

Background

In January 2004 the National Australia Bank (NAB) made the following three public announcements relating to losses from the foreign exchange options transactions:

- 13 January 2004 – an initial announcement of losses from unauthorised foreign currency trading activities estimated at A\$180 million.
- 19 January 2004 – an update of the losses was revised to A\$185 million but with a statement that they were not expected to exceed A\$600 million.
- 27 January 2004 – an announcement that the total losses were A\$360 million, which also included the impact of false transactions as well as a further amount of A\$175 million arising from a revised revaluation of the trading book at 19 January 2004.

KEY POINTS

These losses occurred principally because of an increase in risk-taking in the currency options portfolio, and combined with adverse currency movements (particularly in the last four months of calendar year 2003 and early 2004). The overstatements of the currency options portfolio value at 30 September 2003 was A\$42 million, and A\$92 million on 31 December 2003; and the continued weakening in the US dollar led to an escalation of these losses in early January 2004 to A\$185 million. A subsequent revaluation of the portfolio on 19 January increased the losses to A\$360 million.

The perpetrators of this scandal were four currency options traders – three in Melbourne and one in London - who were aware that significant trading losses had been incurred and concealed in 2002 and 2003, and in 2004.

The practice of smoothing profits and concealing losses had been undertaken by the traders for over two years, and possibly since 1998. The traders had concealed losses by entering various types of false transactions into their trading system. Various methods were used which exploited gaps in many controls. The key methods were: incorrectly recording genuine transactions, entering false transactions, and using incorrect revaluation rates.

The size of the positions was partially masked by false transactions but limits were still breached continuously.

One of the motivations of the Traders appears to have been the desire to achieve budgeted profits and receive bonus payments.

The foreign exchange losses were revealed by a ‘whistleblower’ on 9 January 2004 and brought to senior management attention on 12 January 2004.

Warning signs and timeline of losses

May 1999

In their report, NAB’s Internal Audit rated currency options as unsatisfactory. The main weaknesses they identified were the inability to reconcile the profit and loss between the front and back offices; no “volatility smile” included in revaluations; and no independent monitoring of risk concentrations.

September 2000

Another Internal Audit report on the currency options trading system noted that their new system would mitigate several of the weaknesses raised in 1999, but would not immediately address the “volatility smile” nor some of the broader computer security strategy and framework issues. The systems’ development audit was rated as “good” and the report indicated that a post-implementation review would be performed but the subsequent investigation confirmed that this review was never undertaken.

Financial year to 30 September 2001

The value of the currency options book was overstated by approximately A\$4 million, due to four fraudulent spot foreign exchange transactions.

December 2001

An Internal Audit report gave the foreign exchange business an overall rating of adequate. However, the report did contain three issues in relation to currency options:

- Continuous limit breaches for 61 out of 61 days and that each of the limit breaches was subsequently approved;
- Incorrect VAR numbers being produced, and
- major revaluation rates were being sourced by the front office from only one broker.

However, because of the introduction of a new Internal Audit rating system, these issues did not get included in a report sent to senior management because the value of the issue was “less than A\$5 million”.

6/7 May 2002

An entry in the minutes of the NAB Board meeting, states: *“A report concerning Allied Irish Bank’s FX losses had been reviewed and it was noted that the Group had appropriate controls in place to identify control breakdowns on a timely basis to ensure that any FX losses are minimised.”*

August 2002

An APRA (Australian banking regulator) report, submitted to NAB in January 2003 was critical of several matters. The key findings relevant to currency options were:

- lax approach to limit management,
- culture of non-adherence to risk management policies,
- valuation rates were captured by the dealers and passed to MR&PC,
- problems with interfaces to their risk engine,
- no formal model validation or back-testing for the approved VAR model, and stress testing was inadequate and processes for determining region-specific tests differ across regions.

Financial year to 30 September 2002

The value of the currency options book was overstated by approximately A\$8 million, due to one fraudulent spot foreign exchange transaction.

KPMG, NAB’s external auditor, identified issues related to currency options since at least January 2002, but these issues were rated ‘Minor’

Financial year to 30 September 2003

In October 2002 the currency options desk reported profits of A\$8.9 million; however, the management accounts reported a profit of only A\$974,000. Accordingly, by 1 November 2002, the loss of A\$7.97 million misstated in the 30 September 2002 statutory accounts had been eliminated.

Activity in September 2003

As at 1 September 2003, the currency options desk had a net long spot-equivalent position of US\$8 million, made up of a short US\$210 million options position and a long US\$218 million spot position against major traded currencies.

During September, new trades, and the revaluation effect of exchange rate movements on existing options, caused the net long position of US\$8 million to increase to US\$271 million. A major decline in the value of the US dollar (by four US cents versus the Australian dollar) resulted in a loss of A\$34.8 million but the Traders reported a profit of A\$1.8 million.

Also in September 2003, the currency options desk incurred further losses of approximately A\$1.5 million on eight separate days. On each of three other days (19th, 22nd and 26th September) losses of over A\$5 million were incurred. This level of loss was significantly in excess of the daily A\$3.25 million VAR5 limit for the desk. These losses, together with the underlying risk positions, were concealed by the traders, who entered false transactions into the trading system. Although these false transactions enabled the currency options desk to apparently achieve an annual profit of A\$37 million, the value of the options portfolio was overstated at 30 September 2003 by A\$42 million.

October 2003

During October the currency options desk reduced the long US dollar position from US\$271 million to US\$211 million and, despite a further weakening of the dollar, earned a profit of A\$13.4 million. However, there is evidence that the reported profits might have been misstated by up to A\$10 million due to incorrect revaluation rates being used. Even so, the traders used false transactions to report profits of only A\$5.7 million.

The currency options desk incurred 866 breaches of their limits during this month.

November 2003

In November, the long US dollar position increased to US\$363 million. A profit of A\$4 million was made, but a profit of A\$7.4 million was reported. Again the traders processed false transactions to achieve this result.

December 2003

During December, further trading and the revaluation effects caused the spot-equivalent position to increase to US\$1,548 million. Not only was this significantly over approved limits, but it also reflected a completely unhedged position, with both the options and spot positions being long US dollars. As a result of this large long US dollar position and the fall in the US dollar of approximately three cents in the month, the currency options desk incurred losses of A\$49 million in December. These losses were concealed by false options transactions such that a profit of A\$5.3 million was reported. At the end of December the currency options portfolio value was overstated by A\$91.8 million.

December 2002 and January 2003

So cumulatively, by 31 December 2003 the currency options desk had unrecorded losses of A\$92 million and a large long US dollar position.

By 9 January 2004 the US dollar had declined by a further 2.5 cents against the Australian dollar, and further losses of A\$85 million were incurred. Of this, A\$30 million was incurred by Friday 2 January and a further A\$39 million over the weekend to Monday 5 January. By 12 January 2004, false transactions with a reported value of A\$185 million were entered into the trading system.

On 13 January 2004 the NAB made an initial announcement of unauthorised foreign exchange losses, estimated at that time as A\$180 million. Subsequent announcements on 19 January and 27 January increased the amount of the foreign exchange losses to A\$360 million, including losses arising on the revaluation of the portfolio.

How the losses occurred, and were concealed

The NAB currency options team commenced trading in 1998 with three dealers, increasing to four in 2000 with a mandate to grow both customer business and proprietary trading income.

Contrary to the strategy, in 2003, risk-based proprietary trading activity grew significantly. So too did the size of the book. At 30 September 2003 the notional principal of the currency options book was A\$253 billion. Dealing decisions in the last quarter of 2003 resulted in a large long US dollar position against a range of other currencies. Major losses were incurred when there was a ten cent fall in the value of the US dollar against the Australian dollar.

During interviews, the traders admitted that the practice of concealing losses (in some cases profits) and their true positions started sometime before October 2001.

Initially, incorrect dealing rates were entered into the system by the traders in order to shift profits and losses from one day (or period) to another. This practice was referred to by the traders as 'smoothing' and appears to have been accepted practice by the currency options traders.

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Subsequently, two other principal methods of concealment were employed: incorrect deal rates; and processing false spot foreign exchange and false option transactions. To confuse the investigation further it was discovered that the traders shared their system passwords with each other, so it is not possible to be certain whether the entering of the incorrect deal rates and false transactions into their system was restricted to one, or more, of the traders.

The second method was to process and conceal false transactions in the system, and they exploited weaknesses in the end-of-day procedures. The system's end-of-day process was generally run at approximately 8:00 a.m. Melbourne Time the following morning to allow transactions executed in the New York time zone to be captured. The traders entered false transactions just before the end-of-day close. The profits and losses arising from the system were posted to the general ledger and used to prepare management reports and ultimately the NAB financial statements. There was a difference of approximately one hour between this end-of-day close in this system, and the start of the process whereby the back-office produced the reports that enabled them to carry out checks on transactions. During this period, referred to by some as 'the one-hour window', the traders had time to amend any incorrect details and thereby bypass the deal checking process carried out by Operations. This process had to be redone each day the dealers wanted to process false trades. The traders discovered the 'window' by accident some time in 2000. (78 false one-sided internal options and 467 false internal spot transactions were subsequently identified for 2003.) Many of these transactions gave rise to small profits on "day-one" profits but a few resulted in day-one profits of significant amounts, and in particular on 15 December one gave rise to a profit of US\$40 million.

These transactions appear to have been used to ensure the currency options team met profit, and bonus, targets for the financial year ended 30 September 2003.

On the morning of 1 October 2003 four false internal spot foreign exchange transactions were entered into the system shortly before the end-of-day process for 30 September 2003, and surrendered immediately after. These transactions affected the trading results for 30 September 2003 by overstating the value of the portfolio by A\$42 million which also ensured the desk reported a yearly profit just above the budget for the year of A\$37 million. As market prices moved, further profits and losses were generated from the false one-sided option transactions.

The third method capitalised on the fact that, from October 2003, the back office ceased checking 'internal' transactions. This enabled the traders to enter one-sided internal option transactions at off-market rates, thereby masking the true exposures and concealing losses.

Who discovered the losses?

The process of discovery of the losses and false transactions started at about 7:00am the morning of Friday 9 January 2004. A member of the currency options team revealed concerns about the true position of the desk to another member of the currency options team, who later investigated the trading system and discovered a loss in the books of approximately US\$40 million. The process of discovery proceeded over the weekend of 10/11 January. By the evening of Monday 12 January the losses had been estimated by the employee at US\$120 million. On Tuesday 13 January 2004 the Traders were suspended by NAB.

Forensic analysis of one of the trader's email files revealed that around 6:30am on Tuesday 13 January 2004, over 14,000 emails were deleted. There appears to be little pattern to the deletion, but these emails were later recovered and helped in the subsequent investigation.

So what went wrong?

NAB commissioned PWC to conduct an investigation and their report dated 12 March 2004 concludes that:

- The traders concealed the true position of the currency options portfolio.
- Poor supervision of the traders allowed them to trade not in accordance with the agreed business strategy. The principal focus in overseeing the currency options desk appears to have been on the reported results, with less attention devoted to risks and the nature of transactions being undertaken.
- The controls and procedures in Operations and Finance were inadequate or non-existent.

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- Risk limit breaches were routinely reported to and approved. These limit breaches were not investigated properly.
- Risk Management did not escalate properly the persistent limit breaches. The need to resolve issues with VAR were not given sufficient attention and urgency.
- A number of warning signs (APRA, Internal Audit, Risk Management, and the market place) were not properly and fully responded to.
- The culture of NAB was one to focus on 'good news' and the Board was not informed of important issues.

Operational Risk Lessons to be learnt

PWC made many other observations in relation to these losses during the investigation and identified critical weaknesses in many other areas including:

- Integrity of people
- Risk and control framework
- Governance and culture.

The integrity of people

For a number of years the traders had misstated the profit and loss by using the practice of smoothing. The smoothing progressed to concealment of significant losses by processing false transactions to conceal the true position of the currency options desk. They did not behave in an honest manner and concealed losses on the assumption that one day they would earn enough profit to reverse the previously concealed losses.

The risk and control failure

PWC summarised their findings on the NAB risk and control failures into the following themes:

The currency options trading activity lacked adequate supervision

Day-to-day involvement and supervision of the traders was minimal and there appears to have been little supervision by any other management of the bank, other than a review of reported profits. The fact that relatively stable profits were reported was interpreted to mean that the strategy was being followed successfully. There is, however, significant evidence that this was not the case. For example:

- multiple limit breaches were routinely signed off without rigorous investigation or actions taken to reduce positions
- transactions were occasionally undertaken before Product Usage Authorities (PUAs) had been fully signed off
- warning signs received from the marketplace were ignored or not properly and independently investigated
- although staff appraisals of the Traders contained adverse comments about excessive risk-taking, no effective steps were taken to constrain their behaviour.

The VAR and limit monitoring process

NAB produced a daily risk report which includes details of risk positions (VAR and 'the Greeks') as well as identifying any limits that have been breached. However, due to the concerns over the reliability of the VAR calculation the VAR limit breaches in currency options was removed from the front page of the report from April 2002 until just before the discovery of the losses in January 2004. Breaches of other limits were reported every day and with increasing frequency in late 2003. These limit breaches were entered into an excesses database for electronic approval and were approved.

For the three years to October 2003 the VAR calculations performed by NAB were not able to reflect the 'smile' in the valuation of currency options, and as a result the VAR produced by the system was known to be unreliable. NAB's product control function used another system and needed to upgrade to a new version which could deal with the various option types used by the currency options desk.

The system upgrade went into production in October 2003. Throughout parallel running and during live running of the systems' upgrade, VAR numbers were consistently higher than the agreed limit for currency options. The VAR numbers were rejected by the traders as they claimed the VAR calculation was still unreliable.

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No urgency was given to, first, the resolution of the differences between new system and the traders' view of the VAR calculations, and second, the many breaches of other limits by the currency options desk.

Large and unusual transaction activity

The traders also entered into a number of large or unusual transactions, including deep-in-the-money options and other complex structured transactions. Some of the large and unusual transactions were identified by Operations and referred to the product control function and others were the subject of market speculation.

In March 2002, another Australian bank raised concerns over the size and risk profiles of the transactions being conducted by the currency options desk. In March 2002, senior representatives of NAB visited the bank that had expressed concern to discuss the unusual nature of some of the transactions. Internal National emails as well as correspondence from the other bank indicate that there was an aggressive response, and the concerns were passed off as the other bank not understanding NAB's trading strategy and pricing model. Effectively, the message conveyed to the other bank was that if rumours of this nature emanated from them (or the brokers used by the other bank), then NAB would end its dealing relationships with the bank/broker concerned.

In another example, on the 9th and 10th of October 2003, the currency options desk sold two in-the-money options to another bank for an aggregate premium of US\$322 million. One of these was identified by Operations as being unusual and was referred to the product control function, who duly sought an explanation from the traders. The explanation given was that the deals were done to help fund their cash position and the transaction was cheaper than borrowing the funds internally through NAB's funds transfer pricing system. The bank concerned also raised the matter with NAB but the investigation went no further. In particular, there was no investigation into why the desk had such a funding need in the first place, or of the commercial validity of the deals.

An independent, full and proper investigation into these and similar concerns did not take place; neither was this concerns reported to the CEO or the Board.

Risk management failed

The principal failings were:

- For a long period of time, the daily risk report identified a large number of limit breaches, and these were reported to the business in accordance with agreed procedures, but nobody escalated these continuous limit breaches further.
- The bank relied upon a number of disparate systems to calculate VAR and had acknowledged for three years that the VAR for currency options was not reliable. The resolution of this problem was not given sufficient urgency or priority.
- Although the product control unit was responsible for confirming the source of certain parameters used to revalue the currency options portfolio; they did not undertake procedures to review the reasonableness of parameters actually received to ensure that they reflected current market conditions and translated into appropriate values.

There was an absence of financial controls

Any of the following basic financial control procedures might have identified the concealed losses:

- investigation of transactions with high 'day-one' profit or loss, high premium or deferred premium or transactions done at off-market rates,
- analysis of the profit and loss and deal volumes between customer and proprietary trading,
- analysis and corroboration of profit and loss drivers, market price movements and the size, nature and risks of the portfolio,
- analysis of portfolio, customer, deal type concentrations, and
- a review of the revaluation rates used at month-end.

It was not clear who had responsibility for the above controls, but it is apparent that controls either did not exist or did not operate effectively.

There were significant gaps and omissions in back office procedures

Operations' (or 'back office') was the bank division responsible for processing all transactions, including verification, confirmation, settlement, reconciliations and end-of-day processing. Operations' was structured to align with the trading desks, and a dedicated team supported the currency options desk.

In respect of currency options, Operations was responsible for checking transactions as recorded in the trading system, confirming all external transactions, and, until October 2003, checking internal transactions (i.e. transactions between NAB entities and between NAB desks).

In respect of spot foreign exchange transactions, the Operations' validation procedures for the currency options desk were not designed properly in that they were based on information that was produced approximately one hour after the daily profit and loss was determined. This window gave the traders the opportunity to enter false transactions, which were reflected in the reported results, and then amend or surrender them so that they were not included in the information used for Operations' validation purposes. This was repeated on a daily basis without detection. Operations did not check that amended or surrendered transactions were valid. Specifically, there was no checking of surrendered internal transactions as the assumption was that they were automatically matched and no checking was necessary.

In early October 2003, losses were experienced in currency options because a genuine internal transaction between the currency options desk and the forward foreign exchange desk had been incorrectly entered into the currency options trading system. At this time discussions took place between traders on various desks and Operations about the process of checking internal transactions. Management in Operations considered that they were merely responsible for ensuring that internal transactions were equal and opposite, not that they were valid. There was an exchange of emails between one of the Traders and Operations management, following which an email was sent to a number of front office staff, reminding them that they were responsible for entering internal trades correctly. An extract of the email stated: *"...The currency options back office does not check internal deals. At least in the short term, this situation will not change. This means ... input errors will not be picked up by back office."* This email was copied to the junior staff in Operations - but not the managers in Operations - by way of a group email list.

For reasons that are not clear to PWC, the junior staff in Operations interpreted the email to mean that they were no longer required to carry out any checks on internal transactions in the trader's system, including checking that internal transactions were equal and opposite. This was not discussed with the managers responsible, who were unaware that their staff had stopped following agreed procedures. As a result of this unauthorised change in procedure, the traders were able to process false one-sided internal options transactions without them being detected.

Extracted from the "Investigation into foreign exchange losses at the National Australia Bank" published by PriceWaterhouseCoopers, 12 March 2004