The Strange Case of Société Générale & Mr Kerviel

This note – originally prepared in February 2008 – discusses the aspects of the SocGen scandal relevant for EC372, keeping in mind that the case has yet to be fully resolved.

The main facts (inasmuch as they can be ascertained):

1. Sometime in early January 2008 (probably 8th/9th) Jérôme Kerviel, an employee of Société Générale, apparently acting alone, purchased futures contracts the underlying assets for which were stock indices, mainly the *Euro Stoxx 50* (traded on Eurex), *Xetra DAX* (traded on Eurex) and *FTSE 100* (traded on Euronext.liffe). The SocGen statement refers to this as 'portfolio A', the components of which "were genuine and consistent with the volumes traded by a large investment bank [i.e.Société Générale]."

   The total value at purchase was about €50 billion. The delivery date for the contracts appears to have been one to three months in the future (i.e., with only a short time to maturity).

2. In the days preceding 18th January global stock prices were volatile, mainly declining: the stock price indices underlying the futures contracts were falling. Consequently (in accordance with the arbitrage principle), the futures prices also fell.

3. As the futures prices fell, marking-to-market would have resulted in depletion of funds in SocGen's margin accounts with SocGen's brokers, and hence the exchanges' clearing houses. Eventually, margin calls would have been made. It appears that margin calls of about €2.5 billion were made (and paid by SocGen) before SocGen began its investigations late on Friday 18th January.

4. On 21st-23rd January SocGen 'unwound' – i.e., it sold – the futures contracts purchased by Mr Kerviel. As a consequence SocGen incurred a total loss of about €4.9 billion ($7.2 billion or £3.6 billion). (Compare this with the loss of about $1.4 billion that resulted in the collapse of Barings bank in 1995.)

5. On 24th January SocGen made public what it called "the fraud and its repercussions". On 28th January preliminary criminal charges were made against Mr Kerviel for 'abuse of confidence', 'forgery of documents' and 'illegal entry into company computer systems'. Interestingly, the investigating judge rejected a charge of 'attempted fraud' – though SocGen never fails to represent Mr Kerviel's actions as fraud.

6. The interim report of a three-person panel appointed to investigate the scandal commented: 'At this stage of the investigations, there is no evidence of embezzlement or internal or external complicity' (i.e., Mr Kerviel appears to have acted alone). It conjectured that Mr Kerviel's activities may have represented an attempt to raise his bonus by securing high profits for SocGen.

   The report stated that, despite compliance with SocGen's risk control procedures, SocGen's compliance officers failed to pursue 75 instances of actions taken by Mr Kerviel that signalled improper conduct. Apparently, Mr Kerviel has claimed that his superiors were aware of his activities – it seems that they were but failed to call him to account.

7. The allegations against Mr Kerviel eventually went to trial in June 2010, concluding the following October, with a guilty verdict on three counts: forgery, breach of trust and unauthorised computer use. As a result, Mr Kerviel was sentenced to three years imprisonment (five years, with two suspended) and ordered to repay the €4.9 billion his trades were deemed to have lost SocGen.

   Following the verdict, Mr Kerviel lodged an appeal and was immediately released from custody. The result of the appeal is not yet known (as of 16 September, 2011).

Comments

(a) There is general acceptance that, as SocGen states, Mr Kerviel was expected to have limited the risk of loss by "selling at the same time a portfolio of financial instruments B with extremely similar characteristics, but with slightly different value." SocGen refers to this as 'arbitrage business' but in the terminology of EC372, it would be called hedging.

Portfolio B was fictitious: Mr Kerviel deceived SocGen of the existence of such transactions. Portfolio B would have comprised OTC transactions – essentially forward contracts with other financial institutions (Deutsche Bank has been mentioned) that transact with one another within agreed credit limits rather than protecting against default of the counterparty with margin deposits. It is even possible that some components of 'portfolio B' were fictional trades with other parts of SocGen.

(b) ***If*** portfolio B had existed, the net losses would have been much smaller. Possibly the combination of portfolios A and B would even have resulted in a profit, depending on the price discrepancies ('spreads') that it was Mr Kerviel's job to exploit.

(c) What could have Mr Kerviel hoped to have gained? If stock prices had increased (rather than fallen), portfolio A would have yielded a large payoff (much, much larger than the combination of portfolios A and B). No one suggested that Mr Kerviel would have sought to appropriate such profits for himself (that would have been embezzlement). But SocGen may well have rewarded him with a large bonus, assuming that it overlooked his failure to hedge portfolio A – a failure which would surely have become known to Mr Kerviel's managers, otherwise the profit would have been much smaller.

(d) Why didn't SocGen identify, and control, the risks much earlier? It is debatable why SocGen's risk management processes failed to work. Perhaps Mr Kerviel had become highly skilled in circumventing the control mechanisms (given his previous experience in the 'back office' of the bank). Perhaps SocGen's management was lax.

With respect to the latter, SocGen could have exercised control over Mr Kerviel's 'gross exposure', i.e., the separate risks associated with portfolios A and B, rather than the 'net exposure', i.e., the difference between the values of the two portfolios. That portfolio B was fictitious would have been irrelevant with respect to gross exposure.

Also, it seems that margin accounts for SocGen's futures contracts were 'consolidated', i.e., for SocGen as a whole (or at least substantial parts of the bank), rather than attributed to individual traders at SocGen. Thus, the margin calls resulting from Mr Kerviel's transactions may have been submerged among many others – the substantial sums required may not have been attributed to him (or any other individual trader at SocGen).

(e) Who gained? For every buyer there is a seller. As the *Economist* (Jan 29th, 2008) wryly records "…he [Mr Kerviel] will doubtless have a place in the hearts of the traders who were on the winning side of futures positions worth billions of euros that the French bank frantically unwound between January 21st and 23rd."

(f) Usually it is supposed that futures prices are determined by the spot price of the underlying asset via the arbitrage relationship, $f(t, T) = e^{(r-d)(T-t)}p(t)$ (see *Economics of Financial Markets*, 16.3, p. 408). However, note that the two prices $p(t)$ and $f(t, T)$ are mutually determined – causation does not necessarily operate one way, especially when the time to maturity $(T - t)$ is short, as it appears to have been in this case. Thus the 'unwinding' of SocGen's futures positions may have contributed to the fall in European stock market prices in the week beginning 21st January.

From *The Economist*:

SIR – Jérôme Kerviel is in trouble because without authorisation he used Société Générale's money to bet on European markets, losing his employer some $7 billion ('Socked, not gently', January 26th). But imagine the embarrassment had Mr Kerviel made a profit of $7 billion, or possibly double that, if the markets had moved differently? The bank would have had to discipline, dismiss and pursue for fraud an individual responsible for a huge increase in net profits and a concomitant leap up the banking league table. And what to do, in those circumstances, about executive bonuses?

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Johannesburg — *The Economist* Letters, February 2nd, 2008.

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