as the period in January 1998 when the Indonesian rupiah fell to its trough of 18 600 against the US dollar and there was a fear of widespread market failures in the region). The Reserve Bank's assessment throughout this period was that the Australian dollar market mechanisms were operating normally and its interventions were small.

One key aspect of the normal functioning of the market was that exporters began to buy Australian dollars once the exchange rate had fallen below US70 cents, in order to hedge future export receipts against a recovery in the rate. This helped to stabilise the exchange rate at around US65 cents, down over 10 per cent from its mean level, between December 1997 and March 1998. The large global macro hedge funds, which had begun to accumulate short positions during this period, accelerated their selling from March and built up an aggregate short position – that is, a position where they had sold Australian dollars which had been borrowed – which we estimate to have reached about \$A12 billion by May 1998. (One of the major problems in analysing the effects of hedge funds is that we have no hard data on their positions, although we believe our estimates – based on liaison with dealers – are accurate.)

The large sales by these hedge funds came only after the downward trend was well established and the currency had already fallen by a large amount. Since the funds would have anticipated these positions to become profitable, they must have believed that the trend would continue. The positions were established gradually over a long period – two quarters or so – and did not have any sudden impact on the exchange rate. Indeed, the exchange rate remained fairly orderly through this period.

The hedge funds, having established these large short positions, took a much more aggressive selling stance as the exchange rate approached its post-float lows around US60 cents, a time when the market was naturally quite sensitive. They began by signalling to other market players that they were about to attack the Australian dollar and that the Reserve Bank would be unable to stand in their way because of the volume of funds they had at their disposal, a move which heightened uncertainty and deterred potential buyers from remaining in the market. Once the hedge funds began selling, a key feature of their strategy was to concentrate sales into periods of thin trading (such as lunchtime in the Sydney market and the shoulder periods between Sydney and London trading). One consequence was that exporters, who had been keen buyers of Australian dollars at higher levels, not only stopped buying, but began to sell in the expectation that the exchange rate would fall further – a classic example of herd-like behaviour.

It was at this stage that the Reserve Bank intervened on a considerable scale, buying about \$A2.6 billion in early June over the three days or so that the aggressive selling continued. The Bank ceased intervening once it was clear that the aggressive selling had also ceased, by which time the exchange rate had fallen from about US60 cents to about US58 cents. This was short of the target level which one of the hedge funds had set itself (it boasted to the Bank that it was not going to square its position above US54 cents), but the Bank's intervention had exhausted their willingness to add to their already large short positions.

The initial short positions established in the first half of 1998 were strongly in profit for a substantial period and thus there was ample opportunity for the hedge funds to take their profits between June and September, but it seems that only limited profit-taking occurred, as hedge funds held on in the expectation of further falls. In fact, the Australian dollar did fall as far as US55.3 cents in August, but events then moved very quickly against the funds. In late September and early October, the near-collapse of the hedge fund Long-Term Capital Management caused banks to cut back on their funding to hedge funds in general. Deprived of the credit used to fund their short positions, hedge funds were forced to cover those positions by buying in the market. This deleveraging produced a sharp rise in the exchange rate back to around US65 cents, roughly where it had been before the hedge funds' selling started six months earlier.

2.1 The lessons

There are two aspects of this experience which need to be examined carefully.

First, in the June 1998 episode, the hedge funds acted with the apparent intention to then force a change in the price. They were not merely transacting to take advantage of expected events, but were doing so in a way which seemed intended to try to influence the course of events, posing a risk to market integrity. Information provided by authorities in Hong Kong and South Africa suggests that hedge funds behaved in similar, and similarly destabilising, ways in those markets at different times during 1998.

Second, and perhaps more important, the behaviour of the hedge funds in June affected the dynamics of the market throughout the remaining period in which they held their large short positions. This is most clearly seen following the Russian default in August. The fear that Russia would dump commodities led to a sharp fall in commodity prices, and in currencies traditionally linked to commodities such as the Australian dollar. This created what appeared to other market participants to be another window of opportunity for the large hedge funds to take the market on, as they had done in June, and these other participants pulled back from their normal activities while they waited to see what the hedge funds and other traders would do.

The academic literature on herding suggests that this might be rational behaviour, but the result was a fall in liquidity at a time when it was most needed. The market took on a 'one-way' characteristic: traders were prepared to sell (on the assumption that others would sell if they did anything at all) but were not prepared to buy until they saw others buying and the market stabilise. Exporters, who might have been natural buyers at such low levels of the exchange rate, had been hurt by their earlier attempts to 'pick the bottom' at US65 cents and also waited to see what others would do. The Australian dollar began to fall even against other weak currencies affected by the pessimism about commodity prices. The Reserve Bank responded by intervening in the market, buying Australian dollars to ensure that there remained a two-way market.

In the event, the hedge funds did little and, once this became clear to other traders, they returned to more normal behaviour quickly. Nevertheless, the overhang of concentrated short positions held by the hedge funds continued to weigh on the market until the deleveraging occurred in October.

More generally, there was a temporary breakdown in the structure of the market which coincided with the presence of the large hedge fund positions. During this period, the exchange rate fell below the level which was implied by the traditional explanatory variables – commodity prices and interest rate differentials – where it remained until the large positions were removed.

Figure 2: Australian Dollar Model Performance
Estimated to December 1997

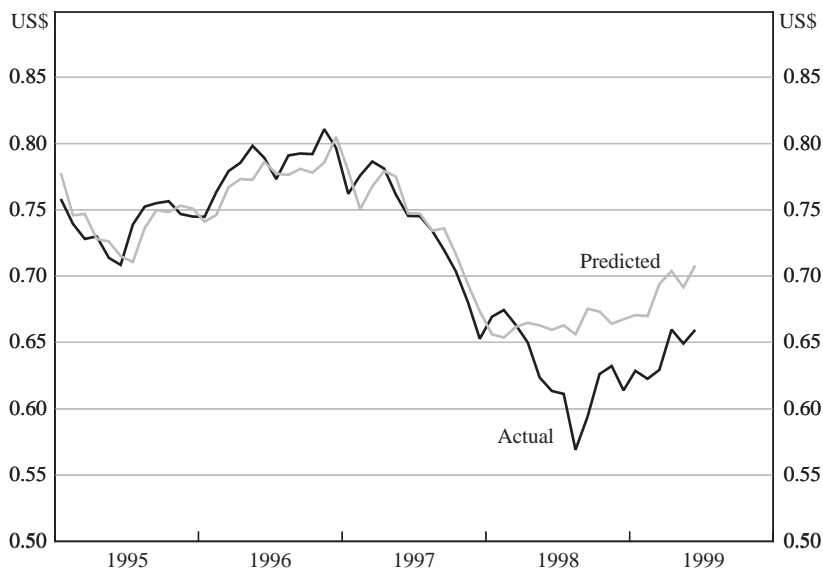
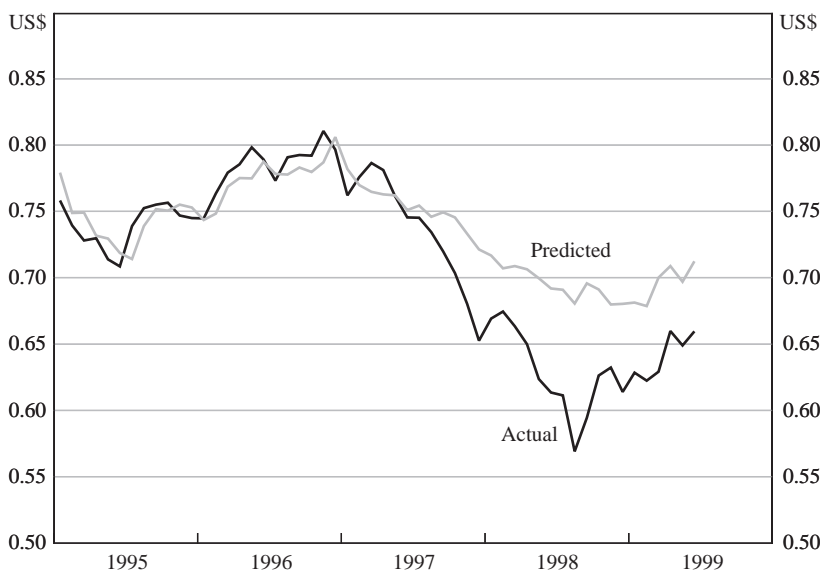


Figure 3: Australian Dollar Model Performance
Estimated to December 1996



This can be seen in the performance of a simple unrestricted error-correction model of the exchange rate when it is used to forecast the changes in the rate over 1998. Equations relating the Australian dollar/US dollar exchange rate (which is the bilateral rate which accounts for the vast bulk of trading in the market and on which traders focus in their decision-making) to commodity prices (represented by the Westpac commodity futures index, which is commonly used by traders as a measure of commodity prices) and the 3-month interest rate differential were estimated on data up to end 1996 or end 1997. When used to forecast out of sample, these models show:¹

- the forecast rate falls sharply in late 1997 as the Asian crisis bites on commodity prices, and the actual rate falls even faster – the two then move towards convergence in early 1998;
- in mid 1998, the forecast rate falls a little further but the actual again moves down sharply; and
- the two again move towards convergence after September 1998.

These results appear to be suggestive of an impact of the presence of hedge funds on the determination of the exchange rate. Of course, the 1998 period was one of considerable disturbance in markets, and there are several possible reasons why the model might break down at that time. One possible reason is that Australia was regarded as likely to be directly affected by the Asian crisis, leading to a change in the determinants of the exchange rate to more Asian-related variables. This might have occurred to some extent, but if so we would have expected the model errors to continue through to early 1999, since it was only then that perceptions of Asian recovery began to take hold. The period of poor performance of the model matches much more closely the period of activity of the hedge funds in our market. From early 1998 to September, the forecast errors build to their peak over exactly the period in which the large hedge funds built and held their dominant short positions, and the errors then subside at the same time as the hedge funds squared up in the deleveraging forced upon them after the near-collapse of LTCM.

3. Are Hedge Funds Different from Other Large Players?

Some claim that hedge funds are being made scapegoats for recent instability, and that in fact their activities are no different to those of other market participants such as commercial banks or investment banks, which can also take large highly geared positions in different markets at times.

This argument does not take into account the very different business approaches of the various types of institutions. The great bulk of commercial and investment bank balance sheets are devoted to supporting client businesses rather than position-taking. To the extent that they do engage in position-taking, it tends to be at a disaggregated level, by individual dealers. In contrast, hedge funds' positions are

1. See Appendix A for details of the equations.

concentrated and centrally controlled. One consequence of this is that individual positions of banks tend to be less strongly held, and therefore less likely to have effects on markets. Also, banks are mindful of their wide-ranging relationships with governments and businesses in individual countries, and therefore less inclined to pursue trading strategies which could disrupt a country's markets and harm the bank's reputation. Hedge funds, in contrast, have no ongoing relationships with most of the countries in which they trade and hence can be purely opportunistic. These differences are to a large extent built into the cultures of the different institutions.

It follows from the above that it is not valid to conclude that, because hedge funds' assets are much smaller than those of banks (or even mutual funds, pension funds and life offices), their impact on markets is less. For one thing, the extensive use by hedge funds of off-balance sheet instruments gives them more leverage and hence influence than their asset size would suggest. Perhaps more importantly, it is *changes* in positions that influence market prices, and in this respect hedge funds are much more active than banks (whose main business is not position-taking) or mutual funds, pension funds or life offices (whose positions in markets are constrained by the benchmarks they follow).

4. Conclusion

If it is accepted that some hedge funds can affect the dynamics of markets, what can be done to limit their effects? Prescriptions of policies for dealing with issues posed by hedge funds have focused on improving transparency, disclosure, and counterparty risk management.² Though primarily aimed at addressing prudential and system stability concerns, these measures would also impact on the behaviour of market participants in a way which is likely to reduce incidence of herding and hence address also the issues raised in this paper.

More generally, it has been proposed by some commentators that small countries can minimise the chances of a speculative attack by developing deep and liquid markets, and that countries should concentrate on avoiding policies which might encourage hedge funds (or indeed any other speculators) to build large positions. I will conclude with some remarks about these 'conclusions'.

On the first, while there are many good reasons for a country to develop deep and liquid markets, the evidence does not support the conclusion that they reduce the risk of speculative attack. In fact, the opposite seems to be the case. Before the crisis, Thailand and Hong Kong had by far the most liquid foreign exchange markets in Asia (except Japan); relative to GDP, turnover was well up with developed country standards. Similarly, the Hong Kong stock market was the most liquid market in non-Japan Asia, and the Australian dollar is the seventh most actively traded currency in the world. Yet it was these markets, rather than other less liquid markets in the region, that were attacked. Market liquidity is one of the characteristics favoured by speculators, because it gives scope to establish and later reverse sizeable positions. In this respect, the activities of hedge funds are more of an issue for

2. A summary of these prescriptions is contained in Appendix B.

medium-sized economies with active markets than small economies with illiquid markets. The real issue facing small countries is not the liquidity of their markets but the potential to be overwhelmed by the funds flows originating from the large economies. When a very small number of market participants can quickly establish a position in a currency that is a large percentage of the country's GDP, as was the case in Thailand and Hong Kong, the potential for market disruption is very high.

Turning to the second 'conclusion', it has been suggested that the activities of hedge funds can be encouraged by the interventions of the authorities in markets. This seems to be derived from the concept of a speculative attack on a fixed exchange rate, where speculators buy from the central bank as it stands in the market. It is true that in some cases hedge fund positions have been established through transactions against central banks; the short positions in sterling in 1992 are an example. However, the Australian experience of 1998 shows that hedge funds can build very large positions even when the central bank does not stand on the other side of the market; the bulk of the short positions in Australian dollars were established during times when the Reserve Bank was not in the market. One of the most important lessons to learn from the experience of 1998 is that hedge funds cannot be ignored as a major factor affecting floating exchange rates (and other floating financial prices) as well as fixed ones.

Appendix A: Exchange Rate Model

Dependent variable: DAUD

Estimated period	Nov 1988 – Dec 1996		Nov 1988 – Dec 1997	
	Coefficient	t-stat	Coefficient	t-stat
Constant	-0.22	-1.41	-0.12	-0.83
DWCFI	0.27	4.35	0.29	4.73
ID	0.0007	0.67	0.0015	1.67
AUD(-1)	-0.17	-3.05	-0.15	-2.69
WCFI(-1)	0.04	1.14	0.02	0.53
R-bar squared	0.20		0.21	

Notes: WCFI is the level of the Westpac commodity futures index (log).
 ID is the differential in interest rates on 3-month bank bills/bankers acceptances (in levels).
 AUD is the Australian dollar/US dollar bilateral exchange rate (log).
 D in front of a variable indicates that it is in first differences.
 Data are monthly. The estimation period was determined by availability of the WCFI,
 which is available from November 1988 onwards.

Appendix B: Studies on Highly Leveraged Institutions

The Basel Committee on Banking Supervision set up the Working Group on *Banks' Exposures with Highly Leveraged Institutions*, which has released two reports – one on banks' exposures and one on recommended changes to banks' practices (the Brockmeijer reports). The latter recommended that banks establish clear policies and procedures for dealing with HLIs, use information about HLIs' risk characteristics (e.g. leverage, concentration and risk management) when they assess credit, and develop more accurate measures of exposure to derivatives.

The Committee on the Global Financial System set up two working groups on disclosure:

- The Working Group on Transparency Regarding Individual Positions (the Fisher Report, completed March 1999) has recommended individual reporting by financial institutions to clients and lenders about their risk profile, including data on the size of risks by reporting institution and the distribution/concentration of risk by risk type (credit risk and market risk) and market group (type of product and geographical region). A template was suggested and it was agreed to establish a Multi-disciplinary Working Group on Enhanced Disclosure, incorporating representatives from other bodies (Basel Committee on Banking Supervision, the International Association of Insurance Supervisors, and the International Organisation of Securities Commissions) as well as the Committee on the Global Financial System to refine the template and establish a pilot study.
- The Working Group on Transparency Regarding Aggregate Positions (the Patat Report, completed June 1999) recommended the collection of more frequent data on market turnover and the positions of major financial participants, initially focused on the foreign exchange market. It recommended that positions and concentrations be published in aggregate form, with the focus on type of institution and not individual firm, and that BIS data be expanded to include off-balance sheet funding by banks, non-bank lending and possibly more detail on the currency and maturity profile of loans.

The President's Working Group on Hedge Funds, Leverage, and the Lessons of LTCM, published April 1999, is the US Government response to the LTCM episode. It recommended more frequent and meaningful information be provided by hedge funds, greater public disclosure by financial institutions, and improvement in risk management and regulation.

The Counterparty Risk Management Policy Group (CRMPG) report on *Improving Counterparty Risk Management Practices*, published June 1999, is the market's response to the LTCM episode. It lists critical information required for counterparty dealings with hedge funds, recommends integrating the assessment of leverage, liquidity and market risk, and examines improved ongoing processes for risk management and documentation.

The Working Group on Highly Leveraged Institutions (HLIs) was established by the Financial Stability Forum in April this year after the G7 summit in Köln. Its terms of reference included assessing the implications of HLIs for financial stability in

developed and developing economies, drawing together and assessing the work already done in the various groups that exist, and examining the policy responses. Chaired by Howard Davies of the UK Financial Services Authority, it has met three times and is currently preparing a status report for the Forum Meeting on 15 September in London.

The final report of the Working Group is due before the 2000 Spring Meeting of the Forum. It is expected to address issues such as risk management practices by firms, disclosure and transparency, the impact of HLIs on market dynamics in medium and small economies, and the arguments for and against direct regulation of hedge funds.

As part of its work, the Working Group has established a Study Group to report to it on the impact of HLIs on market dynamics in medium and small economies. The Study Group's terms of reference include assessing whether HLIs employed excessively aggressive tactics in markets of these economies, whether these tactics raised issues about market integrity, whether these tactics represent a systematic source of volatility, and the conditions that might make an economy more vulnerable to manipulation. The study group has visited Hong Kong SAR, Australia and New Zealand, a subset of economies in which HLIs were active in 1998. It will complete its final report by December this year.

References

- Reserve Bank of Australia (1999a), *Hedge Funds, Financial Stability and Market Integrity*, paper submitted to House of Representatives Standing Committee on Economics, Finance and Public Administration's Inquiry into the International Financial Markets Effects on Government Policy, June.
- Reserve Bank of Australia (1999b), *The Impact of Hedge Funds on Financial Markets*, paper submitted to House of Representatives Standing Committee on Economics, Finance and Public Administration's Inquiry into the International Financial Markets Effects on Government Policy, June.