PGDM, 2018-20

Derivatives and Risk Management

DM-414/IB-409

Trimester – IV, End-Term Examination: September 2019

Time allowed: 2 Hrs 30 Min

Max Marks: 50

Roll No: ___________

Instruction: Students are required to write Roll No on every page of the question paper, writing anything except the Roll No will be treated as **Unfair Means.** All other instructions on the reverse of Admit Card should be followed meticulously. Please carry a non-programmable calculator.

Attempt All Questions

Please refer the enclosed case titled 'China Aviation Oil (Singapore) Limited - Sliding down a Slippery Slope: The US$550m Derivative Trading Loss of November 2004'. After reading the case carefully, try to answer the questions given below:

Section I: TRADING STRATEGY (10)

1. What was the company's trading Strategy? (2) [CILO 2]

2. How did the company formed its views? (3) [CILO 4]

3. What were the main determinants of escalating bets? Could there have been a 'safer' betting strategy? (3) [CILO 4]

4. Describe the major derivative instruments traded in Indian and international Derivative market in brief? (2) [CILO 1]

Section II: OPTION BASED STRATEGY (18)

5. How do you use hedging strategies? What kind of hedging strategies can be used in this case? (2+3) [CILO 3]

6. When do you need to hedge? Is it always necessary to hedge? (3) [CILO 3]

7. Explain the concept of value-at-risk (VAR). How this concept can be used for designing a cost-effective hedge strategy? (5) [CILO 4]

8. How do you find the most cost effective way to hedge? How do you determine the cost of hedging? (5) [CILO 4]

Section III: CORPORATE GOVERNANCE AND RISK MANAGEMENT (22)

9. What should be the company's philosophy on financial risks? (3) [CILO 4]

10. How can the supervisory boards play a role in risk management, particularly when instruments such as derivatives can be highly complex? (4) [CILO 4]

11. Who formulates the firm's guidelines and policies on the use of financial instruments? (3) [CILO 4]

12. How can the board foster a risk management culture within the firm? (3) [CILO 4]

13. How does the board ensure the integrity of risk management system? (3) [CILO 4]

14. Is there a separation of duties between those who generate financial risks and those who manage and control these risks? (3) [CILO 4]

15. What are the main sources of risks a company faces? (3) [CILO 4]

China Aviation Oil (Singapore) Limited ("CAO"): A brief Evolution

CAO was incorporated in Singapore as a joint venture between China Aviation Oil Supply Corporation (CAOSC), China Foreign Trade Transportation Corporation (both of which were Chinese state-owned enterprises) and Neptune Orient Lines (a publicly-listed company linked to the Singapore government) in 1993 as a shipping broker. In 1995, CAOSC became the sole shareholder of the company after acquiring shares held by its other two partners.

CAOSC was one of the largest stated-owned enterprises in China under the control and supervision of the Ministry of Civil Aviation Administration of China (CAAC). It was responsible for the construction of aviation oil supply infrastructure, purchase of aviation oil supply equipment and supply of jet fuel for over 100 foreign and domestic airlines (including the purchase, transportation, storage, and into-plane services of jet fuel) at more than 140 civil airports throughout China. The company was also the sole entity authorized by the Chinese government to allocate the import quota for jet fuel into the country.

In 1997, following a period of dormancy and after a series of strategic transformations, CAO became the imported jet fuel procurement arm for its parent company. Its market share of total jet fuel imports into China grew rapidly from 3% in 1997, to 83% in 1999, and 92% in 2001.[1] Two years later, in 1999, CAO extended its activities to include international oil trading, dealing in an increased range of products including fuel oil, gas oil, petrochemical products and oil derivatives. The jet fuel procurement business contributed to approximately 40% of revenues from physical trades in 2002 and 2003, while the oil products trading business contributed to the rest of revenues from physical trades in the same period. The company's oil derivatives business consisted of trading in paper swaps to hedge the price risk exposure associated with its jet fuel and fuel oil cargoes, and in crude oil futures to hedge its crude oil cargoes. In addition, CAO also engaged in opportunistic and speculative trading by taking open positions on derivatives instruments (which, until March 2002, were limited to futures and swaps) when its traders saw profitable opportunities.[2] The company added a third arm to its fledging business – strategic investments in oil-related infrastructure businesses – when it announced two major acquisitions in July 2002: a 33% stake in Shanghai Pudong International Airport Aviation Fuel Supply Company (Pudong), which owned and operated all the refueling activities in Shanghai Pudong International Airport and held exclusive rights to supply jet fuel to airlines using the airport; and a 5% stake in Compañia Logistica de Hidrocarburos (CLH), a leading oil carrier and the owner of the largest network of oil pipelines and storage facilities throughout Spain. This new third arm became the primary driver of profitability for the company: in 2003, during its first full year of "operations", it accounted for 68% of total reported profit, including S$34.6m from the company's pretax share of Pudong's results and €6.6m (S$13.1) in dividends received from CLH.

CAO's Public Face: Chen Jiulin

Chen Jiulin grew up in central China's Hubei province and did not ride a bus until he attended university, according to an interview titled "High Flyer" that was published in the November

1 Source: Company Annual Report 2003.

2 Source: PricewaterhouseCoopers "Phase 2" report (June 3, 2005).

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2004 issue of Singapore Tatler. He held several academic qualifications: graduating with a Bachelor of Arts degree from Peking University in 1987; receiving a law degree from the China University of Political Science and Law in 1996; and earning an MBA from the National University of Singapore in 2001. He worked at Beijing-based Air China, the nation's biggest international airline, before joining CAOHC in Beijing as chief negotiator and project manager in 1993. Four years later, he was promoted to helm CAO as its CEO, and was credited with increasing annual profit from S$13.5m in 2000 to S$54.3m in 2003. His remuneration package is believed to have consisted of two parts: a basic annual salary of about S$600,000, and a profit sharing scheme, where he would receive a cut of between 7-10% of CAO's profits in any given year.[3] According to an article in Lianhe Zaobao, Singapore's main Chinese daily, Chen was entitled to a percentage of the company's profits if they exceeded S$12m. In 2002, Chen's pay package totaled S$4.9m, of which S$4.3m was his performance bonus.[4]

In Singapore, Chen was feted as the face of the new Chinese manager: highly qualified, capable and transparent, and was portrayed by the media as a humble, low-key man who lived simply. He chalked up numerous honors: he became one of 40 founding members of New Asian Leaders, a group selected by the organizers of the Geneva-based World Economic Forum, in 2003; was named president of Singapore's China Enterprise Association in August 2004; served as a director of the Singapore International Arbitration Centre; and was invited by Singapore's Economic Development Board to speak at a gathering of its International Advisory Council and key policy makers in early 2003. He authored a book titled "Leveraging on China – Going Global", which espoused the virtues and strengths of CAO, and included photographs of him rubbing shoulders with the upper echelons of power in Singapore.

The Initial Public Offering ("IPO") of 2001

In 2001, CAO became the first Chinese company to be listed on the Singapore Exchange (SGX). The company had been wooed aggressively by the Singapore government, which was hoping to gain a slice of the lucrative "China pie" and strengthen Singapore's position as a regional financial hub. The company offered 144 million shares to investors, with 134 million pre-sold to institutional investors and the rest placed to retail investors via a book-building process. The latter tranche was more than 8 times oversubscribed. CAO's IPO, which raised S$80.6m, was the largest IPO in Singapore that year, and it was underwritten by DBS, Singapore's largest banking group.

Investors were attracted to CAO's position as a near-monopoly in jet fuel importation: one-third of all jet fuel in China was imported, with the remainder sourced from domestic refineries. In 2000, CAO sold 1.47 million tons of jet fuel in China, and demand was expected to grow 16% per annum, reaching an estimated import volume of 16 million tons by 2016.[5] Chinese officials forecast that the country's dependency on jet fuel imports may rise to 50%

3 Source: "China Aviation Oil Losses Are A 'Reminder' Of Risks", Bloomberg (December 9, 2004).
4 Source: "King Of The Working Class – Chen Jiulin", The Asialink (Vol. 2 No. 1).
5 Source: "IPO Review: China Aviation Oil (Singapore) Corporation Ltd.", Smart Investor Singapore (January 2002).

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by 2007.[6] As it was indirectly owned by the Chinese government, and its parent company was directly responsible for China's aviation oil industry, CAO was expected to retain the biggest gains from these trends.

CEO Chen indicated that proceeds from the IPO would be used for future expansion in China's interior and Hong Kong, for acquisition in the US and Europe, and for working capital purposes.

Corporate Governance and Risk Management

CAO was highly regarded by investors in its handling of corporate governance and disclosure issues. In March 2002, Business Times, Singapore's leading business broadsheet, ranked CAO 26th most transparent company among those that it surveyed, and in August of that year, the Securities Investors Association of Singapore (SIAS) awarded the company its "Most Transparent Company Award" among newly listed companies.

The company emphasized its commitment to strict corporate governance and risk management guidelines. In its 2003 annual report, CAO indicated that it had "a formal system of rigorous internal controls over three layers" (see Exhibit 1). The annual report also stated that:

> *"The Group is exposed to market risk, in particular price and credit risk. The Group has written risk management policies and guidelines which set out its overall business strategies, its tolerance for risk and its general risk management philosophy, and has established processes to monitor and control the hedging of transactions in a timely and accurate manner. Such written policies are reviewed annually by the Risk Management Committee for the Managing Director and Chief Executive Officer's approval and endorsement by the Board of Directors. The Group uses derivative financial instruments to reduce its exposure to market risk. In addition, the Group may take open positions in derivatives at the opportune time."*
>
> CAO Annual Report 2003

CAO also had in place internal policies to regulate the trading business. They stipulated that trading losses exceeding US$200,000 must be assessed by the company's risk management committee. In the event that accrued losses exceeded US$350,000, trading could only resume with permission from the CEO. Any trade that was likely to lead to losses of US$500,000 or more would have to be closed out immediately. Initially, CAO's trading operations were limited to hedging its physical trades, i.e., since its core business was the import of jet fuel into China, the company used derivatives to hedge against any sudden and dramatic increase in the price of jet fuel. There was a significant increase in the volume of derivatives that was being traded from 2002 to 2004, and at least by 2003, the volume of derivatives traded well exceeded the volume for the physical trades business. This was accompanied by an increase in the revenue generated from oil derivatives traded from 2001 to 2003, such revenue exceeding

6 Source: Company Annual Report 2003.

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the revenue generated from the physical trades business from as early as 2001.[7] Another source of control came from the China Securities Regulatory Commission, which had regulatory oversight of state-owned enterprises, and which dictated that the latter should only trade on the futures market for hedging purposes, and not investment returns.[8]

The charismatic and productive Chen hired Ernst & Young to draft a Risk Management Manual (RMM) modeled on the merits of other large international oil companies. In his book, which was meant to serve as a guide for Singaporean companies and businessmen interested in doing business in China, Chen claimed that "CAO was once a loss-making enterprise … the company now operates in accordance with advanced management practices."[9]

CAO post-IPO: Changing Parents, the Acquisitive Years and the Making of a Star

In March 2002, China's State Council issued a plan for the reform of the civil aviation industry, and established the China Aviation Oil Holding Company (CAOHC) to restructure the aviation oil supply business. CAOHC became the parent company of CAOSC, and took direct control of the latter's stake in CAO.

As mentioned above, in 2002, the company moved down the supply chain by acquiring stakes in Pudong and CLH. The Pudong investment, executed via a share transfer agreement, was valued at RMB370m (S$78.3m), while the CLH stake was acquired through an exclusive tender exercise that cost €61.9m (S$108.3m). In August of the same year, CAO announced a "three-pronged strategy" that included strategic oil-related investments, international oil trading and jet fuel procurement,[10] and continued its expansion into related businesses. One of the reasons for this diversification strategy was that, despite CAO's dominant position in the jet fuel importation business in China, the gross profits and profit margins from the physical trades business were in general decline from 2000 to 2003. This coincided with a period when its commissions for the jet fuel procurement business were negotiated down by 40%.[11]

In December 2003, CAO acquired an 80% stake in the Shuidong oil storage facilities from Shenzhen Juzhengyuan Petrochemical for RMB18.4m (S$3.83m), and established a joint venture with the latter to operate oil facilities in southern China. Shuidong was connected by a short pipeline to the neighboring Maoming Oil Refinery, China's second largest refinery, had direct ocean access, and was close to China's third- and fifth-largest airports. The following year, in February 2004, CAO acquired a 24.5% stake in South China Bluesky Aviation Oil (Bluesky) from Fortune Oil Plc for a combination of US$21.7m in cash, 37.76m new CAO shares (representing 5.2% of the company's enlarged share capital) and options for 26 million new CAO shares with a strike price of S$1.60: total transaction value was estimated to be US$62m.[12] Bluesky owned the jet fuel supply infrastructure in fifteen airports in southern and

7 Source: PricewaterhouseCoopers "Phase 2" report (June 3, 2005).
8 Source: "Why Did CAO's Chen Jiulin Take The Chance?", The Asialink (Vol. 2 No. 1).
9 Source: "China Aviation Oil: The Inside Story", Singapore Business Review (January 2005).
10 Source: Company Annual Report 2003.
11 Source: PricewaterhouseCoopers "Phase 2" report (June 3, 2005).
12 Source: "China Aviation Oil Timeline: IPO To $550 Mln Loss, Police Probe", Bloomberg (December 9, 2004).

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central China, and was the sole jet fuel supplier to all domestic Chinese and foreign airlines in the region. One month later, in March, CAO announced that it might buy as much as 20% of Horizon Terminal, the fuel storage unit of Emirates National Oil Co., and form a joint venture with Horizon to build a US$135m fuel storage facility in Singapore.

The company's acquisition war-chest was partially funded by a US$160m five-year syndicated term credit facility that it signed with ten international banks led by Société Générale in July 2003. It had also received from Pudong a dividend of RMB105.6m (S$22.3m) and a distribution of retained earnings of RMB39.6m (S$8.4m).[13]

As CAO's acquisition momentum increased, so did its share price. CAO became one of the "hot stocks" on the SGX as it was perceived to be a stable, well-run business that provided a direct play on the fast-growing Chinese economy (see **Exhibit 2(a)** for the share price performance of CAO and **Exhibit 2(b)** for its performance relative to the SESALL Index (a weighted index of all stocks listed on the SGX) and the Dow Jones Industrial Average). The 2003 Annual Report emphasized the bullish outlook for the company:

> *"Jet fuel procurement was at all-time highs in 3Q03 and again in 4Q03. Total spot and tender volumes for the January-March 2004 quarter ("1Q04") reached 603,000 metric tonnes ("MT") were the highest ever for a first quarter, marking a third consecutive quarterly record. All current indications point to CAO maintaining or surpassing FY03 levels in FY04 ... China is expected to consume 6.8 million MT of jet fuel in 2004, up 19% from the 5.7 million MT last year, of which 33% was supplied by CAO. Total consumption is forecast to jump to 10 million MT in 2008. Officials forecast China's dependency on imports may rise to 50% by 2007 from only 31% in 2002 ... Experts have estimated that nationwide oil demand is expected to grow at a compound annual rate of 12% over the next two decades. By 2020, total oil demand will reach 450 million MT a year. Dependence on supply sources outside of China will rise to 60%, compared with 30% currently."*
>
> CAO Annual Report 2003

Timeline to Crisis: A Chronology of Events in the Final Months before default

The Bumpy Road to CAO's Largest Acquisition to Date

On August 18, 2004, CAO announced that it would purchase a 20.6% stake in Singapore Petroleum Company (SPC) from Satya Capital (SCL) for S$227m in cash and S$64.48m in CAO warrants. The transaction, at S$291.48m, was the company's largest to date, and valued each SPC share at S$3.31, representing a 6.4% premium to its volume-weighted price of S$3.11. SPC was a major regional oil and gas company with interests in oil and gas development and production, refining, storage and distribution, marketing and trading of crude and refined petroleum products. Its activities were spread across upstream, midstream and downstream businesses. A principal investment of SPC was its 50% stake in Singapore

13 Source: Company Annual Report 2003.

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Refining Company (SRC), a large refinery situated on Jurong Island, with daily capacity of 285,000 barrels of oil per day. Utilization rates at SRC were then over 80%. The transaction was conditional on SCL executing an agreement with third parties for the disposal of the warrants before September 30, and also subject to CAO shareholder approval. CAOHC, which held 75% of CAO shares, gave an irrevocable undertaking to vote in favor of the acquisition.[14]

On September 29, CAO announced changes to the terms of the transaction: it would now pay SCL S$135.2m in cash in lieu of the CAO warrants, increasing the transaction value to S$362.2m, or S$4.12 per SPC share. This represented an 18% premium over SPC's volume-weighted average share price of S$3.49. The rationale for the amendment was:

> *"Under the terms of the share purchase agreement dated 18 August 2004, the completion of the Proposed Acquisition was dependent on a number of factors, including SCL executing an agreement with third part(ies) for the disposal of the Warrants. CAO believes that it is in the best interest of CAO to manage and control the process for the issuance of its equity or equity-linked securities (including, warrants). Through the Amendment, CAO would be able to lock in the value of prospective upsides from future potential issuance of equity securities as well as maintaining full flexibility with regard to timing and structure of such issuance. CAO strongly believes that this would greatly enhance and optimize the value and benefits to its shareholders in the longer term."*
>
> Company announcement (September 29, 2004)

On November 24, 2004, in a surprise move, CAOHC voted against CAO's plan to purchase a 20.6% stake in SPC during the company's extraordinary general meeting (EGM), despite having earlier given an irrevocable undertaking to support the plan. Investors were puzzled over the move, and CAO indicated that it was seeking legal advice on the parent company's failure to honor its irrevocable undertaking. The company declined to comment on whether it knew of its parent's decision before the EGM. According to CAO's 2003 Annual Report, CAO Chairman Jia Changbin was also President of CAOHC, while CEO Chen doubled as a vice-president of the parent company.

It was not clear why CAOHC voted the way it did, although market speculation emerged that the Chinese authorities might have balked at the possibility of CAO paying much more for SPC than it originally intended. Chris Sanda, an analyst with DBS Vickers, a local brokerage, thought that the news could be positive for CAO: the company was a growth story riding on rising volumes from the Chinese aviation market, but an SPC stake would mean exposure to the refining cycle, which was a much more mature market.[15]

CAOHC Sells CAO Shares to Investors

On October 21, 2004, Deutsche Bank announced that it had helped CAOHC raise S$196m by selling 145.2 million shares in CAO at S$1.35 per share, a 14% discount to the stock's previous traded price. Deutsche Bank claimed that it had sold all the shares within four hours.

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14 Source: Company announcement (August 18, 2004).

15 Source: "CAO parent blocks SPC deal in shock move", Business Times (November 25, 2004).

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After the sale, CAOHC would own just 60% of CAO's shares. CAO shares fell as much as 12% after the announcement. The shares were sold to institutional investors, with 75% going to those based in Asia. In a later announcement, CAO claimed that:

> *"... the placement was made to institutional investors. This had the effect of broadening our institutional shareholder base. This is positive in itself, in that institutions in general tend to apply more rigorous analysis to their investments compared with retail investors. The greater presence of institutional investors in our roster will serve to ensure corporate best practices on our part, and so should be considered a net positive by all investors."*
>
> Company announcement (October 28, 2004)

John Casey, a spokesman for CAO, claimed that CAOHC "had an investment they are making and they need to raise the cash". Declining to comment further on the parent company's acquisition, he added, "They wanted to get the deal completed as soon as possible."[16]

CAO Announces Third Quarter Financial Results

On November 12, 2004, CAO announced its third quarter financial results (see **Exhibit 3** for CAO's financial statements). Net profit for the nine-month period from January to September 2004 was S$41.7m, an increase of 4.9% on the same period the previous year. However, net profit for the three-month period from July to September 2004 was S$8.8m, a decrease of 15.4% on the same period the previous year, "due to weak contributions by the company's international oil trading division". The announcement indicated that the "company's international oil trading division ... had some setbacks in the form of adverse market movements" and that "in a continuation of pattern seen in oil markets since mid-year 2003, choppy markets made profitable trading extremely difficult".[17] CEO Chen was quoted as saying:

> *"The direction of prices has been extremely hard to predict in the past several quarters, with market conditions unlike anything we have seen in nearly 25 years. CAO remains committed to stringent risk-management policies, and our main goal in trading is to support our jet fuel procurement and other operations. Nonetheless, markets do occasionally throw up conditions such as those we have seen recently, and their adverse effects cannot be completely hedged against. In order to ensure that this business remains a positive contributor to our bottom line, we're currently reviewing our risk-management criteria and may tighten them even further."*
>
> Company announcement (November 12, 2004)

On November 16, in its briefing to analysts, the company claimed that "there was a positive gross profit" in the trading division, "just not enough to cover operating expenses"[18] (see

16 Source: "China Aviation Parent Sells 15% Stake; Shares Decline", Bloomberg (October 21, 2004).
17 Source: Company announcement (November 12, 2004).
18 Source: Company presentation (November 16, 2004).

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Exhibit 4 for an excerpt from the CEO's presentation to analysts). CAO shares had fallen 6.7% after the results announcement on investor fears over the scale of its trading activities. CAO also announced that it would cease all speculative oil trading activities. A statement from the company indicated that "in order to respond proactively to conditions arising in the international oil trading business, the company has revised its trading policy". CAO would exit all speculative derivative trade positions by the end of the month and focus solely on the physical trading business. The only derivative trading would be for the hedging of physical cargoes. Some analysts had pegged the trading losses at S$5m, although CAO did not confirm the figure.[19]

The shock Announcement of November 30

On November 30, CAO announced that it had incurred US$550m of derivative losses (nearly equal to its then market value of US$570m), and had obtained a court order that, pending the approval of a scheme of arrangement, would protect the company from creditor demands. The scheme of arrangement was a way for companies to achieve a variety of objectives through the courts, including debt restructurings. For a scheme of arrangement to be approved, the company needed to obtain the support of at least 50% in number and 75% in value of the stakeholders affected. In this case, CAO would require at least half of all creditors representing three-quarters of debt value to approve its debt restructuring proposal before it could be adopted (see **Exhibit 5** for the list of CAO's creditors). In addition, the announcement also indicated that:

- Chen Jiulin was suspended as CEO with immediate effect;
- CAOHC had provided a shareholder loan of approximately US$100m to CAO to meet liquidity requirements;
- SGX had required the company to appoint PwC as special investigative accountant;
- Temasek Holdings, the state investment arm of the Singapore government, and CAOHC were in active discussions to invest US$100m in the company, after which both parties would gain joint control of CAO. Temasek had a 2% indirect interest in the company.

An affidavit submitted by Chen on November 29 (and later filed in the High Court) indicated that CAO commenced trading in options in the second half of 2003. The company lost US$5.8m in trades in the first quarter of 2004 and US$35.8m in the second, and decided to "move back positions on the trades in an effort to ride through the upward-trending oil market",[20] but by October, it had exposure to 52 million barrels of oil, "greatly" increasing potential losses as global oil prices surged to record highs.[21] The affidavit also claimed that CAOHC had brought forward the October 21 sale of a 15% stake in CAO to cover the margin calls on CAO's derivative positions. The transaction took place ten days after CAO informed its parent of the "potential losses" on derivative trades, and the US$118m net proceeds from the share sale were loaned to CAO. When contacted, Mike West, a spokesman for Deutsche

19 Source: "China Aviation Oil To End All Speculative Oil-Dealing Activity", The Straits Times (November 17, 2004).

20 Source: "China Aviation Doubled Bets To Cover Loss, WSJ Says", Bloomberg (December 3, 2004).

21 Source: "China Aviation Oil Timeline: IPO To $550 Mln Loss, Police Probe", Bloomberg (December 9, 2004).

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Bank, said, "This transaction was conducted entirely in accordance with market practice. The bank is cooperating with regulators in Singapore."[22] However, this capital infusion was insufficient to save the company: as of October 10, the company had used US$214m of working capital, bank loans and trade receivables to meet the margin calls. Between October 26 and 28, CAO had to realize losses of US$132m. A fortnight later, a further US$100m of losses were incurred, with an additional US$70m a week later. By November 25, CAO was burdened with derivative losses of US$381m.[23] (See Appendix A for a timeline of the main events leading to the announcement).

The Proposed Scheme of Arrangement of January 24

About two months after its shock announcement on the massive trading losses, on January 24, 2005, CAO revealed its proposed scheme of arrangement. The principal terms of the scheme[24] comprised:

- A cash injection of US$100m from CAOHC and a new investor[25] by way of fresh equity to CAO, on terms to be agreed between CAOHC, the new investor and the company. The cash was to be utilized for working capital purposes and upfront cash distribution to creditors;
- There would be an upfront cash distribution of US$100m to the creditors comprising:
  - US$70m from the cash injection described above;
  - US$30m from cash derived from the existing assets of the company;
- CAOHC would be treated like the other unsecured creditors of the company in the scheme with respect to its shareholder loan of US$118m. However, as a gesture of goodwill, CAOHC would not participate in the cash distribution and the deferred debt, but would convert its debt at a discount into shares in the company, at a price to be agreed by CAOHC, the new investor and the company;
- CAO's current debt (less the upfront cash distribution) would be restructured into US$120m of deferred debt repayable annually over a period of eight years. Such repayments would be funded out of cash flows from the operations of the company and/or dividends from the company's shareholdings in investments and/or sale of assets of the company, at the company's absolute discretion;
- Creditors would be asked to give their irrevocable waiver, release, discharge and extinguishment of all rights, interests and claims against the company in relation to the balance waived debt.

The next day, CAOHC released a statement indicating its full support for the scheme, and reiterated the two concessions that it had given as a gesture of goodwill: its non-participation in the upfront and deferred cash distribution and the conversion of its proportion of the debt to

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22 Source: "China Aviation Stake Sold Amid Margin Calls, CEO Says", Bloomberg (December 3, 2004).

23 Source: "Wagers On Oil Prices Prove A Slippery Slope For CAO", Financial Times (December 2, 2004).

24 Source: Company announcement (January 24, 2005).

25 Although this new investor was not named, the announcement indicated that "CAOHC had invited Temasek … to participate in the fresh equity injection and the two parties have been engaged in … discussions with respect to the proposed investment".

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equity. It also claimed that the proposed US$100m injection of fresh equity was a clear demonstration of its commitment to the restructuring process.[26] The creditors were scheduled to vote on the scheme on June 10.

Creditor reaction to the scheme was mixed. Martin Botha, Director for Commodities Activities at Standard Bank London, rejected the offer, saying CAO's offer was worth, at most, 35 cents in the dollar, and not 41.5 cents in today's money, since more than half of the repayment would be made over eight years. "We have formally advised the company of our total rejection of their latest offer and requested an improved offer" he said. SK Corp. also indicated that it would reject the offer, "We have reviewed the current offer by CAO, which we find unreasonable and unacceptable." Sumitomo Mitsui Banking Corporation similarly indicated its rejection of the offer, and filed a writ in Singapore's High Court seeking repayment of US$26m. However, other creditors were more receptive. Overseas Chinese Banking Corporation thought that "the scheme of arrangement is a good starting point for further negotiations between all the creditors and CAO" while BP's Singapore subsidiary indicated that "at this stage, [we are] not pursuing our debt through the court process but through the scheme". Shanghai Pudong Development Bank, one of six Chinese bank creditors, said that it was still in talks with CAO, and "if we cannot get the loan back in full, we'll write the remainder off". David Gerald, President of the SIAS, which represents more than 63,000 individual shareholders, urged support for the scheme, "Legal action will not be conducive to reaching a win-win situation because the company must be allowed to be restructured for share trading to begin. To wind up the company means little or nothing for anyone."[27]

On March 4, 2005, SK Corp. served CAO with a judicial management petition, which was filed with the Singapore High Court. CAO indicated that "judicial management is not in the interests of any stakeholder" and that "it is certain that judicial management will lead to the liquidation of the company".[28] Furthermore, in a later announcement, CAO noted that CAOHC had "emphasized that it will withdraw support and terminate the company's core jet fuel procurement business should the company be placed under judicial management".[29] On April 8, the High Court ordered the judicial management petition hearing to be adjourned to a date no earlier than May 20. On that same day, CAO announced that it had already "commenced the process of improving its proposed scheme of arrangement", and that it would "give serious consideration to all the feedback received from the creditors in the revised scheme". CAO also indicated that since April 1, "support from creditors for the consensual restructuring process has increased from 53% to 66% of the total value of all creditors".[30]

Meanwhile, some creditors reported that Deutsche Bank had offered to buy CAO's debt for 40% of its face value upfront. Merrill Lynch is also believed to have made similar offers.[31] This perhaps reflected the investment banks' belief that the originally proposed "haircut" of

26 Source: CAOHC announcement (January 25, 2005).
27 Sources: "China Aviation Plan Unacceptable, Standard, SK Say" (February 3, 2005), "China Aviation Oil Parent May Have To Offer More Cash" (February 5, 2005), both from Bloomberg.
28 Source: Company announcement (March 7, 2005).
29 Source: Company announcement (April 1, 2005).
30 Source: Company announcement (April 8, 2005).
31 Source: "Deutsche Offers To Buy CAO Debt At Discount", The Straits Times (March 9, 2005).

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58.5% (based on the US$100m upfront payment and US$120m eight-year deferred payment) was too high, and their expectation of a more creditor-friendly revised scheme. CAO's debt capacity may have been higher than that represented in the scheme. After all, its parent, CAOHC, was a very powerful state-owned enterprise charged with the oversight of China's aviation oil industry, and under the control of the State-owned Assets Supervisory and Administrative Commission (SASAC), a body that reported directly to China's State Council, or cabinet. CAO's business and financial prospects were perceived as excellent, as long as it retained its status as the monopoly importer of aviation fuel into China, due to China's growing consumption of the commodity. So far, there were no indications that CAO would lose the monopoly, and in fact, CAOHC had continually reiterated its support for and commitment to its subsidiary. Confidence in CAO's core jet fuel procurement business was still very strong. On February 3, CAO announced that China Aviation Oil Trading (CAOT), a wholly-owned subsidiary established to operate the jet fuel procurement business during the restructuring period, had successfully closed its second physical jet fuel tender for deliveries in March/April 2005. Ten jet fuel suppliers submitted tenders, and based on the March/April volume requirements of 350,000 metric tons of Jet A-1 Fuel, the tender was approximately five times oversubscribed.[32]

PricewaterhouseCoopers' Statement of Phase 1 Findings[33]

On March 28, PricewaterhouseCoopers (PwC), the Special Auditor appointed to investigate the CAO trading debacle, issued a Statement of Phase 1 Findings (Phase 1 Report) to report on the progress of its investigations.

CAO's Options Trading Operations

CAO commenced options trading in March 2002, but these were "back-to-back" transactions with airline companies: the company bought options from the latter and sold them on largely similar terms to third parties, earning a premium in the process (documents obtained by the Special Auditor indicated that the company did not have to pay the airline companies a premium). The company took on the role of middleman, as the credit standings of the airline companies in question were not acceptable to the counterparties. The trades were put through the company which then assumed the credit risk of the airline companies. Interviews with the company and its external auditors revealed that although the premiums earned were booked as commission income, the value of the transactions was not disclosed in its financial statements. CAOHC claimed that since the airline companies in question were sister companies of CAO, the transactions should be categorized as related-party, agency-type transactions. The Special Auditor disagreed with this accounting treatment, and were "also unable to agree, therefore, that they need not have been disclosed in the company's 2002 and 2003 financial statements". More back-to-back transactions were undertaken in 2003 and 2004.

The company started speculative options trading on its own account in late March 2003 (and not the third quarter of 2003, as indicated by the Audit Committee Report for that year). From this period until the fourth quarter of 2003, the company took the view that the market price of oil would trend upwards, and therefore bought calls and sold puts (see **Exhibit 6** for

32 Source: Company announcement (February 3, 2005).
33 Source: "Statement of Phase 1 Findings", PricewaterhouseCoopers (March 28, 2005).

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oil price movements and **Exhibit 7** for historical volatility of the Brent Crude Index from 2002 to 2004). This prediction proved to be largely accurate, and the strategy yielded a profit.

The Use of Incorrect Mark-to-market (MTM) Valuation Methodology

The Special Auditor discovered that the company regarded the MTM value of an option as the difference between the strike price and the forward price of the underlying commodity, i.e., the intrinsic value. It did not include the time value of the option, which would have considered factors such as the length of time to maturity of the option, the volatility in the spot price of the underlying commodity, interest rates and other factors. The MTM value of an option approximates to its premium replacement cost, i.e., the quantum of premium required to close out the option at that time. A declining MTM value (which, in the extreme, can become increasingly negative) associated with an increasing oil price would mean an increase in exposure to the counterparty (i.e., the long party). The seller (i.e., the short party), in such a situation, can decide whether to hedge the exposure or close out the position before maturity. Thus, accurate MTM valuation is critical for good risk management and control, and for accurate representation of the option's value in the financial statements (see **Appendix B** for an explanation of the time and intrinsic values of an option).

The company's use of the incorrect MTM valuation methodology continued throughout 2004, despite the discovery that its own MTM valuation of its various options contracts differed significantly from the valuation of these same contracts by the counterparties. Such counterparties had sent MTM statements of the company's outstanding options positions with them, either at the company's request or in support of margin calls, and the company met the margin calls without protest until it lost the financial capacity to do so at the end of September 2004.

The Change in Trading Strategy and the January 2004 Restructuring

CAO took a bearish view of the trend in oil prices in the fourth quarter of 2003, and began to sell calls and buy puts, with the result that it was in a short position at the end of the quarter. Some of these trades were compound options, i.e., options with extendible features that gave one party to the contract the option to extend the contract on the same or modified terms. The intention behind including such features was to increase the premium or improve the strike price. As the assumption was that oil prices would fall, it was further assumed that the counterparties would not extend the options, and these would therefore lapse to the benefit of the company.

As it turned out, oil prices did not correct downwards, and instead accelerated upwards in an environment of increased tension and uncertainty in the Middle East (see **Exhibit 8** for an overview of political events that happened around this period). The rise in oil prices resulted in the counterparties exercising the extendible features on options, and with the calls that were sold, the company faced the real risk of having to sell the contracted number of barrels at the strike price. A number of the options that were executed in the fourth quarter of 2003 were maturing in the first quarter of 2004, and with the prevailing oil prices at the time, the company faced the real possibility of realizing substantial losses in that quarter.

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It was against this background that the company decided to restructure the options in January 2004, perhaps influenced by the wish not to crystallize or record losses on the maturing options. The restructuring involved the simultaneous selling and buying of options, and comprised two elements. The first element involved the buying of options in order to close out the existing options that were maturing: the premiums that were paid for these options corresponded largely to the negative MTM value on the said existing options. The second element involved the sale of options to generate sufficient premiums to settle both the premiums that the company was required to pay under the first element, as well as the transaction cost (which might have included advisory fees, commissions, etc.) of the restructuring. CAO sold longer dated calls and puts with higher strike prices and volumes, and the maturity dates on these contracts stretched from the second quarter of 2004 to the first quarter of 2005, and extendible features stretched further to the fourth quarter of 2005. Thus, the quantum of premiums that needed to be generated was entirely dictated by the premiums and transaction cost that had to be paid: to raise sufficiently high premiums, the company had to assume higher exposure to losses.

The January restructuring, from the company's perspective, was underpinned by its view that oil prices would trend downwards in 2004. No assistance from independent third parties was sought by the company to evaluate the commercial sense of the restructuring.

The June 2004 Restructuring

The June restructuring was flawed for essentially the same reasons as was the case with the January restructuring. There were, however, two further critical aspects. First, the risks that the company assumed were far greater than had been the case with the January restructuring due to the larger negative MTM value that the company was facing then. A significant proportion of the company's options portfolio was restructured in June, and consequently, premiums that had to be generated in order to enable to company to settle the premiums that were, in turn, required to buy options to close out the pre-existing negative options positions were much higher. The transaction cost for the restructuring that was payable to the counterparty was also higher. Second, unlike the January restructuring, in executing the June restructuring, it would have been extremely difficult for the company to manage the negative MTM value of the options portfolio. Any material movement in oil prices would have resulted in a deterioration of the MTM value of the restructured positions. The company should have been aware of the prospect of margin calls made after the June restructuring, and should have appreciated that this was a very real possibility, for three reasons. First, any reasonably informed participant in the business of options trading ought to have known that the negative MTM value, post the June restructuring, would be greater than the negative MTM value pre-restructuring. Second, even if oil prices were ultimately to trend downwards, given the long tenure of the options, material interim fluctuations in oil prices would have resulted in margin calls against the company. Third, in May 2004, the company had already begun to meet margin calls arising from the January restructuring. Given the volume and tenure of the options that were being written under the June 2004 restructuring, the company should have also appreciated that more such margin calls would be made, and were likely to be significant.

In fact, oil prices continued their upward trend after the June restructuring, and as a result, the company faced substantial margin calls on options that were written under the June restructuring. These margin calls were made from July 2004 and continued right through to

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November 2004. The company attempted to support them up to September 2004, but lost the financial capacity to do so by the end of September 2004.

The September 2004 Restructuring

In September, the company restructured the options that were close to maturing against the backdrop of its worsening cash position resulting from the margin calls referred to above. The September restructuring involved five counterparties (whereas the previous two involved single counterparties), and took place from August 31 to September 27. The fundamental objective of the exercise remained the same, namely, to close out near-dated call options and replace them with longer-dated call options for a much higher volume. The company, by this stage, was facing huge negative MTM values on its options portfolio, and it would have been apparent that any movement of oil prices upwards would have resulted in huge margin calls being made by the counterparties.

The margin calls that the company faced and satisfied spanned a period of seven months, from May to November 2004, and they increased in magnitude after the June restructuring. CAO satisfied the calls through a combination of cash and standby letters of credit. The spike in oil prices in early October and the consequent increased volatility meant that the company did not have sufficient cash to meet margin calls: New York oil futures soared to a record US$55.67 a barrel on October 25, partly because of surging demand from China. The Special Auditor calculated the MTM losses as at October 8 to be US$367m. The company finally formally informed CAOHC of its losses, and a document dated October 9 indicated that the losses were unrealized and amounted to US$180m. The document also requested financial support of US$130m, which could rise to US$200m if oil prices hit US$55/barrel, and US$400m if they hit US$61/barrel. CAO indicated that if all positions had been closed on October 7, the realized losses would have been US$500m, and if closed on October 8, US$550m. (See **Appendix C** for an example of the "snowball effect" of derivative losses).

Overstating of Financial Performance in 2004

Due to the company's incorrect accounting treatment of options and the impact of the restructurings, there were material inaccuracies in the 2004 quarterly announcements, as shown in the table below:

(in S$ m)	1Q	2Q	YTD June '04	3Q	YTD Sept. '04
Reported PBT	19.0	19.3	38.3	11.3	49.6
Adjusted PBT	–6.4	–58.0	–64.4	–314.6	–379.0

CAO's Risk Management Environment

Only swaps and futures were traded on a speculative basis at the time of the company's listing. However, there was no formal risk management manual in place for derivatives

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trading until March 2002, when the RMM, which incorporated guidelines for the speculative trading of swaps and futures, was approved by the Board.

The Special Auditor thought that when options trading started in 2002, and in particular when speculative options trading started in March 2003, the following measures ought to have been taken before trading commenced:

- The Board ought to have established appropriate guidelines for such trading and ensured that they were consistent with the company's fundamental risk management policies, management capabilities and expertise, and overall risk appetite and tolerance;
- The appropriate accounting and valuation treatment for options ought to have been addressed.

The RMM could also have been improved in the following areas:

- The reporting line of the Chairman of the Risk Management Committee (RMC) was stated in the RMM as being to the CEO. Even if a reporting line to the CEO was recognized, the RMM should have clearly stipulated that the primary reporting line was to the Audit Committee and the Board;
- Then, day-to-day risk management responsibility ought not to have been delegated to the CEO. Rather, this should have been the responsibility of the Chairman of the RMC.

The Revised Scheme of Arrangement of May 12

On May 12, about three months after the company announced its initial scheme of arrangement (Initial Scheme), CAO presented a "significantly improved" scheme of arrangement to its creditors (Revised Scheme). Calling it the "final" scheme of arrangement, CAO claimed that it was formulated after "a detailed process of meeting and discussions with its creditors to obtain feedback and exchange ideas". CAO's parent company, CAOHC, released a simultaneous announcement, saying that "as a matter of goodwill, and in order to assist the [company] to get back on its feet, CAOHC had agreed to the general terms of the Revised Scheme to the extent applicable to it". It further indicated that the revised terms were "already the most favorable terms CAOHC [would] accept, and that no revision [would] be considered".[34] (See **Exhibit 9** for a comparison of the terms of the Initial Scheme and the Revised Scheme).

The main elements of the Revised Scheme[35] were:

- A cash injection of US$130m from CAOHC and a new investor[36] by way of fresh equity to CAO, on terms to be agreed between CAOHC, the new investor and the company;
- An initial cash distribution of US$130m to the creditors, comprising:
  - US$100m from the cash injection described above;

34 Company announcement (May 12, 2005).

35 Source: Company announcement (May 12, 2005).

36 Although this new investor was still not directly named, the announcement indicated that "discussions between CAOHC and Temasek are still continuing".

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- US$30m from cash derived from the existing assets of the company;

- CAO's debt (less the initial cash distribution) would be restructured into US$145m of deferred debt repayable over a period of five years. Creditors would also be paid interest at the LIBOR rate on the deferred debt. Furthermore, CAOHC agreed to provide a guarantee over the repayment of the deferred debt;

- CAO proposed to fund the debt repayment through cash flow from operations, dividends from the company's investments, sale of its stake in CLH (Compañia Logistica de Hidrocarburos, its Spanish investment) and a refinancing exercise. The company committed to apply the first US$60m of proceeds from the CLH divestment to debt repayment, while CAOHC agreed to "assist CAO in the refinancing exercise";

- Creditors were offered two debt repayment options:
  - Option A provided creditors with the option of receiving a single, immediate cash payment (and therefore an "immediate cash exit") at a fixed recovery rate of 45%. Due to constraints on the cash available under the Revised Scheme, up to US$45m of the initial cash distribution of US$130m would be set aside for this option (i.e., the total value of creditors that may participate in Option A would be capped at US$100m). In the event that Option A was oversubscribed, creditors would participate in Option A on a pro-rata basis to the value of their debt, with any claims in excess of US$100m being transferred to Option B;

  - Under Option B, creditors' debt would be restructured into US$230m and repaid in two parts:
    - An initial cash distribution of US$85m;

    - The balance of US$145m would be converted into deferred debt, repayable over five years and paying interest at LIBOR;

- Creditors would be provided with an option to purchase (using their restructured debt) up to 10% of the equity in the enlarged share capital of CAO on the same terms as the new investors;

- As was the case in the Initial Scheme, CAOHC would not participate in the initial cash distribution and deferred debt in respect of its shareholder loan of US$118m, and would convert its debt into shares in CAO at a price to be agreed by CAOHC, the new investor and the company;

- Creditors were again asked to give their irrevocable waiver, release, discharge and extinguishment of all rights, interests and claims against the company in relation to the balance waived debt.

The company indicated that it was presently conducting a "proof of debt" verification exercise to ascertain and conclude on the final debt that would participate in the Revised Scheme. The exercise resulted in a more accurate estimate of its total debt, which was valued at US$510m (as opposed to US$530m at the time of the announcement of the Initial Scheme).

There was no immediate reaction from the creditors, but several market commentators viewed the new scheme favorably. Dariusz Kowalczyk, Senior Investment Strategist at CFC Securities in Hong Kong, said, "It's good news for the creditors, good news for the Singapore market and it goes some way in restoring investor confidence, and most importantly, it will

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improve investor confidence in the China market. We could have closure to the whole debacle." David Gerald, President of the SIAS, thought, "Any news that the company is revising to settle is good news. The company is trying to show that they are genuine about caring about the stakeholders, and that they would do their best to help them."[37]

Damage Control: Chen's Lawyers React

Meanwhile, lawyers for Chen Jiulin moved to distance their client from the speculative derivatives trading that led to CAO's collapse. They claimed that his involvement in such activities was largely supervisory, and that he had "never personally traded in the market, whether by himself or through an intermediary". Furthermore, they noted that most of the trading activity was restricted to the chief trader, and since Chen was unfamiliar with the trading operations, he had set up a risk management committee comprising trained professionals. "With the support of these experienced people possessing specialized knowledge in an admittedly complex area of trading, Mr. Chen's role in the company was largely purely management", his lawyers indicated.[38]

In response to the above, an article by Wong Wei Kong, a popular columnist at the Business Times, asked the question: to what extent should management shoulder the blame when a company runs into trouble?

> *"It is all well and good to say that [the] former CAO chief trader ... did most of the trading. But it is equally well and good to say that Mr. Chen was [his] superior and should have made it his business – as CEO – to ensure that the company's trading activities were in order and were not exposing it to unnecessary risks ... Mr. Chen's lawyers have said: 'If any fault is to be attributed to Mr. Chen, it would be an error in omission rather than commission on his part.' ... Well, given what happened to CAO, shareholders will hardly find omission acceptable."*
>
> Business Times (May 13, 2005)

PwC's "Phase 2" Report[39]

On June 3, PwC issued its "Phase 2" report (Phase 2 Report). While the Phase 1 Report looked into how and why the losses were incurred, the Phase 2 Report aimed to apportion responsibility for CAO's losses. The Special Auditor noted that:

> *"... in a short span of about 5 years the Company had unwittingly or otherwise, changed its primary business model from one that was rooted in physical trading with some hedging paper trades and some speculative trades to a model that was heavily weighted the other way. Moreover, the nature of its speculative portfolio itself changed within a short time from relatively straightforward transactions in*

37 Source: "China Aviation Raises Debt Payment Offer To 53.9%", Bloomberg (May 12, 2005).

38 Source: "Chen Not Involved In Futures Trades: Lawyers", Business Times (May 13, 2005).

39 PricewaterhouseCoopers "Phase 2" Report (June 3, 2005).

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futures and swaps to exotic options. In doing so, the Company was apparently oblivious to the very significantly different risks that applied to a seller of options for whom the downside risk is potentially unlimited as opposed to a buyer of options whose risk is limited to the premium cost."

PwC Phase 2 Report (June 3, 2005)

Risks and Internal Risk Management

The company had highlighted in its 2002 Annual Report that the RMM, which it had commissioned Ernst & Young to develop, was "modeled on the best industry practices used by the major international oil companies". It did not, however, disclose that the Board had approved and adopted the RMM on a "test run" basis, as the Board and the Audit Committee had not had sufficient time to digest its contents and lacked the expertise to comment on the figures. Moreover, the RMM was not written for, and did not address, options trading. It did not state trading limits for options, and when attempts were made to establish such limits in late 2003 and early 2004, the MTM value of the options portfolio was significantly in the negative, and had already breached these limits. Furthermore, there was no attempt to distinguish between the different types of options which were of varying complexity and thus carried with them varying degrees of risks. There were no procedures to determine what hedging mechanisms were to be utilized to address potential downsides to the trading positions taken by the company, and to measure Value-at-Risk and the "Greeks", which were key techniques in respectively measuring the market risks of derivatives in general, and options in particular.

The Special Auditor also commented that "the Board and/or senior management ought to understand and be fully aware of the risks associated with the Company's business activities, regardless of how complex or sophisticated these activities may be, whether due to their inherent nature or otherwise".

PwC pointed out the control failures at the front-, middle- and back-office levels. Although there were no specific options trading limits in place, there were limits in place for trading as a whole. The latter should have served as an indication of the company's overall appetite for risk. The traders, who were the front office for trading purposes, did not monitor their options trades, and failed to ensure that there was adherence to such trading limits. The front office also failed to highlight the fact that the wrong valuation methodology for options was being applied, and to advise others in the company of the consequences and ramifications of the various restructuring exercises, even though it was well placed to do so.

The Risk Controller, who occupied the middle office, was responsible for recording the trades, and monitoring and reporting excesses. It failed to accurately compute and report the MTM valuation of the company's options portfolio and risk exposure, and to apply key risk measurement techniques in respect of the company's options trades and overall derivatives portfolio.

The finance department occupied the back office, and was responsible for settlement of the trades. It fell short in this role as it did not identify and stop activities that breached the permitted limits. Specifically, it failed to prevent the use of non-designated funds to satisfy margin calls worth about US$381m in the 7-month period from May through November

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2004. Moreover, the back office failed to ensure that basic safeguards and controls inherent in having counter signatories for cash payments and the issuance of letters of credit were adhered to, and to accurately report the MTM losses in the company's financial statements.

The RMC and Internal Audit Division (IAD) were also criticized for not playing their oversight role. In particular, the RMC failed to evaluate and understand the business of options trading before and after the company commenced such operations. In fact, options trading started with a casual exchange of e-mails between the principal trader and Chen, with the sole concern being whether this could be a profitable venture. The IAD largely existed only in name, as it did not make regular reports to the Audit Committee, and its reports were repetitive and perfunctory in content.

The Special Auditor placed primary responsibility of the trading loss on CAO's CEO, Chen. His four main failings were:

- Allowing options trading to commence without fully understanding the business and its risks;
- Committing the company to unacceptably imprudent risks in the restructurings;
- Failing to accurately report the MTM losses in the company's financial results;
- Fostering a culture of secrecy that included attempts to conceal the losses on the options trades.

PwC concluded that Chen was primarily motivated by a need to surpass his past achievements as CEO and a plan to turn CAO into an international oil major. Chen admitted that he did not disclose the trading losses because he did not wish for the price of the company's shares to be affected, and that he had made these mistakes because he had the interests of the company in mind. These assertions, however, showed that he had a distorted view of what constituted the interests of the company.

Role of the External Auditors

As mentioned above, CAO accounted for only the intrinsic value of its options, and amortized the premium income over the life of the option as a substitute for time value. The external auditors accepted this valuation method, arguing that it provided a reasonable surrogate for time value for short-dated options. They further indicated that as the company sold mostly short-dated options in 2003, the approach could be applied for the audit for that financial year.

PwC pointed out that the above assertion was misguided because:

- The company sold a significant number of compound options (i.e., options with extendible features) which extended the tenure as well as increased the volume. As a result, these options could not properly be regarded as short-dated options;
- There was no basis for the company's valuation "theory".

In the end, the external auditors failed to alert management that the company might not have the expertise, or the risk management environment, to understand the risks and conduct the business of options trading.

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Corporate Governance

CAO was prohibited from engaging in any speculative trading activities by the CSRC, and in fact was censured by the regulatory body in 2001, when it disclosed, in its IPO prospectus, that it had been trading in derivatives (swaps and futures) for speculative purposes since 1999 (CSRC regulations allowed state-owned enterprises to engage in trading activities for hedging purposes). The company was ordered to cease all such operations, but its subsequent annual reports indicated that the speculative trading operations continued. It was unclear why the company's directors, including those nominated by the parent company, CAOHC, did not question or object to this contravention of regulations, even though the trading activities were disclosed in public information. The Audit Committee did not carry out its function of identifying and monitoring the financial risks involved in options trading, and investigating whether the risk management framework and safeguards were sufficient for dealing with the business. PwC commented that, to the extent that there were risk management procedures and controls that could have applied to the options trades, management was too ready to override them.

Events of October and November 2004

CAOHC was not aware of the company's deteriorating financial position until early October, when Chen prepared a report to the CAOHC Executive Committee. In the report, Chen informed the committee of the magnitude of the losses (US$500m if all options positions were closed out on October 7, and US$550m if they were closed out on October 8). He warned the committee that the company would face liquidation if these losses were disclosed, and proposed that CAOHC take over the options positions in a "back-to-back" arrangement, monitor the market and employ measures as appropriate in order to reduce the loss, possibly to zero. Chen further suggested that CAOHC should sell part of its stake in the company "when circumstances necessitated the realization of losses, in order to ensure that CAOHC did not have to bear the losses".

CAOHC formed a crisis management team to try and rescue CAO, and its members included several directors of the company. During this time, no attempt was made to disclose the company's problems to the Independent Directors, external auditors, the SGX or the investing public. Prior to the release of the company's third quarter results, Chen may have misled CAO's financial controller into believing that CAOHC had approved the "options transfer agreement" by placing the signature of Jia Changbin, CAOHC's president (who was also CAO's chairman), on such an agreement, without Jia's knowledge. Accordingly, the Audit Committee was not informed of the trading losses, and approved CAO's third quarter results, which showed a net profit.

Concluding Observations

PwC concluded the report by stating that:

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> *"This financial debacle could only happen because of the failure at every level of the Company. If anyone at any level had independently asked more questions, or delved a little deeper, or even sought to understand the position more fully, the situation might well have been averted."*
>
> PwC Phase 2 Report (June 3, 2005)

CAO issued a statement, indicating that it intended to form a committee to study the results of PwC's investigations, and "make recommendations to the Company on specific remedial or disciplinary actions which the Company ought to take moving forward". It also stated that with "greater clarity on the past events and circumstances as a result of the conclusion of PwC's investigations, the Company is of the view that it is in a better position now to move forward with the debt and equity restructuring exercise in a positive manner".[40]

To Be Continued ...

The company had called for a creditor meeting to approve its latest debt restructuring plan on June 8. SK Corp., which had petitioned the Singapore High Court to put CAO into judicial management, applied to have its hearing postponed to June 13. Earlier on, before the announcement of the Revised Scheme, the Singapore High Court had rejected an attempt by CAOHC to obtain immunity from civil litigation. CAOHC argued unsuccessfully that as a part of the Chinese government, Singapore's courts had no jurisdiction over it. It was highly uncertain how this potentially complex restructuring process, involving more than one hundred stakeholders, would work out.

40 Source: Company announcement (June 3, 2005).

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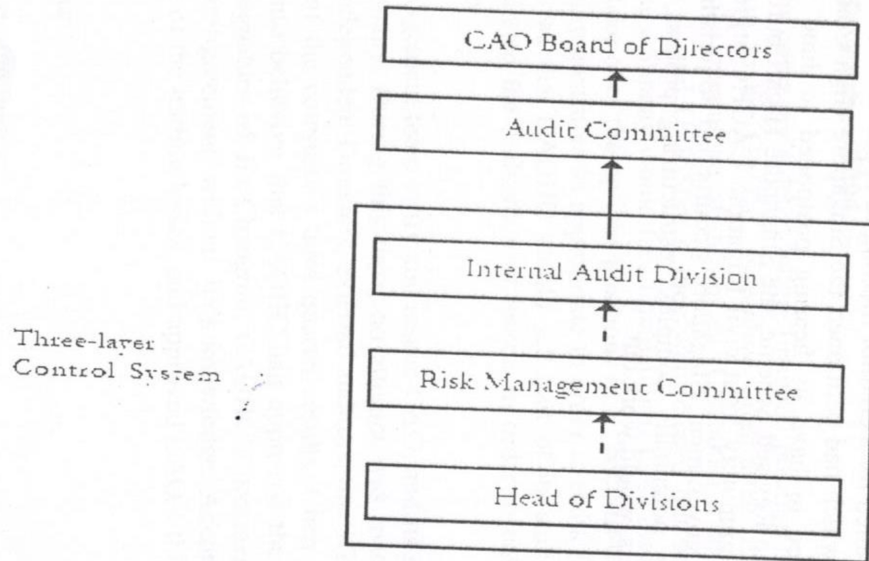
Exhibit 1

Excerpt from CAO's 2003 Annual Report on its Corporate Governance Structure

6. *Enhanced Risk Management - Three Layers of Control*

CAO's on-going efforts to optimally manage risk have resulted in the implementation of a formal system of rigorous internal controls over three layers. This system has been further enhanced through the incorporation of both Chinese and Western approaches to management control as encapsulated in its corporate maxim "Chinese Wisdom, International Expertise".



Within the above framework, the internal control supervision structure comprises all appointed heads of divisions, an independent risk management committee and an internal audit division that reports directly to the Board's Audit Committee.

Source: CAO.

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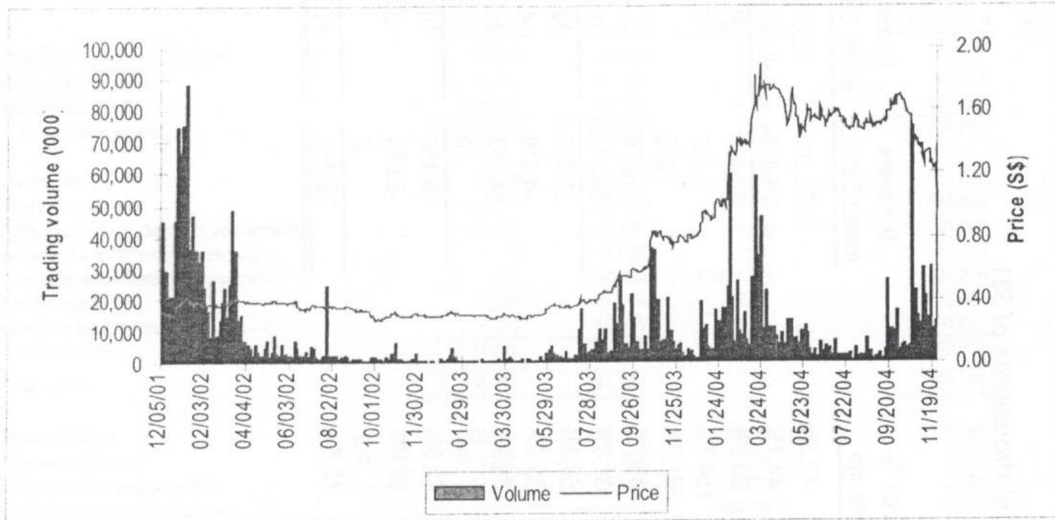
Exhibit 2(a)

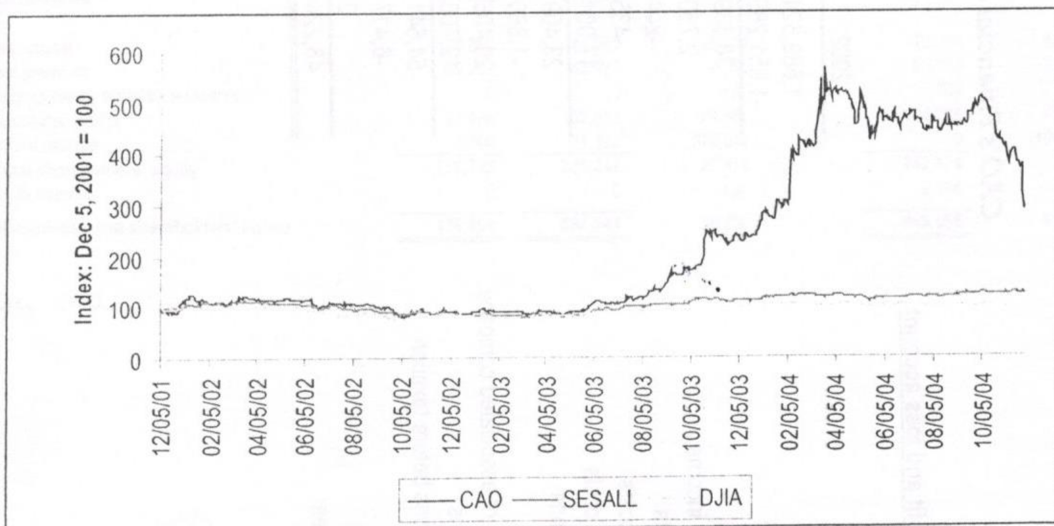
Share Price Performance of CAO from IPO until Trading Suspension in November 2004



Source: Bloomberg.

Exhibit 2(b)

Performance of CAO shares Relative to the SESALL Index and the Dow Jones Industrial Average



Source: Bloomberg.

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Exhibit 3

CAO's Financial Statements (figures in thousands of S$)

Consolidated profit and loss account

	2002	2003	*YoY % change*	9 months ended Sep 03	9 months ended Sep 04	*YoY % change*
Revenue	1,689,624	2,425,092	*43.5%*	1,772,303	2,204,923	*24.4%*
Cost of revenue	-1,651,285	-2,378,983	*44.1%*	-1,738,853	-2,178,692	*25.3%*
Gross profit	38,339	46,109	*20.3%*	33,450	26,231	*-21.6%*
Other operating income	2,750	15,243	*454.3%*	7,787	5,842	*-25.0%*
Distribution costs	-244	-883	*261.9%*	-276	-467	*69.2%*
Administration costs	-435	-721	*65.7%*	-476	-671	*41.0%*
Other operating costs	-17,001	-22,406	*31.8%*	-14,472	-16,946	*17.1%*
Profit from operations	23,409	37,342	*59.5%*	26,013	13,989	*-46.2%*
Finance costs	-1,880	-4,717	*150.9%*	-4,216	-4,878	*15.7%*
Share of results of associated company	20,406	34,472	*68.9%*	24,663	40,455	*64.0%*
Exceptional items	12,706	0	*n.a.*	0	0	*n.a.*
Profit from operations before taxation	54,641	67,097	*22.8%*	46,460	49,566	*6.7%*
Tax expense	-6,417	-12,827	*99.9%*	-6,674	-7,781	*16.6%*
Minority interest	0	0	*n.a.*	0	-63	*n.a.*
Net profit for the year	48,224	54,270	*12.5%*	39,786	41,722	*4.9%*

Source: CAO.

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Exhibit 3 (Cont'd)

CAO's Financial Statements (figures in thousands of S$)

Consolidated balance sheets	As at Dec 31, 2002	As at Dec 31, 2003	*YoY % change*	As at Sep 30, 2004	*% change from Dec 31, 2003*
Property, plant and equipment	17,758	17,844	*0.5%*	17,425	*-2.3%*
Associated company	95,332	91,206	*-4.3%*	96,662	*6.0%*
Other investments	109,328	110,251	*0.8%*	110,654	*0.4%*
Non-current assets	222,418	219,301	*-1.4%*	224,741	*2.5%*
Inventories	10,548	4,232	*-59.9%*	0	*-100.0%*
Trade receivables	107,118	198,983	*85.8%*	144,893	*-27.2%*
Other receivables, deposits, prepayments	43,711	37,484	*-14.2%*	24,529	*-34.6%*
Amount due from holding company	0	31,051	*n.a.*	78,262	*152.0%*
Amount due from related companies	292	37,740	*12,824.7%*	124,208	*229.1%*
Fixed deposits	46,724	57,764	*23.6%*	173,663	*200.6%*
Cash and bank balances	6,183	10,989	*77.7%*	196,662	*1,689.6%*
Current assets	214,576	378,243	*76.3%*	742,217	*96.2%*
Total assets	**436,994**	**597,544**	*36.7%*	**966,958**	*61.8%*
Trade payables	86,411	216,016	*150.0%*	316,183	*46.4%*
Accrued staff costs	6,336	7,154	*12.9%*	7,086	*-1.0%*
Other payables and accruals	44,505	36,404	*-18.2%*	6,899	*-81.0%*
Amount due to holding company	78,246	0	*-100.0%*	17,128	*n.a.*
Amount due to related company	0	78,246	*n.a.*	78,246	*0.0%*
Bank loan	0	0	*n.a.*	54,848	*n.a.*
Trust receipt payables	41,675	29,640	*-28.9%*	34,866	*17.6%*
Provision for taxation	3,007	4,760	*58.3%*	922	*-80.6%*
Current liabilities	260,180	372,220	*43.1%*	516,178	*38.7%*
Deferred tax liabilities	82	82	*0.0%*	82	*0.0%*
Bank loan	0	0	*n.a.*	205,680	*n.a.*
Non-current liabilities	82	82	*0.0%*	205,762	*250,829.3%*
Total liabilities	**260,262**	**372,302**	*43.0%*	**721,940**	*93.9%*
Share capital	28,800	34,560	*20.0%*	48,384	*40.0%*
Share premium	69,737	63,977	*-8.3%*	50,153	*-21.6%*
Foreign currency translation reserve	0	0	*n.a.*	102	*n.a.*
Accumulated profits	72,435	102,513	*41.5%*	144,235	*40.7%*
Dividend reserve	5,760	24,192	*320.0%*	0	*-100.0%*
Total shareholders' equity	176,732	225,242	*27.4%*	**242,874**	*7.8%*
Minority interest	0	0	*n.a.*	2,144	*n.a.*
Total liabilities and shareholders' equity	**436,994**	**597,544**	*36.7%*	**966,958**	*61.8%*

Source: CAO.

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Exhibit 3 (Cont'd)

CAO's Financial Statements (figures in thousands of S$)

Consolidated statement of cash flows	2002	2003	9 months ended Sep 03	9 months ended Sep 04
Cash flow from operating activities:				
Net profit from operations before taxation	54,641	67,097	46,460	49,566
Adjustments for:				
Depreciation of PPE	649	753	539	696
Amortization of goodwill	1,239	2,227	1,860	0
Gain on disposal of PPE	-490	0	0	0
Interest expense	902	854	652	2,007
Interest income	-2,024	-1,179	-771	-1,473
Share of results of associated company	-20,406	-34,472	-24,663	-40,455
Dividend income	0	-13,091	-6,977	-2,224
Write-back of provision for mgmt fee	-9,235	0	0	0
Write-back of provision for staff bonus	-3,471	0	0	0
Operating profit before working capital changes	21,805	22,189	17,100	8,117
Decr/(Incr) in inventories	-10,548	6,316	10,536	4,232
Decr/(Incr) in trade receivables	46,598	-91,865	-10,006	75,900
Decr/(Incr) in other receivables, deposits, prepayments	-30,551	6,227	578	-8,855
Decr/(Incr) in amount due from holding company	0	-31,051	-809	-47,211
Decr/(Incr) in amount due from related companies	-292	-37,448	-8	-86,468
(Decr)/Incr in trade payables	-2,252	129,605	40,029	67,422
(Decr)/Incr in accrued staff costs	100	818	-2,844	-68
(Decr)/Incr in other payables and accruals	33,090	-8,101	-10,772	3,240
(Decr)/Incr in trust receipt payables	-10,688	-12,035	-7,519	5,226
(Decr)/Incr in amount due to holding company	-100	-78,246	-78,246	17,128
(Decr)/Incr in amount due to a related company	0	78,246	69,961	0
Cash (used in)/generated from operations	**47,162**	**-15,345**	**28,000**	**38,663**
Income tax paid	-3,152	-5,386	-4,365	-5,506
Interest received	2,024	1,179	771	1,473
Interest paid	-902	-854	-652	-2,007
Net cash flows (used in)/from operating activities	**45,132**	**-20,406**	**23,754**	**32,623**
Cash flow from investing activities:				
Proceeds from sale of PPE	3,738	0	0	0
Purchase of PPE	-7,559	-839	-440	-277
Gains/(Expenses) on acquisition of associated company	-902	-63	-63	2,183
Additions in other investments	-109,282	-923	-148	-496
Dividend income	0	43,837	37,723	31,203
Net cash flows from/(used in) investing activities	**-114,005**	**42,012**	**37,072**	**32,613**
Cash flow from financing activities:				
Dividends paid	-18,000	-5,760	-5,760	-24,192
Loan receipts/(payments)	0	0	0	258,036
Translation difference	0	0	0	2,492
Expenses on initial public offering	-190	0	0	0
Net cash flows used in financing activities	**-18,190**	**-5,760**	**-5,760**	**236,336**
Net incr/(decr) in cash and equivalents	-87,063	15,846	55,066	301,572
Cash and equivalents at the beginning of period	139,970	52,907	52,907	68,753
Cash and equivalents at the end of period	**52,907**	**68,753**	**107,973**	**370,325**

Source: CAO.

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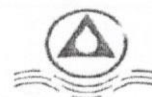
Exhibit 4

Excerpt from CAO's Presentation to Analysts (November 16, 2004)



Trading didn't do as well as hoped

- Some trading losses
- Continues the pattern we've been noting for several quarters
- Losses recognised on closed positions, and mark-to-market
- For what it's worth, there *was* a positive gross profit
  - Just not enough to cover operating expenses
- However, proforma PBT – that is, excepting trading* – was up 121% y/y in Q3, 36% y/y for nine months

*and equalising amortisation treatment

Source: CAO.

Exhibit 5

List of CAO's creditors

Creditor	Exposure (US$ m)	% of total
Six Chinese banks	148	22.8%
CAOHC	118	18.2%
Standard Bank	34	5.3%
Fortis Bank	33	5.1%
Three subsidiaries of BP	32	5.0%
Sumitomo Mitsui Banking Corporation	26	4.0%
Barclays Capital	19	2.9%
Singapore Petroleum Company	15	2.4%
Glencore International	15	2.3%
Overseas Chinses Banking Corporation	15	2.3%
SK Corp	14	2.2%
Societe Generale	14	2.1%
United Overseas Bank	10	1.5%
Mitsui & Co.	8	1.2%
J Aron & Co	8	1.2%
Macquarie Bank	3	0.4%
Marubeni International	2	0.3%
View Sino International	1	0.2%
74 other creditors	134	20.7%
Total debt	**648**	
Total number of creditors	**99**	

Source: Various Bloomberg articles.

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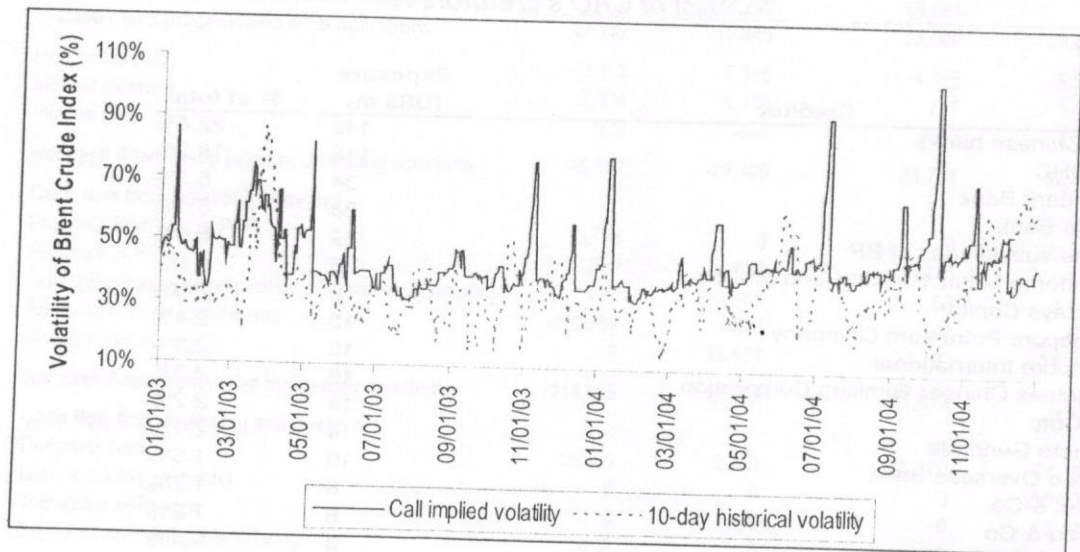
Exhibit 6

Movement of the Brent Crude Index (2003-2004)

Source: Bloomberg.

Exhibit 7

Implied and 10-Day Historical Volatility of the Brent Crude Index (2003-2004)



Source: Bloomberg.

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Exhibit 8

Overview of Relevant Political Events from March 2003 to December 2004

Mar 20, 2003	Second Gulf War begins
Apr 9, 2003	Coalition forces take control of Baghdad
May 12, 2003	Bomb attack on compound housing mainly Westerners in Riyadh kills 35
Aug 2003	Bomb attack at Jordanian embassy in Baghdad kills 11; attack at UN headquarters in Baghdad kills 22, including the UN's chief envoy; car bomb in Najaf kills 125, including prominent religious leader
Nov 2003	By early-November, more US soldiers have been killed in Iraq than died during the war to oust Saddam Hussein; in the course of the month, 105 coalition troops are killed
Nov 8, 2003	Suicide attack on diplomatic housing compound in Riyadh kills 17
Apr/May 2004	Hundreds reported killed in fighting during month-long US military siege of Sunni Muslim city of Falluja; attack on petrochemical site at Yanbu, Saudi Arabia, kills five foreigners; attack on oil company compound in Khobar, Saudi Arabia, kills 22
Dec 2004	Attack on US consulate in Jeddah kills five staff and four attackers; two car bombs explode in central Riyadh and security forces kill seven suspected insurgents

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Exhibit 9

Comparison of the Initial Scheme with the Revised Scheme

(in US$ m)	Initial Scheme	Revised Scheme
Total estimated debt	530	510
Initial cash payment, of which	100	130
– *New equity injection*	*70*	*100*
– *Cash from existing assets*	*30*	*30*
Deferred debt	120	145
Overall recovery value	220	275
Recovery (%)		
– Gross recovery	41	54
– Present value	36	52
Deferred debt repayment period (years)	8	5
Interest paid on deferred debt	None	LIBOR
Option for immediate repayment	None	Creditors can opt to receive a single immediate cash payment of up to US$45m at a fixed recovery rate of 45% (i.e., total debt accepted for this option is capped at US$100m)
CAOHC guarantee	None	CAOHC will guarantee the deferred portion of the restructured debt
Equity participation	None	Creditors will be offered an option to purchase, using their restructured debts, up to 10% of the enlarged share capital of CAO on the same terms as the new investors

Note: The recovery values under the Final Scheme are based on participating creditors of US$510m and the present value recovery rate is based on a 5% discount rate and considers interest payable at an assumed LIBOR rate of 2.8% per annum on the deferred proportion of the restructured debt.

Source: CAO.

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Appendix A
Chronology of Main Events

Mar 2002

- CAO commenced "back-to-back" options trading transactions with airline companies

Mar 2003

- CAO commenced speculative options trading on its own account
- The company initially bet that oil prices would trend upwards, which proved correct, and its trading operations produced some profit

Q4 2003

- The company started betting that oil prices would correct downwards, but this proved inaccurate
- PwC indicated in its report that the company's mark-to-market trading losses then amounted to about US$1.2m

Q1 2004

- Faced with soaring global oil prices, CAO faced impending losses of $5.8m if it closed out all its positions in the market
- It "restructured" its positions and increased its exposure as a result

Q2 2004

- Oil prices continued to rise and CAO ran up debts of US$30m
- To cover the losses, it decided to move back the positions on the trades to 2005 and 2006, and further increased the volume transacted (the second "restructuring")
- Trading losses at this stage amounted to US$35.8m

Sep 2004

- CAO restructured its portfolio for a third time, further increasing its exposure to the oil markets

Oct 2004

- Chen reported to CAOHC that CAO had incurred unrealized paper losses of US$180m, and requested US$130m in financial support; CAO had already paid US$80m to meet margin calls
- Financial support requirements could rise to US$200m if oil prices hit US$55/barrell and US$400m if oil prices hit US$61/barrel
- Furthermore CAO was facing serious cash flow problems: it had almost used up US$26m of working capital, US$120m of a syndicated loan and US$68m from the proceeds of its trade receivables

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Appendix A (Cont'd)
Chronology of Main Events

- Between October 26-28, the company's failure to meet margin calls resulted in the forced closing of a number of derivative contracts, causing realized losses of US$132m
- On October 29, Barclays Capital began to demand payment for the amount of US$26.46m
- PwC estimated that mark-to-market losses as of October 8 was US$367m

November 2004

- On November 8, CAO was forced to close more contracts, incurring another US$100m in losses
- On November 9, Mitsui & Co. demanded payment of US70.33m
- CAO closed more contracts on November 16, incurring additional losses of US$70m
- The next day, on November 17, Standard Bank demanded payment of US$14.43m
- On November 25, the closing of the last batch of contracts brought total losses to US$381m
- CAO's creditors were demanding the payment of $US248m in total, while at the same time, the company had also defaulted on the SocGen-led US$160m syndicated loan
- On November 30, CAO announced that it had incurred US$550m in derivative losses and filed for bankruptcy protection

Source: Various news reports and publications.

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Appendix B

Overview of the Intrinsic and Time Values of an Option

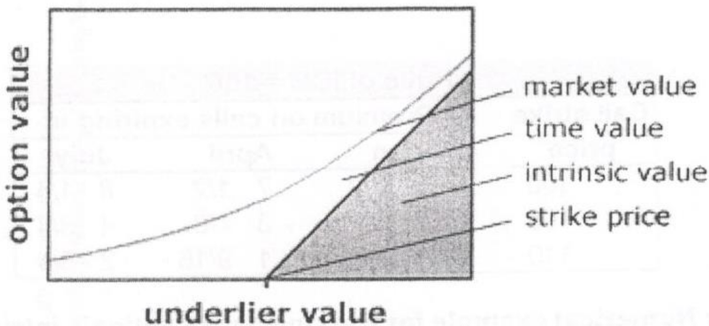

Figure B.1: Components of an option's price, or market value

Intrinsic value and time value are two of the primary determinants of an option's price (or market value). Intrinsic value can be defined as the amount by which the strike price of an option is in-the-money. It is actually the proportion of an option's price that is not lost due to the passage of time. At-the-money and out-of-the-money options do not have any intrinsic value because they do not have any "real" value. You are simply buying time value, which decreases as an option approaches expiration. The intrinsic value of an option is not dependent on the time left until expiration. It is simply an option's minimum value; it tells you the minimum amount an option is worth. Time value is the amount by which the price of an option exceeds its intrinsic value. It is also referred to as extrinsic value, and "decays" over time. In other words, the time value of an option is directly related to how much time an option has until expiration. The more time an option has until expiration, the greater the option's chance of ending up in-the-money. The deeper in-the-money an option is, the less time value and more intrinsic value it has. That's because the option has more real value and you pay less for time. Therefore, the option moves more like the underlying asset.

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Appendix B (Cont'd)

Overview of the Intrinsic and Time Values of an Option

We can use the table below to calculate the intrinsic value and time value of a few call options:

Price of IBM = 106			
Call strike price	Premium on calls expiring in		
	Jan	April	July
100	6 3/8	7 1/2	8 1/4
105	2	3 7/8	4 3/4
110	3/8	1 9/16	2 3/4

Figure B.2: Numerical example for working out an option's intrinsic and time values

1. Strike Price = 100
   Intrinsic value = Underlying price – Strike price = \$106 – \$100 = \$6
   Time value = Call premium – Intrinsic value = \$7½ – \$6 = \$1½
2. Strike Price = 105
   Intrinsic value = Underlying price – Strike price = \$106 – \$105 = \$1
   Time value = Call premium – Intrinsic value = \$3⅞ – \$1 = \$2⅞
3. Strike Price = 110
   Intrinsic value = Underlying price – Strike price = \$106 – \$110 = –\$4 = No Intrinsic Value
   Time value = Call premium – Intrinsic value = \$1 9/16 – \$0 = \$1 9/16 = All Time Value

Source: www.optionetics.com/www.riskglossary.com

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Appendix C

An Example of the "Snowball Effect" of Derivative Losses

- In period 1, the company takes a view that oil prices will fall in the medium term
- It executes a strategy consistent with this view:
  - It sells call options at a price above the prevailing oil price (in the hope that the options expire unexercised)
  - It buys put options at a price either at or above the prevailing oil price (in the hope of exercising them before expiration, after oil prices have fallen)
- In period 1, the company could be in a "zero net cash" position, i.e. the premiums it receives from selling the calls just covers the premiums it pays for buying the puts
- Throughout this example, we make the simplifying assumptions that
  - The company prices the options such that they are valued at $1 per option
  - Transaction costs are 5% of potential losses

For illustrative purposes, we assume the following numeric example

▪ Price of oil in period 1	30
▪ Strike price (X) of calls sold	33
▪ # of calls sold (m)	2
▪ Strike price (X) of puts bought	28
▪ # of puts bought (m)	2

- In period 2 (at the options' maturity date), the price of oil actually rises, contrary to the company's expectations

Again, we use the following numeric examples for illustrative purposes

▪ Price of oil in period 2	36

- Counterparty exercises call options (while the company's put options expire unexercised)

Loss per call option	3
# of call options (m)	2
Total potential loss ($m)	6

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Appendix C (Cont'd)

An example of the "snowball effect" of derivative losses

- The company does not want this loss to be revealed in its financial statements
- So, right before the options' maturity date, it "closes out" all its positions by buying back the options, paying approximately the "realised loss" figure above
- In order to generate funds to pay for the above, the company decides to sell more options
  - It is motivated purely by a desire to generate sufficient funds to cover the premiums paid as well as any transaction costs incurred in the process (the latter at $0.3m)
  - In order to achieve the above, and still taking the view that oil prices will fall, it increases its exposure by selling more calls

This scenario can be illustrated by the following numeric example

Price of oil in period 2	36
Strike price (X) of calls sold	40
# of calls sold (m)	6.3

- In period 3, oil prices rise further to, say, $43 per barrell
- The company then faces the following scenario

Price of oil in period 3	43
Loss per call option	3
# of call options (m)	6.3
Total potential loss ($m)	18.9

- The company may now be facing two potentially financing issues
  - Its potential losses have now ballooned more than three times to $18.9m
  - It may also be facing margin calls if it trades on credit, so for example, if it trades on 20% margin, it will have to come up with $3.78m of cash
  - As its financial situation deteriorates, the counterparty may demand a higher margin

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Appendix C (Cont'd)

An Example of the "Snowball Effect" of Derivative Losses

- The company still does not want to "face the music" and realise its losses
- Instead, it further increases its bets since it now has to generate sufficient premiums to cover the bigger losses, meet margin calls, and pay additional transaction costs

• Price of oil in period 3	43
• Strike price (X) of calls sold	46
• # of calls sold (m)	23.6

- In period 4, oil prices continue to climb, to $50 per barrell

Price of oil in period 4	50
Loss per call option	4
# of call options (m)	23.6
Total potential loss ($m)	94.5

- The company continues its previous strategy, and now may face margin calls on 50% of the potential loss
- Oil prices still continue to rise, and this time, the situation could look like this

Price of oil in period 5	57
Strike price (X) of calls sold	53
Loss per call option	4
# of call options (m)	146.5
Total potential loss ($m)	585.9

- If each period represented 3 months, the company would have seen its losses from derivative trades snowball from $6m to $584m in a period of 15 months
- Throughout this time, it would also be facing increasing margin calls as its exposure increased and the counterparties demand higher margins due to its deteriorating credit standing
- Notice how incremental "bets" that look small in the beginning have an exponential impact on losses

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Appendix C (Cont'd)

An Example of the "Snowball Effect" of Derivative Losses

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