THUNDERBIRD
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COURSE PACK

GF5250: Multinational Corporate Finance

Professor Michael Moffett
Fall 2012

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Nine Dragons Paper—2009

Bankruptcy Rumors
Rumors about this relatively secret company abound. Share prices fell below $1 in November. Following some action on the stock, and at the request of the Hong Kong stock market, the company had to issue a number of press releases denying rumors of acquisitions or other agreements. It also denied rumors that its Chinese mills had taken market-related downtime. Finally, a spokesman said the company had no "liquidity" problems.

G. Rodden, M. Rushton, F. Willis, "Five Companies to Watch," *PPI*, January 2009, p. 21.

The Global Recession
This time is really different. Large and small are all affected. In the past, the big waves would only wash away the sand and leave the rocks. Now the waves are so big, even some rocks are being washed away.

Cheung Yan, Chairwoman of Nine Dragons Paper, "Wastepaper Queen: Letter from China," *New Yorker,* 30 March 2009, p. 8.

Incorporated in Hong Kong in 1995, Nine Dragons Paper (Holdings) Limited had become an international powerhouse in the paper industry. The company's primary product was linerboard, with a product line including *kraftlinerboard*, *testlinerboard*, and *white top linerboard*, in addition to a portfolio of paperboard products used in consumer product packaging. The company had expanded rapidly, its capital expenditure growing at an average annual rate of 120% for the past five years.

But by April 2009, the world economy was spiraling downward. Squeezed by market conditions and burdened by debt, Nine Dragons Paper (NDP), the largest paperboard manufacturer in Asia and second largest in the world, had seen its share price plummet. As the economic crisis of 2008 had bled into 2009, many of NDP's customers had simply disappeared. Rumors had been buzzing since October that NDP was on the very edge of bankruptcy. Now, it was carrying so much debt that more than one analyst was asking, "Will they go bust?" Was the financial crisis of 2008-2009 about to claim another victim?

The Chairlady and Nine Dragons

It is the largest of scaly animals, and it has the following nine characteristics. Its head is like a camel's, its horns like a deer's, its eyes like a hare's, its ears like a bull's, its neck like an iguana's, its belly like a frog's, its scales like those of a carp, its paws like a tiger's, and its claws like an eagle's. It has nine times nine scales, it being the extreme of a lucky number.

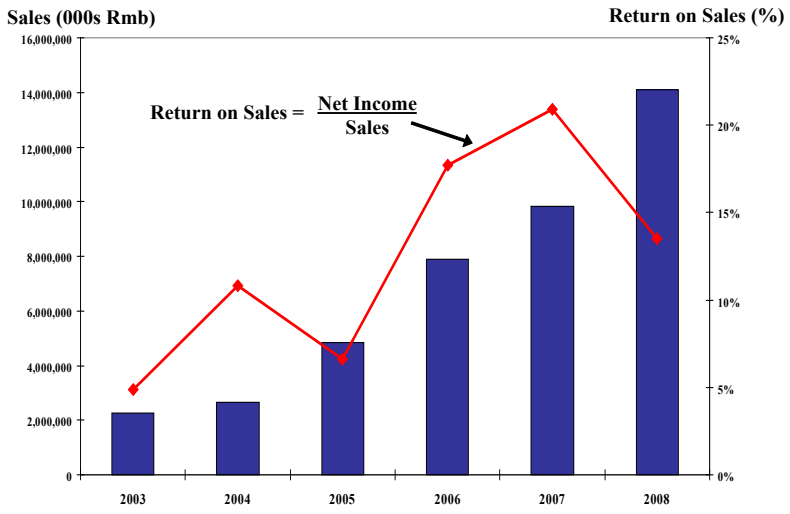
www.ninedragonbaguazhang.com/dragons.htm

Cheung Yan, or Mrs. Cheung as she preferred, was the visionary force behind NDP's success. Her empire was built from trash—discarded cardboard cartons to be precise. The cartons were collected in the U.S. and Europe, shipped to China, then pulped and remanufactured into paperboard. NDP customers then used the paperboard to package goods for shipment back to the U.S. and Europe, returning them to their origins.

Born in 1957, Mrs. Cheung came from a modest family background. She had started as an accountant for a Chinese trading company in Hong Kong, and then started her own company after her employer went under. Her company, Ying Gang Shen, was a scrap paper dealer, purchasing scrap paper in Hong Kong and mainland China and selling it to Chinese paper manufacturers. Paper in China was of generally poor quality, made from bamboo stalk, rice stalk, and grass. The locally collected waste paper didn't meet the needs of paper manufacturers as a raw input. In Europe and the U.S., however, paper was made from wood pulp, which produced a higher quality paper. U.S. companies typically use a higher percentage of pulp, while Chinese companies use more recovered paper, primarily a result of material availability. Realizing that by capturing the waste paper stream in the U.S. and Europe she could provide a higher quality product to her customers in China, Mrs. Cheung moved to the U.S. in 1990 to start another company, American Chung Nam Incorporated (ACN).

One of the first companies to export waste paper from the U.S. to China, ACN started by collecting waste paper from dumps, then expanded its network to include grocery stores, waste haulers, and waste paper collectors. Mrs. Cheung negotiated favorable contracts with shipping companies whose ships were returning to China empty. ACN soon expanded abroad, and became a leading exporter of recovered paper from Europe and Asia to China as well. By 2001, ACN had become the largest exporter, by volume, of freight from the United States. "In other words, nobody in America was shipping more of anything each year anywhere in the world."[1]

Exhibit 1. NDP's Growing Sales and Profitability



The Chinese economic miracle which began in the late 1990s rose through exports of consumer goods which needed a massive amount of packaging material. Within a few years, the demands for packaging far outgrew what domestic suppliers could provide. Mrs. Cheung saw the opportunity and acted. In 1995, she founded *Nine Dragons Paper Industries Company* in Dongguan, China. By 1998, the first papermaking machine was installed and running. A second production facility was constructed in 2000, and a third in 2003. NDP continued to expand and, by 2008, had 22 paperboard manufacturing machines at six locations in China and Vietnam. Sales and profits soared.

NDP's Products

Containerboard is used for exactly what it sounds like: containing products in shipping between manufacturing and market. As illustrated in Exhibit 2, the containerboard value chain is a consumer-driven market, with consumer purchases of products driving the demand for packaging and containers and insulation worldwide. Companies like NDP purchase recovered and pulp paper from a variety of raw material suppliers (for example, American Chung Nam, ACN, Mrs. Cheung=s own company), to manufacture containerboard. The containerboard is then sold to a variety of box manufacturers, most of which are located near the final customer, the consumer product companies.

NDP produced three different types of containerboard: Linerboard (47% of 2008 sales), Corrugated Medium (28% of sales), and Corrugated Duplex (23% of sales). *Linerboard*, light brown or white in color, is the flat exterior surface of boxes, and is used to absorb external pressures during transport. *Corrugated containerboard* is

[1] "Wastepaper Queen: Letter from China," *New Yorker*, 30 March 2009, p. 4.

Exhibit 2. Chinese Containerboard Value Chain

Nine Dragons Paper

Raw Material Suppliers	Containerboard Manufacturers	Box Manufacturers	Consumer Product Companies

• OCC (old corrugated cardboard) or recovered paper makes up 90% of volume
• Pulp paper makes up about 10% of volume
• Input prices have been very volatile in recent years
• NDP sources 60% of its OCC from American Chung Nam (ACN) owned by Mrs. Cheung
• Raw material costs make up 60% of cost of goods sold
• Large quantities of water and electricity required in manufacture
	• Containerboard companies typically pass along cost changes due to highly fragmented box manufacturers
	• NDP and Lee & Man control roughly 25% of the total Chinese market
	• Sales mix has shifted to domestic market in recent years (78% domestic in 2008, only 49% in 2005)
	• Companies
	  • Shandong Huatai Paper Company Ltd.
	  • Kith Holdings Limited
	  • Samson Paper Holdings Limited
	  • Lee & Man Paper Manufacturing Limited
		• Also able to pass along prices to customers, as container costs make up a relatively small percentage of total product cost of final customer
		• Corrugated boxes are used for shipping, storage, and increasingly packaging for consumer goods
		• Manufacturing needs to occur near customers due to high cost of transport of low-value goods
		• Hop Fung supplies manufacturing sector in Hong Kong and the Pearl River Delta
			• Highly cyclical with consumer spending
			• Market in China has been shifting to a domestic orientation, as Chinese incomes and consumption patterns grow, and the general Chinese economy shifts from an export orientation to domestic market growth
			• Chinese economy, domestic economy, recovered rapidly from the 2008 recession suffered by most nations globally

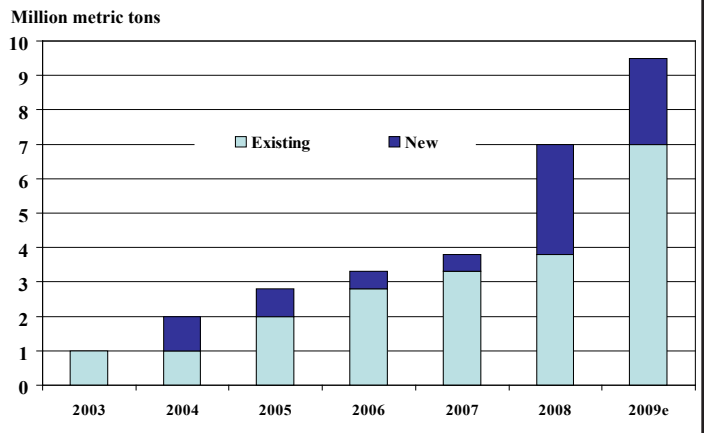
the wavy fluted interior used to protect product in shipment. *Corrugated Medium*, also light brown in color, has a high stack strength and is lightweight, saving significantly on shipping costs for shippers. *Corrugated Duplex* is glossy on one side, is high in printability, and is used in packaging of electronics, cosmetics, and a variety of food and beverages. These three products made up 98% of NDP=s sales in 2008, with pulp and specialty paper making up the final 2% of sales.

Expansion

> *The market waits for no one. If I don't develop today, if I wait for a year, or two or three years, to develop, I will have nothing for the market, and I will miss the opportunity.*
>
> Cheung Yan, Chairwoman of Nine Dragons Paper, "Wastepaper Queen: Letter from China," *New Yorker*, 30 March 2009, p. 2.

Since its founding in 1995, the company had continuously expanded production capacity. After 2001, as illustrated in Exhibit 3, the rate of expansion increased dramatically. By 2008, NDP had three paperboard manufacturing plants in China: (1) Dongguan, in Guangdong Province in the Pearl River Delta; (2) Taicang, in Jiangsu Province in the Yangtze River Delta region; and (3) Chongqing, in Sichuan Province in western China. All three were strategically located close to consumer goods manufacturers and shipping ports. NDP also had three other major investments in parallel with paperboard manufacturing: (1) a specialty board producer in Sichuan Province; (2) a joint venture in a pulp manufacturer in Inner Mongolia (55% interest); and (3) a joint venture in a pulp manufacturer and paper mill in Binh Duong Province, Vietnam (60% interest).

Exhibit 3. NDP's Capacity Expansion Plan



Source: Nine Dragons Paper. Fiscal year ending June 30. 2009 capacity expansion plans as of September 2008.

Even with NDP and competitor expansions, the demand for paperboard in China surpassed production. In 2005, Chinese manufacturers produced nearly 28 million tonnes of containerboard, yet consumption equaled 30 million tonnes. Domestic manufacturers had been narrowing the output gap, yet there was still an unmet need. Despite being the largest containerboard manufacturing country in the world, China remained a net importer. By 2008, NDP was the largest paperboard manufacturer in Asia. If planned expansion was completed, NDP would become the largest paperboard manufacturer in the world.

Operational Efficiency and Sustainability

NDP continued to expand, believing that the resulting economies of scale would drive profit margins. In papermaking, expansion requires significant capital outlay and a long-term outlook. A papermaking machine can cost anywhere from $100 to $200 million to purchase and set up, and then take up to two years before reaching optimal productivity. Mrs. Cheung's expansion strategy extended to her entire supply chain. As a result, NDP operated its own electrical power plants, loading and transportation services, had entered into several joint ventures to supply wood pulp, and held long-term agreements for waste paper supply. Though registered in Bermuda, corporate offices remained in Hong Kong.

Containerboard manufacturing is both energy intensive and water use intensive. To secure power supplies, NDP constructed coal-fired co-generation power plants to supply its plants in Dongguan, Taicang, and Chongqing. With these plants, the cost of generating power was approximately one-third less than electricity purchased from the regional power grid. Steam generated as a byproduct was redirected to the production line and used in the drying process, further reducing power requirements. The power plants were equipped with particulate filtration and desulphurization equipment to reduce pollution, resulting in an emission level quality that surpassed government requirements. Additionally, the power plants often generated surplus electricity, which was then sold to the regional power grid. In the future, surplus power could support additional capacity expansion.

The company owned and operated its own transportation infrastructure, including piers and unloading facilities, railway spurs, and truck fleets. The company received shipments of raw materials, including recovered paper, chemicals, and coal, at its own piers in Taicang and Chongqing, and at the Xinsha Port in Dongguan. These facilities took advantage of ocean and inland waterway transportation, reducing port loading and unloading charges, and allowing the company to avoid transportation bottlenecks.

Raw Materials

Recovered paper (OCC or *old corrugated cartons*) and kraft pulp (wood pulp) are the principal raw materials used in the manufacture of paperboard, making up 60% of cost of goods sold. Sourcing stability was in many ways more important than price, as cardboard and pulp paper costs could be passed through to both box manufacturers and consumer product companies; the real challenge was keeping up with growing volume demands. This made the ability to consistently source large volumes of high-quality recovered paper critical to success in the industry. In 2008, China imported 13.7 million tonnes of recovered waste and scrap paper valued at $3.1 billion.[2] By far the world's largest importer of waste paper, China's imports made up nearly 90% of total world trade volume in waste paper in 2008.

NDP used a high proportion of recovered material in its production of paperboard. Approximately 85% of the fiber in its products was derived from recovered paper, and some product lines were manufactured from 100% recovered waste paper. The company also recycled scrap fiber byproducts from the linerboard production line into its manufacture of corrugating medium. To ensure supplies of manufacturing inputs, NDP had secured long-term contracts with American Chung Nam (owned by Mrs. Cheung) to supply up to 80% of its recovered paper needs. To establish a secure source of wood pulp, NDP entered into a joint venture with China Inner Mongolia Forestry Industry Company, a state-owned enterprise, in 2004. In 2008, NDP acquired a wood and bamboo pulp/specialty paper project in Leshan, Sichuan, and, in May 2008, acquired Sichuan Rui Song Paper Company, which would provide additional supplies of kraft and bamboo pulp.

[2] United Nations Commodity Trade Statistics Database, http://comtrade.un.org, accessed December 22, 2009.

Technology and Innovation

We only have a certain number of opportunities in our lifetime. Once you miss it, it's gone forever.
Cheung Yan, Chairwoman of Nine Dragons Paper, "Wastepaper Queen: Letter from China," *New Yorker,* 30 March 2009, p. 2.

From the beginning, the company invested in the most advanced equipment available, importing papermaking machines from the U.S. and Italy. Each plant was constructed with multiple production lines, allowing flexible configuration. This allowed NDP to respond to changing customer demands, offering a diversified product portfolio with options including product types, sizes, grades, burst indices, stacking strengths, basis weights, and printability. Five principal products were available in more than 60 basis weights and more than 1,000 different sizes and type specifications. Owing to the expertise of its in-house team, NDP had become an innovation leader in the industry, with equipment utilization rates consistently averaging 94%, far surpassing the industry average. (In 2008, utilization dropped to 91.8% because of an increase in the shutdown period required for product changes due to change in market demand.)

Although now publicly traded, the family still controlled the business. Mrs. Cheung and her husband held 72% of the company's stock, with family members holding a number of the executive positions in the company: Mrs. Cheung was Chairman; her husband, Ming Chung Liu, was Chief Executive Officer; her brother Zhang Cheng Fei was a general manager; and her son, Lau Chun Shun, was an executive director.

Environmental Concerns

Wastepaper is like a forest. Paper recycles itself, generation after generation.
Cheung Yan, Chairwoman of Nine Dragons Paper, "Blazing a Paper Trail in China," *The New York Times*, 16 January 2007.

Production of containerboard demands an uninterrupted supply of electricity, consumes large quantities of water, and generates noxious waste products. Internationally, these environmental impacts had long raised concern, so that companies in Europe and North America operated under strict government regulation. With China's rapid increase in manufacturing and the development of its national papermaking industry, concern over environmental impacts had risen. The Chinese government had taken steps to toughen restrictions and impose strict standards to limit environmental impact, using both punishments and rewards. For example, in 2008, NDP was granted an award under the environmental project fund of the Jiangsu provincial government. The Guangdong Environmental Protection Bureau and Taicang Environmental Protection Bureau each granted the company the honor of *Green/Environmental Creditable Enterprise* in 2008.

The expenses associated with environmental compliance had led to the closing of more than 550 small paper mills in 2008 alone. Environmental protection costs were increasingly a barrier to entry into NDP's market segments. NDP had responded by constructing water treatment plants, waste treatment facilities, coal-fired cogeneration power plants, and transportation infrastructure to support its operations in the cleanest way possible in a historically dirty industry.

In December 2004, NDP had obtained ISO 14001 Quality and Environmental Standard Certifications. In March 2005, it gained the OSHAS 18001 Occupational Health and Safety Management System Certification. It had met or exceeded the minimum national standards and ensured the company's performance was aligned with international standards for product quality, environmental protection, and work safety.

Water was used as efficiently as possible. At all of its greenfield plants, NDP had constructed its own water conservation and recycling system. For example, water used by one production line was treated and reused in a different production line before being treated again and discharged. This innovation resulted in water usage of 6 to15 tonnes per tonne of production, less than half the international standard. NDP also found that if it controlled the saline levels in the water, it could provide a consistently high-quality product to customers. (Because it was able to improve plant efficiency by reprocessing its wastewater, NDP constructed waste treatment facilities at all of its manufacturing plants.) This had three major benefits: capturing part of the waste stream for

reuse, reentering paper pulp into the production stream, and channeling remaining waste into a waste-to-energy boiler for incineration.

Paperboard Industry

The paper industry in China mirrored the global paper industry: resource-hungry and dominated by large domestic players, including Shandong Huatai Paper, Kith Holdings, Samson Paper, and Lee & Man Paper, NDP's strongest competitor in China. Also founded in 1995, Lee & Man also focused on containerboard and had added capacity rapidly. NDP and Lee & Man together accounted for 24% of domestic production in 2008. Other paper manufacturers in China were generally smaller, older, and more diversified. Because papermaking machines were expensive to maintain (requiring skilled technicians), and increasingly strict environmental regulations created additional challenges, high levels of continuing capital investment were required to remain competitive in the industry.

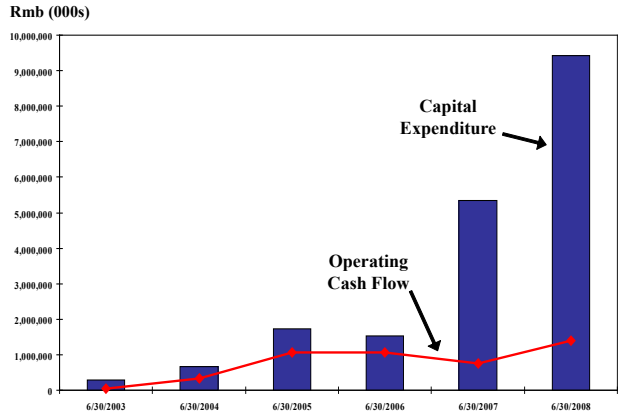
Major international companies outside of China, large ones like NDP, typically had a broader focus and were vertically integrated into other market segments. Because production in the industry was not labor-intensive, the low labor cost advantage in China added little value; and because shipping costs were high on a value-to-volume basis, it had not been cost-effective to manufacture far from customers.

Financing Expansion

> *Why are we in debt? she asked....I took a high level of risk because that is the preparation for the future, so that we will be first in the market when things change.*
>
> Cheung Yan, Chairwoman of Nine Dragons Paper, "Wastepaper Queen: Letter from China," *New Yorker*, 30 March 2009, p. 2.

Although sometimes difficult, NDP had historically been able to fund its growing capital expenditures with a combination of operating cash flow and debt. But as the rate of expansion grew even faster, and the company's capital expenditures ballooned as illustrated by Exhibit 4, it became obvious that the company would need to restructure its financial base. Mrs. Cheung devised a second strategic plan.

Exhibit 4. NDP's Capex and Operating Cash Flow



Source: Nine Dragons Paper.

The first step was an initial public offering (IPO). In March 2006, NDP offered 25% of the company's equity, one billion shares, at an offer price of HK$3.40 per share. The official offering was oversubscribed as a result of intense investor interest. The company then exercised an overallotment option through its joint underwriters, Merrill Lynch and BNP Paribas Peregrine, issuing an additional 150 million shares in a private placement to a select set of Hong Kong-based investors. The added shares raised an additional HK$490 million ($63.2 million) after fees, raising the total issuance to HK$3.9 billion ($504 million), representing 27.7% of the company's ownership.

NDP's shares (HK:2689) began trading on the Hong Kong stock exchange in March 2006, and within six months were a constituent stock of the Hang Seng Composite Index. Following the highly successful IPO, Mrs. Cheung was now the richest woman in China.

Rising Debt

The proceeds from the IPO allowed NDP to retire a large portion of its accumulated debt. But the respite from debt concerns was short-lived. As Mrs. Cheung increased the rate of asset growth, the company's debt once again began to grow. Mrs. Cheung's ambitions and her capital expenditure outpaced operating cash flow, once again

generating a negative free cash flow (operating cash flow less capex, as illustrated in Exhibit 4). This required NDP to borrow heavily to make up the funding gap.

In April 2008, NDP issued $300 million in senior unsecured notes, notes which Fitch initially rated BBB-, the very edge of investment grade.[3] Fitch cited a multitude of factors in its rating: the current economy, raw material price increases, supply risk, and the company's aggressive capital expenditure program.

When global financial markets ground to a halt in September and October 2008, and the economic crisis spread around the globe, consumers stopped buying, Chinese exports slowed, and sales of containerboard plummeted. NDP's export orders declined 50%, sales revenue dropped, and the burden of debt grew noticeably heavier. (The one bright spot was that domestic sales, which had been growing in recent years, maintained some momentum.) Analysts became increasingly nervous. As price pressure from raw materials continued and NDP's margins fell, final customers started fighting higher containerboard and box prices. On October 13, Fitch downgraded NDP to BB+. NDP was now speculative grade, junk bond status.

Other external factors were also at work. In May 2008, Sichuan Province in western China was struck by a massive earthquake measuring 8.0 on the Richter scale, killing more than 60,000 people. The earthquake destroyed critical infrastructure and disrupted transportation networks. In response to the economic slowdown and disruptions and falling sales, NDP laid off 500 workers at its Dongguan plant in June 2008. In protest, workers surrounded the Dongguan paper mill. The press reported allegations of workers being beaten and arrested.[4]

NDP's Chinese New Year 2009

> *We understand that all NDP's banks have postponed for one year all earnings-based debt covenant ratios. We see this as a significant positive for shareholders as it should allow management enough time to restore confidence and restructure its Rmb14.7 bn in debt, of which half is due in two years.*
>
> "Nine Dragons Paper," Morgan Stanley, January 29, 2009, p. 1.

Following new rumors of the company's possible bankruptcy, NDP announced on December 29, 2008, that it would delay Rmb1.5 billion in capital expenditure planned for the 2009 fiscal year (ending June 2010), and defer other planned expansion until 2010 or 2011. NDP reassured analysts and shareholders alike that by late 2010 or early 2011 the paperboard markets would rebound. NDP also moved quickly to repurchase $16 million of its own notes (experiencing a gain as a result of buying them for a fraction of their issuance value), and reported it would prepay $100 million of an existing $350 million syndicated loan and HK$720 million of a HK$2.3 billion credit line.

The debt restructuring had mixed results for NDP's outlook. The partial repayment on the two loan facilities detailed in Exhibit 5 convinced NDP's bankers to allow the debt covenants on the loan facilities (which were earnings-based) to be relaxed for one year. In turn, NDP's costs under the loan facilities would reflect new higher spreads commensurate with its fallen credit rating. Its actions quelled the tempest somewhat, but not much, and not for long.

Exhibit 5. NDP's Announced Debt Restructuring Agreements

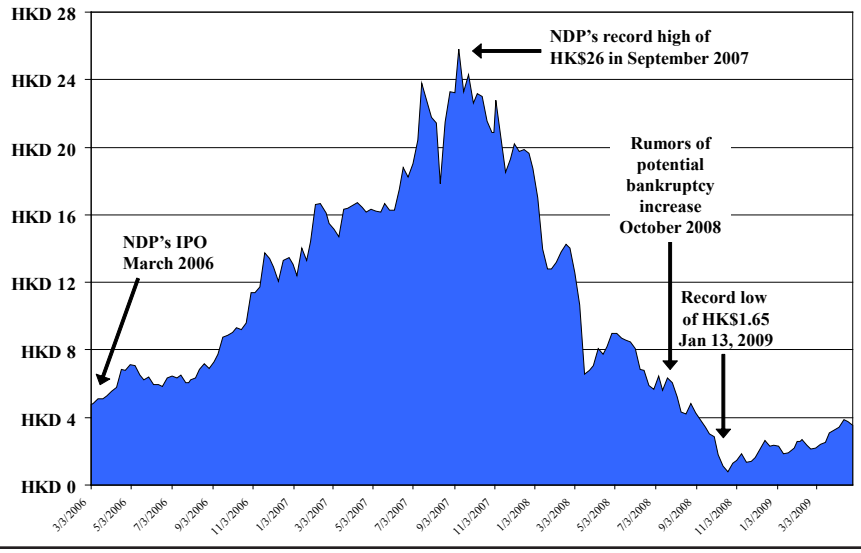
	Earnings Based Covenant				
	Debt/EBITDA	EBIT/Interest	Interest	Partial Repayment	Possible Interest Rate Change
US$350 mn loan facility	5x or less	4x or more	LIBOR + 55bp	$100 mn	+80 to +150 bp
HK$2.3 bn loan facility	5x or less	4x or more	HIBOR + 45bp	HK$ 721 mn	+80 to +150 bp

Source: Morgan Stanley, January 29, 2009, p. 4. The debt restructuring was negotiated by NDP in late December 2008.

NDP's share price closed at an all-time low on January 13 at HK$1.65/share, as shown in Exhibit 6. Two days later, on January 15, NDP issued a profit warning, revising sales and profit forecasts downward (see Appendix 1). The ratings agencies responded with another downgrade, Fitch pushing NDP's outstanding notes down to BB-. Rumors of the company's potential bankruptcy were widespread.

[3] Fitch Ratings, market announcement, 14 April 2008.
[4] Official Board Markets, 28 June 2008, p. 23.

Exhibit 6. NDP's Share Price (ending April 30, 2009; weekly)



By mid-February, many investment analysts were reversing their recommendations on NDP shares; not because of the company's true fundamentals, as most market information was still very negative, but from the perspective that the company's share price had overreacted and the company simply "had to be worth more" than what it was currently trading at. As more and more analysts endorsed the strategic and financial changes announced and implemented by management, the share price gradually rose. There were early signs that the Chinese economy was recovering from the recession quickly, margins were stabilizing, and that boded well for NDP's earnings and cash flows.

In mid-March, however, the analysts were stunned once again. In a briefing held by Mrs. Cheung, NDP announced it was reinstituting capex plans, which had been shelved only three months before.

> *...We are concerned about the heavy reliance on bank borrowing in its current capital structure. Whilst the US$165 mn buyback of its senior notes and the relaxation of loan covenants in its syndicated term loans were positive catalysts for shareholders, in our view, we believe investors today are now asking what the company is doing to cut total debt, and at the meeting management failed to provide any new strategies.*
>
> Morgan Stanley, March 18, 2009.

Estimates of earnings for the year would once again have to be revised downwards (as seen in the March 18, 2009, revision in Exhibit 7). The higher capital expenditures would now result in both higher depreciation charges and higher interest expenses for their funding.

Cash Flow Concerns

> *Nine Dragons' earnings are very sensitive to prices of both recycled paper and containerboard. Fluctuations in these prices could lead to material changes in earnings. With current net debt to equity close to 100%, the company relies on bank borrowings to finance part of its working capital and capex. Should the banks unexpectedly withdraw their facilities, the company may encounter liquidity problems. In addition, the company's earnings growth is based on expansion plans. If the company is unable to obtain sufficient funding, the expansion may fall short of the company's target.*
>
> Morgan Stanley, January 29, 2009, p. 6.

The focus of analyst concerns over NDP's prospects was the impact of declining sales and margin (the company's earnings before interest, taxes, depreciation, and amortization, or EBITDA) on its ability to service its large debt burden. As NDP management released changing guidance, analysts revised their forecasts. Morgan Stanley's frequent revision and reevaluation of NDP's key cash flow drivers and drains over the first quarter of 2009 is illustrated in Exhibit 7. Key issues included:

Exhibit 7. The Evolution of Earnings, Cash Flow, and Debt Analysis of Nine Dragons Paper

Rmb (millions)	2007	2008	Maintain Sept 17, 2008 2009e	Downgrade Dec 16, 2008 2009e	Upgrade Jan 29, 2009 2009e	Positive Signs Feb 10, 2009 2009e	Downgrade Feb 19, 2009 2009e	Debt Concern Mar 18, 2009 2009e
INCOME								
Net sales	9,838	14,114	20,837	14,691	14,691	14,691	14,522	14,517
Cost of goods manufacturing	(7,201)	(11,341)	(16,849)	(12,886)	(12,779)	(12,779)	(12,482)	(12,468)
EBITDA	2,637	2,773	3,988	1,805	1,912	1,912	2,040	2,049
Percent of sales	26.8%	19.6%	19.1%	12.3%	13.0%	13.0%	14.0%	14.1%
Depreciation & amoritization	(370)	(507)	(914)	(800)	(807)	(807)	(848)	(829)
EBIT	2,267	2,266	3,074	1,005	1,105	1,105	1,192	1,220
Percent of sales	23.0%	16.1%	14.8%	6.8%	7.5%	7.5%	8.2%	8.4%
Interest	(105)	(102)	(795)	(887)	(887)	(887)	(556)	(480)
Pre-tax Profit (EBT)	2,162	2,164	2,279	118	218	218	636	740
Percent of sales	22.0%	15.3%	10.9%	0.8%	1.5%	1.5%	4.4%	5.1%
CASH FLOW								
EBITDA	2,637	2,773	3,988	1,805	1,912	1,912	2,040	2,049
Less taxes paid	(93)	(263)	(296)	(15)	(28)	(32)	(44)	(22)
Less net financial	(272)	(102)	(814)	(918)	(918)	(918)	(588)	(1,057)
Less working capital	(1,517)	(1,012)	(1,202)	(691)	1,500	592	602	599
Operating Cash Flow	755	1,396	1,676	181	2,466	1,554	2,010	1,569
Capex	(5,345)	(9,601)	(2,950)	(1,500)	(1,700)	(1,700)	(2,800)	(4,450)
Acquisitions	(208)	(208)	(208)	(208)	-	-	-	-
Disposals & other	28	-	20	31	31	31	31	31
Investing Cash Flow	(5,525)	(9,809)	(3,138)	(1,677)	(1,669)	(1,669)	(2,769)	(4,419)
Equity raised	2,011	-	-	-	-	-	-	-
Debt raised	1,795	8,594	2,950	1,350	(1,000)	(1,000)	(500)	2,000
Dividends	(199)	(495)	(495)	(224)	(224)	(224)	(224)	(224)
Other	119	171	-	(452)	(12)	(12)	(17)	(17)
Financing Cash Flow	3,726	8,270	2,455	674	(1,236)	(1,236)	(741)	1,759
Net Changes in Cash	(1,044)	(143)	993	(822)	(439)	(1,351)	(1,500)	(1,091)
FREE CASH FLOW								
Operating Cash Flow	755	1,396	1,676	181	2,466	1,554	2,010	1,569
Less capex	(5,345)	(9,601)	(2,950)	(1,500)	(1,700)	(1,700)	(2,800)	(4,450)
Free Cash Flow (FCF)	(4,590)	(8,205)	(1,274)	(1,319)	766	(146)	(790)	(2,881)
CAPITAL STRUCTURE								
Payables	1,767	3,839	2,941	2,280	4,316	4,316	4,232	4,221
Borrowings	6,632	14,685	14,865	16,265	13,915	13,075	13,575	16,369
Other liabilities	328	544	39	91	532	532	527	527
Total Liabilities	8,727	19,068	17,845	18,636	18,763	17,923	18,334	21,117
Shareholders equity	11,513	13,272	14,426	13,090	13,178	14,014	14,419	13,706
Minority interest	123	274	243	334	334	334	334	334
Total Liabilities & Equity	20,363	32,614	32,514	32,060	32,275	32,271	33,087	35,157
Net Debt	5,007	13,396	13,458	15,858	13,124	13,195	13,845	16,231
Net Debt / Equity	43.5%	100.9%	93.3%	121.1%	99.6%	94.2%	96.0%	118.4%
Interest Cover (EBITDA x)	9.7	27.2	4.9	2.0	2.1	2.1	3.5	1.9
Gearing (Debt/Equity)	58%	111%	103%	124%	106%	93%	94%	119%
Debt / EBITDA (5x or less)	2.51	5.30	3.73	9.01	7.28	6.84	6.65	7.99
EBIT / Interest (4x or more)	21.59	22.22	3.87	1.13	1.25	1.25	2.14	2.54

Source: Compiled by authors from "Nine Dragons Paper," Morgan Stanley, September 17, 2008; December 16, 2008; January 29, 2009; February 10, 2009; February 19, 2009; and March 18, 2009.

- **Earnings**. NDP's primary source of ongoing cash flow was earnings, and, as measured by EBITDA (earnings before interest, taxes, depreciation, and amortization), margins and earnings would be negatively impacted by the current paperboard market decline and higher input costs. Current containerboard prices, recovered paper costs, and company margins are shown in Appendices 5 and 6.
- **Interest Expenses.** Debt costs in the form of interest expenses were clearly rising rapidly as a result of continued high debt levels and the higher interest rates which followed from credit downgrades.
- **Capex**. NDP's massive asset expansion had brought about both its market dominance and its never-ending need for debt. Initially, management had announced postponement of capital expenditure plans in an attempt to calm bankruptcy fears.
- **Debt**. The debt-carrying capacity of NDP was the primary source of debate in the current recessionary environment. The company's debt/equity ratio, its gearing, was extremely high and potentially lethal in a recessionary environment amid a global financial crisis, with credit so tight that many banks had stopped answering the phone. Analysts agreed across the board that NDP needed to reduce debt—now.

The March announcement of higher capex, now revised upward to Rmb 4.45 bn, would result in both higher depreciation charges and higher interest expenses. It would again commit the company to a large negative free cash flow for the 2009 year, and would probably result in NDP carrying higher debt levels well into 2010 and 2011, while the world economic environment was predicted to remain fragile. As the global economic crisis continued in the spring of 2009, many of NDP's customers had simply disappeared. More than 670,000 Chinese businesses had failed in 2008. Could NDP be next?

Prospects

> *Our future path of development may remain thorny ahead, but, armed with the shared confidence and courage throughout the Group to overcome and conquer, we are poised to act even more diligently and powerfully to prepare for the next global economic recovery…*
>
> "Chairlady's Statement," 2008/09 Interim Report,
> Nine Dragons Paper (Holdings) Limited

Growing global demand for consumer goods had been the primary driver of China's manufacturing and export-led growth during the past decade. The surge in global outsourcing to China had increased U.S. demand for goods and, likewise, the demand for packaging products. Conversely, given the manufacturing slowdown resulting from the 2008 global economic crisis, some industry experts cautioned that future demand might not match planned capacity increases in the paperboard industry. Already, due to the decline in exports, production had slowed. In fact, the demand for raw materials used in paperboard manufacture had decelerated so rapidly that scrap paper was "backing up in America like a clogged drain."[5] Although linerboard prices had dropped, so too had OCC input prices (see Appendix 5).

Working in the company's favor were the Chinese government's aggressive actions to shut down many of the smaller paperboard manufacturers because of their lack of environmental protection measures. Many small manufacturers were also suffering, as the tight credit market made it difficult for them to fund working capital requirements, and some were failing.

Nine Dragons Paper, the largest paperboard manufacturer in Asia and second largest in the world, was now squeezed by reduced margins and burdensome debt. Mrs. Cheung's nearly obsessive pursuit of growth at all costs had guided NDP to the very top of its industry. Many investors and analysts, however, wondered if the growth had possibly come at too high a price, and many moved to revise their outlook for NDP once again.

[5] "Wastepaper Queen: Letter from China," *New Yorker*, 30 March 2009, p. 7.

Appendix 1. NDP's Profit Warning, Press Release, Hong Kong, 14 January 2009

玖龍紙業(控股)有限公司

NINE DRAGONS PAPER (HOLDINGS) LIMITED

(Incorporated in Bermuda with limited liability)

(Stock Code: 2689)

ANNOUNCEMENT

PROFIT WARNING

The Board wishes to inform the shareholders of the Company and potential investors that it is expected the Group will record a substantial reduction in its unaudited consolidated net profit arising from normal operations for the six months ended 31 December 2008 as compared to that for the corresponding period in 2007 due to the substantial decrease in the selling prices of the Group's products and the rising cost of raw materials.

Shareholders of the Company and potential investors are advised to exercise caution in dealing in shares of the Company.

Appendix 2. Annual Income Statement, Nine Dragons Paper (Holdings) Limited

Thousands of Rmb	6/30/2003	6/30/2004	6/30/2005	6/30/2006	6/30/2007	6/30/2008
Sales, net	2,244,817	2,653,501	4,825,373	7,902,156	9,837,664	14,113,586
Cost of goods sold	(1,954,283)	(2,105,683)	(4,064,869)	(6,041,282)	(7,308,753)	(11,241,250)
Gross profit	290,534	547,818	760,504	1,860,874	2,528,911	2,872,336
Gross margin	*12.9%*	*20.6%*	*15.8%*	*23.5%*	*25.7%*	*20.4%*
Other gains - net	3,147	5,315	24,122	356,982	311,216	228,780
Selling & marketing costs	(50,990)	(60,195)	(91,466)	(172,756)	(195,429)	(335,482)
Administrative expenses	(39,173)	(67,305)	(135,020)	(233,897)	(351,274)	(499,778)
Operating profit (EBIT)	203,518	425,633	558,140	1,811,203	2,293,424	2,265,856
Operating margin	*9.1%*	*16.0%*	*11.6%*	*22.9%*	*23.3%*	*16.1%*
Finance costs	(62,111)	(85,074)	(179,814)	(294,793)	(131,441)	(101,884)
Profit before tax (EBT)	141,407	340,559	378,326	1,516,410	2,161,983	2,163,972
Income tax expense	(30,900)	(52,770)	(60,418)	(116,286)	(101,645)	(263,145)
Profit for the year (NI)	110,507	287,789	317,908	1,400,124	2,060,338	1,900,827
Return on sales	*4.9%*	*10.8%*	*6.6%*	*17.7%*	*20.9%*	*13.5%*
Profit attributable to equity holders	110,585	281,375	303,759	1,374,782	2,003,408	1,876,850
Profit attributable to minority interests	78	(6,414)	14,149	25,342	56,930	23,977
Weighted average shares outstanding - basic			3,000,000	3,376,027	4,179,049	4,310,918
Weighted average shares outstanding - diluted				3,400,007	4,259,707	4,416,864
Year-end ordinary shares outstanding			3,000,000	4,150,000	4,290,652	4,330,862
Net earnings per share - basic			0.101	0.407	0.479	0.435
Net earnings per share - diluted				0.404	0.470	0.425

Source: Nine Dragons Paper (Holdings), Ltd.

Appendix 3. Annual Balance Sheet, Nine Dragons Paper (Holdings) Limited

Thousands of Rmb	6/30/2005	6/30/2006	6/30/2007	6/30/2008
Property, plant and equipment, net	7,639,960	8,625,486	13,802,727	23,536,557
Land use rights	607,562	592,125	949,259	1,185,424
Intangible assets	146,694	146,694	146,694	238,284
Derivative financial instruments	-	-	-	25,923
Total non-current assets	**8,394,216**	**9,364,305**	**14,898,680**	**24,986,188**
Inventories	998,174	932,031	1,502,509	2,818,476
Trade and other receivables	997,009	1,559,012	2,188,107	2,852,233
Derivative financial instruments	-	-	24,900	-
Restricted cash	659,379	200,590		393,175
Bank and cash balances	651,587	2,816,660	1,748,224	1,562,873
Total current assets	**3,306,149**	**5,508,293**	**5,463,740**	**7,626,757**
Total Assets	**11,700,365**	**14,872,598**	**20,362,420**	**32,612,945**
Trade payables and bills payable	2,167,800	1,516,798	1,068,500	2,286,500
Other payables	646,750	476,650	698,099	1,552,300
Current incomes tax liabilities	44,441	67,440	21,416	72,374
Derivative financial instruments			7,417	1,723
Short-term borrowings	2,431,571	2,176,875	2,543,082	2,295,515
Total current liabilities	**5,290,562**	**4,237,763**	**4,338,514**	**6,208,412**
Long-term borrowings	3,817,280	2,743,901	4,088,927	12,389,923
Deferred income tax liabilities	169,747	226,808	281,746	452,421
Other payables	15,200	-	-	-
Deferred government grants	-	27,809	17,215	17,039
Total non-current liabilities	**4,002,227**	**2,998,518**	**4,387,888**	**12,859,383**
Total Liabilities	**9,292,789**	**7,236,281**	**8,726,402**	**19,067,795**
Capital and reserves attributable to equity holders	**2,321,954**	**7,541,404**	**11,512,934**	**13,271,502**
Minority interests	85,622	94,913	123,084	273,648
Total Liabilities & Shareholder Equity	**11,700,365**	**14,872,598**	**20,362,420**	**32,612,945**

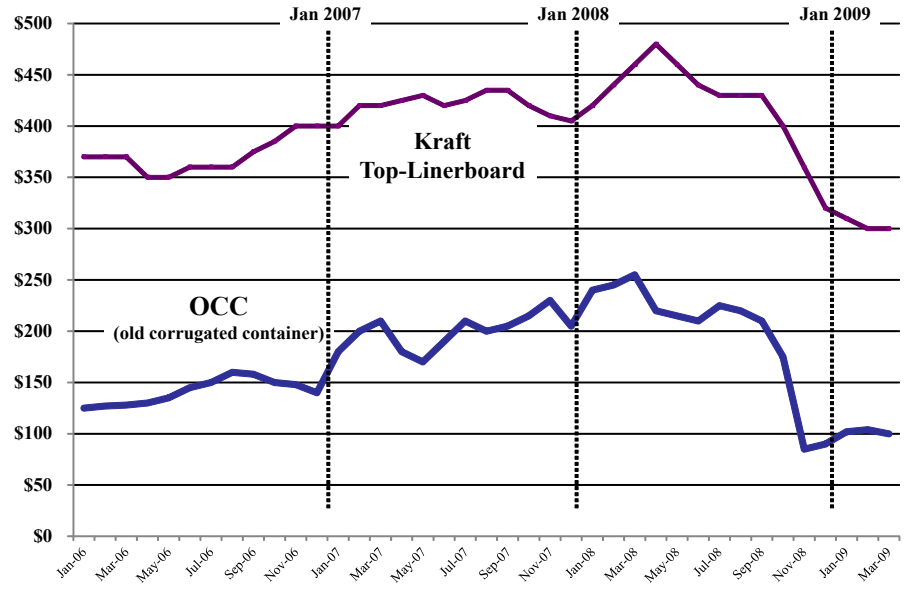
Source: Nine Dragons Paper (Holdings), Ltd.

Appendix 4. Annual Cash Flow, Nine Dragons Paper (Holdings) Limited

Thousands of Rmb	6/30/2003	6/30/2004	6/30/2005	6/30/2006	6/30/2007	6/30/2008
OPERATING ACTIVITIES						
Profit for the year	110,507	287,789	317,908	1,400,124	2,060,338	1,900,827
Income tax expense (P&L)	30,900	52,770	60,418	116,286	101,645	263,145
Depreciation and amortization	84,813	91,568	172,049	352,653	369,958	487,834
Miscellaneous, et al	-	181	6,875	32,314	86,416	75,491
Interest income (P&L)	(1,619)	(3,321)	(8,988)	(140,347)	(25,099)	(10,647)
Finance cost	62,111	85,074	179,814	294,793	131,441	101,884
Exchange losses on bank & cash balance					27,514	41,970
Operating cash flows before working capital	286,712	514,061	728,076	2,055,823	2,752,213	2,860,504
Inventories	153,813	(250,645)	35,627	66,748	(571,507)	(1,181,663)
Trade & other receivables (incl. financial instruments)	(70,222)	(178,352)	104,930	(148,434)	(457,126)	(1,043,672)
Trade & other payables	(269,521)	338,523	470,208	(536,430)	(603,000)	1,426,143
Change in net working capital (NWC)	(185,930)	(90,474)	610,765	(618,116)	(1,631,633)	(799,192)
Cash generated from operations	100,782	423,587	1,338,841	1,437,707	1,120,580	2,061,312
Income tax paid	-	(287)	(8,550)	(24,706)	(92,731)	(106,328)
Interest paid	(65,516)	(82,015)	(267,308)	(345,899)	(271,758)	(559,198)
Net cash generated from operating activities	***35,266***	***341,285***	***1,062,983***	***1,067,102***	***756,091***	***1,395,786***
INVESTING ACTIVITIES						
Purchase of property, plant & equipment, net	(287,900)	(666,109)	(1,737,184)	(1,527,479)	(5,344,030)	(9,426,554)
Payment for acquisition of land use rights, net	(24,991)	(34,925)	(17,218)	(75,978)	(207,886)	(169,660)
Acquisition of subsidiaries, net of cash acquired	-	-	128,914	-	669	(223,917)
Cash (advances) and repayments to directors	(17,631)	(23,077)	40,708	(1,691)	2,191	-
Cash (advances) and repayments to a related party	(336,452)	(84,957)	(10,305)	10,713	(21)	76
Cash (advances) and repayments to shareholders	(27,316)	(21,424)	48,740	-	-	-
Interest received	1,619	3,321	8,988	140,347	25,099	10,647
Net cash generated from (used in) investing activities	***(692,671)***	***(827,171)***	***(1,537,357)***	***(1,454,088)***	***(5,523,978)***	***(9,809,408)***
FINANCING ACTIVITIES						
Proceeds from placement (repurchases) of shares				4,051,151	2,011,048	(6,507)
Placing expenses				(221,860)	(32,358)	
Exercise of share options					47,544	275,749
Cash advances (repayments)		38,311	(114,461)	(1,063)		
Proceeds from borrowings	1,897,828	2,044,388	2,724,603	6,165,573	8,783,028	15,893,788
Repayments of borrowings	(1,406,927)	(1,287,348)	(1,919,708)	(7,477,303)	(6,987,644)	(7,580,185)
Government grants received				49,459	103,902	117,918
Dividend paid to a minority shareholder			(9,000)	(10,001)	(37,520)	
Dividend paid to equity holders of the Company					(161,035)	(501,543)
Capital from minority shareholders of subsidiaries						71,021
Net cash generated from financing activities	***490,901***	***795,351***	***681,434***	***2,555,956***	***3,726,965***	***8,270,241***
Net increase (decrease) in bank & cash balances	(166,504)	309,465	207,060	2,168,970	(1,040,922)	(143,381)
Bank & cash balances at beginning of the year	303,987	137,149	446,890	651,587	2,816,660	1,748,224
Exchange losses on bank & cash balances	(334)	276	(2,363)	(3,897)	(27,514)	(41,970)
Bank & cash balances at end of the year	137,149	446,890	651,587	2,816,660	1,748,224	1,562,873

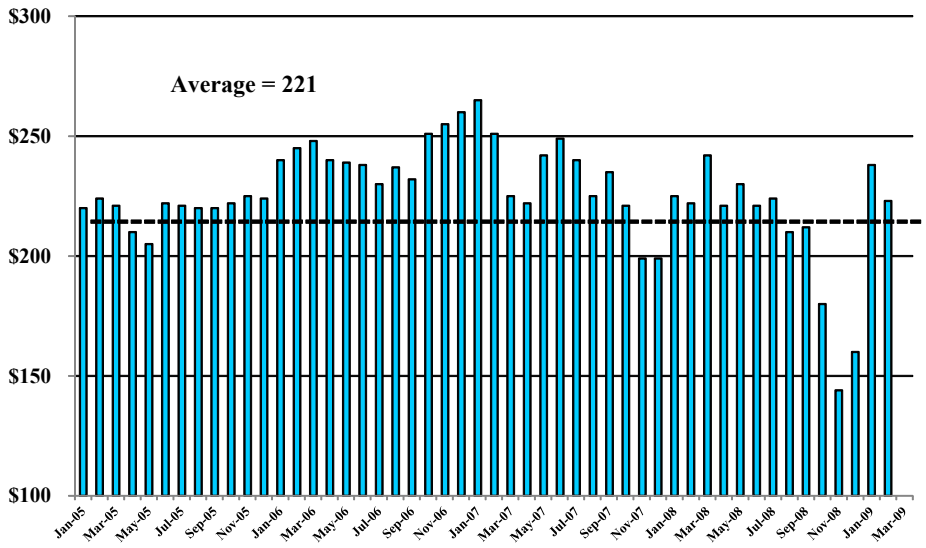
Source: Nine Dragons Paper (Holdings), Ltd.

Appendix 5. Linerboard and OCC Prices ($/ton)



Source: Morgan Stanley, March 18, 2009, p. 4.

Appendix 6. Monthly Margins Normalizing ($/ton)



Source: Morgan Stanley, March 18, 2009, p. 4.

THUNDERBIRD
THE GARVIN SCHOOL OF
INTERNATIONAL MANAGEMENT

A06-06-0003
Rev. 05/07

Michael H. Moffett

Minera las Piedras of Chile: The Fruits of Copper

We estimate the wisdom of nations by seeing what they did with their surplus capital.
Ralph Waldo Emerson, 1803-1882
American Poet and Essayist

In January 2005, the leadership of Minera las Piedras (MLP) of Chile, a privately held Chilean copper mining company, had an unusual problem: the company had too much money. The company had earned $500 million more than expected in 2004, and as a result was now exploring its alternative uses for the funds. Although all agreed it was a nice problem, it still presented leadership with a rather complex set of choices of how and where to invest or distribute these new-found riches.

Minera Las Piedras

Francisco Novoa was the Chief Financial Officer of AngloLatino Minerals S.A. (AMSA), the corporate center of UK-based AngloLatino PLC that owned and managed three copper mines in Chile: Minera la Serena (60% owned by AMSA); Minera Roja (70% ownership); and MLP (60% ownership), the most profitable of the three. AMSA managed corporate finance matters, new business developments, and strategic planning on behalf of the three properties.

MLP had enjoyed dramatic increases in its operating cash flows in the previous few years due to record high prices in both copper and molybdenum (*moly* as it is commonly called, is a metal commodity by-product often found in copper mining). Due primarily to the rapid growth of the Chinese economy and its need for metals, materials, and commodities of all kinds in recent years, the global prices of copper and moly had grown to record levels, generating record profits for copper and moly producers worldwide.

Members of AngloLatino PLC's Board of Directors, along with two senior managers from a Japanese consortium (a minority shareholder), informed Francisco that they would arrive in Santiago on January 15. The purpose of the meeting was to discuss possible uses for MLP's excess cash. While Francisco understood that the owners deserved, and most likely expected, a substantial return on their investments, he hoped to present a few investment ideas of his own that could make Las Piedras a formidable competitor to the world's leading copper producers like Codelco of Chile and Phelps Dodge of the United States.

Chilean Copper and Copper Prices

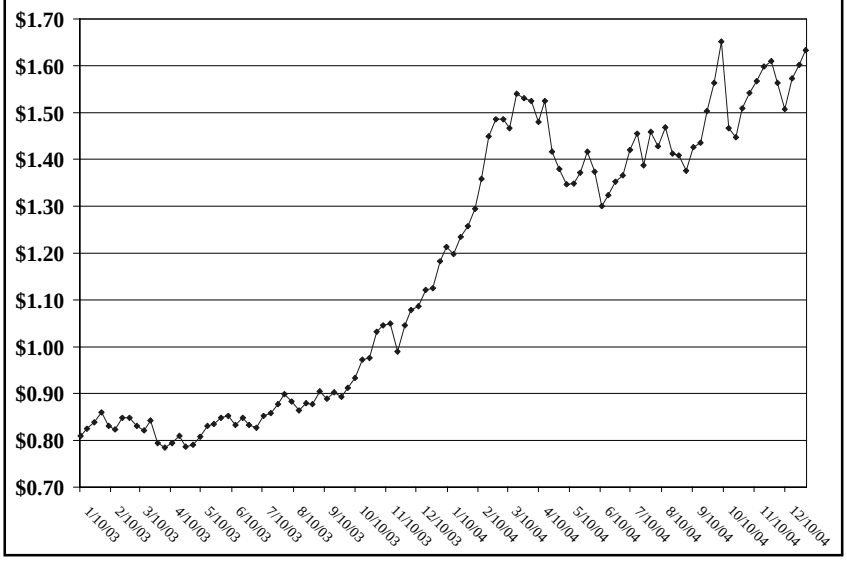
Copper was the primary export product for all of Chile. Chile, in turn, was the world's largest producer of copper, and was also home to the world's largest copper mining company, Codelco. Although Codelco

itself was owned by the Chilean government, a multitude of other multinational copper companies operated copper mines, smelters, and refineries throughout Chile. In the past decade, more and more of the individual mining operations had become owned and operated under joint venture consortium structures.

Minera las Piedras was 60% owned by AngloLatino PLC (UK) and 40% owned by a private Japanese investment consortium. MLP was the operator of one of the largest open-pit copper mines in Chile, located approximately 260 kilometers north of Santiago in the Coquimbo region bordering on Argentina. The mine had produced 350,000 tons of copper and 7,700 tons of moly in 2004.

But it was the price of copper which had been the real story in Chile in recent years. The global demand for copper, led by the rapid economic growth of China, had resulted in a surge in copper prices approaching $1.70 per pound by the end of 2004. Global demand was driven primarily by the building construction sector, but electronics and electrical wiring also consumed increasing quantities of copper. As illustrated in Exhibit 1, the result was a doubling of copper prices from the industry average of $0.80 per pound in early 2003. Only once in the previous 50 years had the price of copper even topped $1.20 per pound.[1] (Appendix 4 presents copper prices for the 1989-1994 period.)

Exhibit 1. Copper Prices, 2003-2004 (weekly, US$/pound)



MLP's Financial Track Record

MLP's business results reflected the benefits of rising copper and moly prices. 2004 had closed with more than $1.339 billion in sales and EBITDA of $1.043 billion; an astounding operating margin of 78%.[2] This was a 110% increase in sales and a 78% increase in EBITDA from 2003, which itself had been a record year. The healthy copper market had already had a positive impact on the company's investing, as capital expenditures, typically 12-14% of sales, had grown a bit over recent years as a result

[1] Copper prices had long been considered volatile, but often dropped to levels below the cost of production. For example, in the mid-1990s copper prices had dropped to as low as $0.60 per pound for a short time. This was even low for historical planning purposes, as most copper companies typically assumed a long-term copper price of roughly $0.80 per pound when planning 30-year mining investments.

[2] Although a Chilean company and required to file financial and tax documents within Chile in Chilean pesos, the company maintained most of its financial records for management and performance purposes in U.S. dollars as a result of the global prices of both copper and molybdenum being denominated in U.S. dollars.

of the improved cash flows. Income statements and balance sheets for MLP are presented in Appendices 1 and 2.

Exhibit 2. MLP's Statement of Cash Flows (millions of US dollars)

	2001	2002	2003	2004
Operating activities				
Net income	80.9	114.4	244.7	786.4
Depreciation & amortization	74.5	83.2	75.1	77.6
Deferred taxes	21.2	23.7	45.3	162.9
Changes in NWC & other	4.4	(9.3)	(10.8)	(79.0)
Operating cash flow	181.0	212.1	354.3	947.9
Investing Activities				
Capital expenditures	(89.3)	(108.3)	(104.7)	(81.5)
Investing cash flow	(89.3)	(108.3)	(104.7)	(81.5)
Financing Activities				
Repayment of loans	(46.5)	(46.5)	(62.9)	(118.8)
New loans	-	28.7	14.0	-
Dividend distributions	(43.7)	(82.8)	(203.7)	(242.0)
Financing cash flow	(90.2)	(100.6)	(252.6)	(360.8)
Beginning of year cash balance	21.3	22.8	26.0	23.0
Increase (decrease) in cash	1.5	3.2	(3.0)	505.6
End of year cash balance	22.8	26.0	23.0	528.6

But it was these same cash flows which were now the problem. As illustrated by MLP's Statement of Cash Flows in Exhibit 2, the company's cash balance had accumulated rapidly, ending 2004 with more than $500 million. Operating cash flows had grown so rapidly in recent years, from $181 million in 2001 to $948 million in 2004, that the company had literally been unable to spend the money fast enough.

But it wasn't that MLP and Francisco Novoa had not tried to use the money. In the previous four years, the company had reinvested $384 million in the business. It had repaid more than $275 million of its debt (loans outstanding). It had repeatedly increased its dividend distribution to its owners, totaling more than $570 million over the past four years. And it still had $500 million in cash sitting on its balance sheet heading into 2005. And now 2005 was expected to be even better than 2004, as copper prices had risen even further in the first few weeks of January.

Deployment Alternatives

Francisco Novoa had identified what he considered a short but complex list of alternative uses for the excess cash balance. As he saw it, the traditional choices were all available: invest, pay down debt, distribute it to ownership, do nothing now and wait, or some combination of the four. Although none of these choices had yet been discussed with MLP's corporate parents, he hoped to build a case for their consideration.

Francisco also made two special notes in the column alongside his alternatives. First, a number of the major Chilean copper companies—Codelco, for example—had been receiving increasing pressure from workers groups and unions to *share the fruit*; pay bonuses to workers of 1,000,000 pesos per worker from the copper windfall or face a strike. With roughly 500 workers employed at las Piedras,

that might prove expensive. The second note was on taxes. Although MLP did pay Chilean corporate income tax (at 17%, one of the lowest in the world), the Chilean tax code also stipulated that profits which were distributed to owners outside of Chile would suffer an additional 35% withholding. That too could prove expensive.

Option 1: Mine Capacity Expansion. The alternative which both Francisco and the senior leadership team at MLP favored was investing heavily in additional mining capacity. At an initial cost of $180 million over the coming year, MLP would add 140,000 tons of copper-producing capacity, along with 3,080 tons of molybdenum-producing capacity. The project would be completed by the end of 2007, and the firm would not expect to generate positive cash flows from the expansion through 2008. Per an Environmental Impact Assessment, the expansion would also require the construction of a new tailing impoundment facility (dam). The cost was estimated to be $300 million in 2005, $100 million in 2006, and $60 million in 2007.

MLP's mine was estimated to have two billion tons of mineable copper reserves. The new dam would provide adequate storage capacity to deposit mine tailings (waste) generated from operations over the mine's estimated 47-year lifespan. From an environmental and social standpoint, this dam would bring several benefits to the company and to the surrounding community. First, the dam would recirculate water used in the production process in order to minimize the company's use of fresh water in the area. Second, MLP would hire and train local workers, thus providing employment opportunities in the area. Exhibit 3 summarizes the preliminary capital budgeting analysis on the combined mine expansion and dam facility.

Exhibit 3. Financial Analysis of Mine Capacity Expansion Proposal

Forecasted Prices & Volumes	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Copper price ($/lb)	$1.50	$1.30	$1.20	$1.10	$1.05	$1.00
Molybdenum price ($/lb)				$18.00	$18.00	$18.00
Current copper production (tons)	350,000	350,000	350,000	350,000	350,000	350,000
Current moly production (tons)	7,700	7,700	7,700	7,700	7,700	7,700
Expansion Analysis						
Additional copper production (tons)				140,000	140,000	140,000
Additional moly production (tons)				3,080	3,080	3,080
Projected capacity utilization rate				90%	90%	90%
Expected gross sales revenue				$376,992,000	$364,392,000	$351,792,000
Expected NOCF percent of sales:				$75,398,400	$72,878,400	$70,358,400
(Millions of US$)	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
New capacity investment	($180.0)					
Tailing dam facilities	(300.0)	(100.0)	(60.0)			
Operational free cash flow				75.4	72.9	70.4
Terminal value (1% growth rate)						922.1
Net operating cash flows (NOCF)	($480.0)	($100.0)	($60.0)	$75.4	$72.9	$992.4
WACC	**8.707%**					
NPV of proposed project	**141.9**					
IRR of proposed project	**13.82%**					

By 2008, MLP officially expected average annual prices to have fallen from their current record highs to $1.10 per pound for copper and $18.00 per pound for molybdenum. Francisco did not expect these prices to increase at Chile's rate of inflation in the years that followed, a traditional assumption in mining financial analysis.[3] Francisco projected annual net operating cash flows from operations in 2008 and thereafter would equal 20% of total sales. This was obviously significantly less than the net operating cash flows over recent years (71%, 56%, and 37% in the previous three years), resulting from the record high prices of copper and moly.

[3] As opposed to most traditional manufacturing and service industries, commodity prices rarely changed in any predictable or correlated measure with inflation.

Although MLP was privately held, Francisco and his team still had an estimate of the company's cost of capital (Exhibit 4). The most recent debt financing had been medium term bank loans (floating rate) at LIBOR (6-month) plus 24 basis points. MLP itself did not have a *beta*, but the average *beta* of similar publicly traded firms was readily available, and was hovering around 1.2. The recent 10-year U.S. Treasury bond was yielding 4.22%, and was what Francisco used for the risk-free rate of interest. Francisco had debated at length at the target capital structure for the company. Assuming no new strains on its financing needs, the financing committee had recently recommended moving to an 80% equity/ 20% debt structure in the coming year. This would require only a minimal pay-down of current debt levels, and, given the current excess cash and continuing strength of margins, very doable. The weighted average cost of capital had then come in at 8.707%.

Exhibit 4. Minera ls Piedras' Cost of Capital

Debt Cost Components	Value	Equity Cost Components	Value
LIBOR, 6-month US$	2.958%	10-year US Treasury yield	4.220%
Spread over LIBOR	0.240%	MLP's beta (estimated)	1.20
Cost of debt	3.198%	Equity risk premium	5.000%
Corporate tax rate	17.000%	**Cost of equity**	**10.220%**
Cost of debt, after-tax	**2.654%**		
Target capital structure			
Proportion debt/capital	20%		
Proportion equity/capital	80%	**Weighted average cost of capital**	**8.707%**
Total	100%		

Option 2: Dividends. A second option was to pay a special dividend to MLP's owners. While Francisco fully understood that his owners expected—and were entitled—to some or all of the profits, he would prefer to see the money put back into the business to improve MLP's prospects.

Dividend distributions had already been increased dramatically in recent years. He was afraid that this might be the easiest choice for ownership, but possibly not one which took advantage of growth opportunities for the company. The problem was different for MLP, however, as it paid dividends as dictated by its owners, and was not burdened with the complex dividend decisions—market expectations, signaling, showing sustained levels—that are the hallmark of publicly traded companies in markets today.

Option 3: Debt Reduction. The third alternative was to continue to reduce MLP's outstanding debt (bank loans). In the previous three years, Francisco and MLP's management team had made considerable progress in reducing debt. Long-term debt had been consistently reduced in recent years, dropping to only $398 million by the end of 2004, which had included a loan pre-payment of $50 million.

In December 2004, MLP refinanced its entire project debt converting it into an unsecured corporate loan. At the same time, the spread over LIBOR was reduced from 96 basis points (bps) to 24 bps and all guarantees and pledges to the creditor banks released. The current Debt to Capitalization ratio was 25.5%. Exhibit 5 provides a comparison of MLP's debt levels to other major Latin American mining companies in 2004.

Option 4: Joint Venture. The directors from MLP's Japanese owner had proposed participation in a new joint venture (JV) between MLP and a Canadian mining concern named Lumina Group. The Canadians were in the beginning stages of developing a copper site in Chile just north of MLP. This region, Atacama, was estimated to contain nearly one billion tons of copper reserves. The Japanese owners of MLP also owned 54% of Lumina. Recently, both the Japanese investment consortium and Lumina had begun actively recruiting potential partners for this exploration project. MLP had the option of taking a 49% stake in the new venture.

Exhibit 5. Overview of Selected Copper Mining Companies, 2004

Company	Country	Sales (US$, bns)	EBIT (US$, bns)	EBIT Margin (percent)	Debt to Capital
Minera Las Piedras	Chile	1.339	0.965	72.1%	25.5%
Codelco	Chile	8.203	3.511	42.8%	51.0%
Grupo Mexico SA de CV	Mexico	3.626	1.262	34.8%	46.2%
Southern Peru Copper	Peru	2.295	1.338	58.3%	27.3%
Companhia Vale do Rio Doce (CVRD)	Brazil	8.623	3.768	43.7%	32.1%
Caemi Mineracao e Metalurgia (CAEMI)	Brazil	1.251	0.604	48.3%	32.5%

The Atacama JV would add another 166,600 tons (49% of the JV's 340,000 tons) of copper to its existing 350,000 ton per year base. Francisco used the same cost of capital and copper and moly price forecasts for the JV analysis as he had in the mine expansion analysis. The utilization rate was assumed slightly less—85% rather than 90%. He did assume the same 20% operating cash flow yield over the project life as before. The terminal value was also slightly more conservative, assuming a zero percent growth rate. The JV would require more capital from MLP; an investment of $500 million in 2005 and $280 million in 2006 by MLP for its participation. The new mine would begin full production in 2007. Exhibit 6 illustrates Francisco's preliminary financial analysis of MLP's potential participation in the Atacama JV.

Option 5: Nada. A final option available to MLP was to do nothing (*nada*) with the cash—yet, and to maximize the interest earnings for the time being on the balance. Francisco found this idea worth considering given the recent volatility in copper and moly prices. Francisco was concerned that 60% of MLP's sales came from Chinese companies. But a number of industry analysts were predicting a hard landing for the Chinese economy in the coming year. Both sales volume and sales price could then drop considerably.

Exhibit 6. Financial Analysis of Possible Joint Venture Mining Project

Forecasted prices, volumes & sales		2005	2006	2007	2008	2009	2010
Copper price ($/lb)		$1.50	$1.30	$1.20	$1.10	$1.05	$1.00
Molybdenum price ($/lb)				$18.00	$18.00	$18.00	$18.00
JV copper production (tons)				340,000	340,000	340,000	340,000
JV moly production (tons)				7,479	7,479	7,479	7,479
MLP's share of new production:				49%	49%	49%	49%
Estimated capacity utilization				85%	85%	85%	85%
MLP's estimated copper sales (tons)				141,610	141,610	141,610	141,610
MLP's estimated moly sales (tons)				3,115	3,115	3,115	3,115
Expected gross sales revenue				$452,004,126	$423,682,126	$409,521,126	$395,360,126
Expected NOCF percent of sales:	20%			$90,400,825	$84,736,425	$81,904,225	$79,072,025

(Millions of US$)		2005	2006	2007	2008	2009	2010
New capacity investment		(500.0)	(280.0)				
Operational free cash flow				90.4	84.7	81.9	79.1
Terminal value (0% growth rate)	0%						908.2
Net operating cash flows (NOCF)		($500.0)	($280.0)	$90.4	$84.7	$81.9	$987.2
WACC		**8.707%**					
NPV of proposed project		**93.9**					
IRR of proposed project		**11.805%**					

The Challenge

Francisco was faced with the task of creating a presentation for the upcoming meeting with the Board. He called for an emergency meeting with his team. He knew that if any alternative other than the extraordinary dividend was to be accepted, he would have to do his homework.

Appendix 1. Minera las Piedras Statement of Income

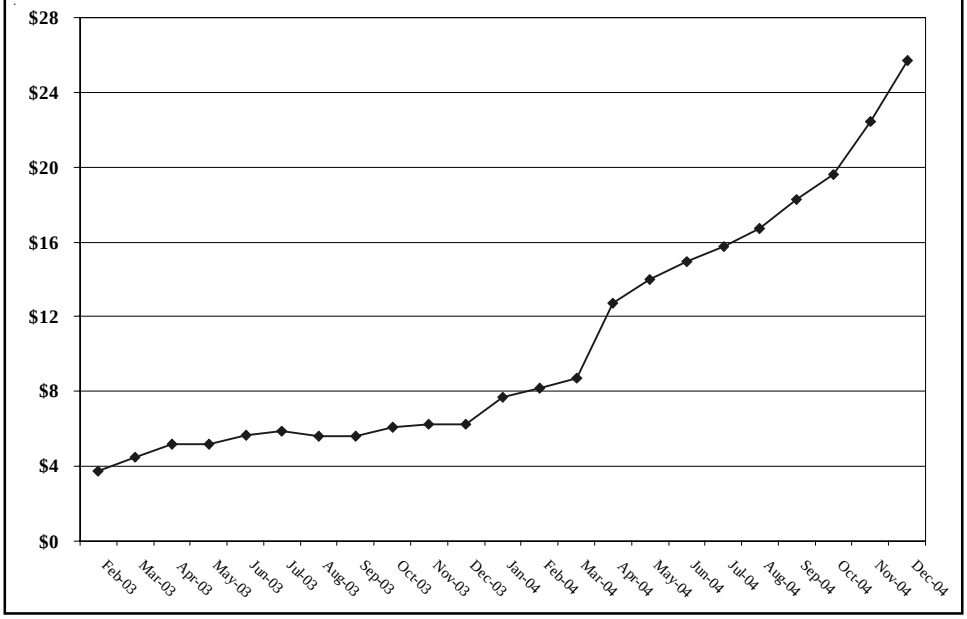
Millions of US dollars	**2001**	**2002**	**2003**	**2004**	**2005e**
Net sales	564.8	576.5	639.0	1,338.5	1,560.8
Cost of goods sold	(287.3)	(289.0)	(203.8)	(242.1)	(220.9)
Depreciation	(65.8)	(74.9)	(68.7)	(70.4)	(66.3)
Gross profit	211.7	212.6	366.5	1,026.0	1,273.6
SG&A expenses	(39.5)	(34.2)	(38.2)	(53.5)	(49.2)
Amortization	(8.7)	(8.3)	(6.5)	(7.1)	(4.9)
Operating earnings (EBIT)	163.5	170.1	321.8	965.3	1,219.5
Interest income	1.9	1.1	1.2	4.9	15.8
Other income (expense) net	(3.8)	(1.1)	(10.0)	1.9	15.3
Interest expense	(59.6)	(31.9)	(22.9)	(22.8)	(19.8)
Earnings before taxes (EBT)	102.1	138.2	290.0	949.3	1,230.8
Income taxes	(21.2)	(23.7)	(45.3)	(162.9)	(209.0)
Net income	80.9	114.4	244.7	786.4	1,021.8
Return on sales (ROS)	*14.3%*	*19.9%*	*38.3%*	*58.7%*	*65.5%*
Copper price (average, US$/lb)	$0.65	$0.69	$1.04	$1.46	e $1.50

e = estimate

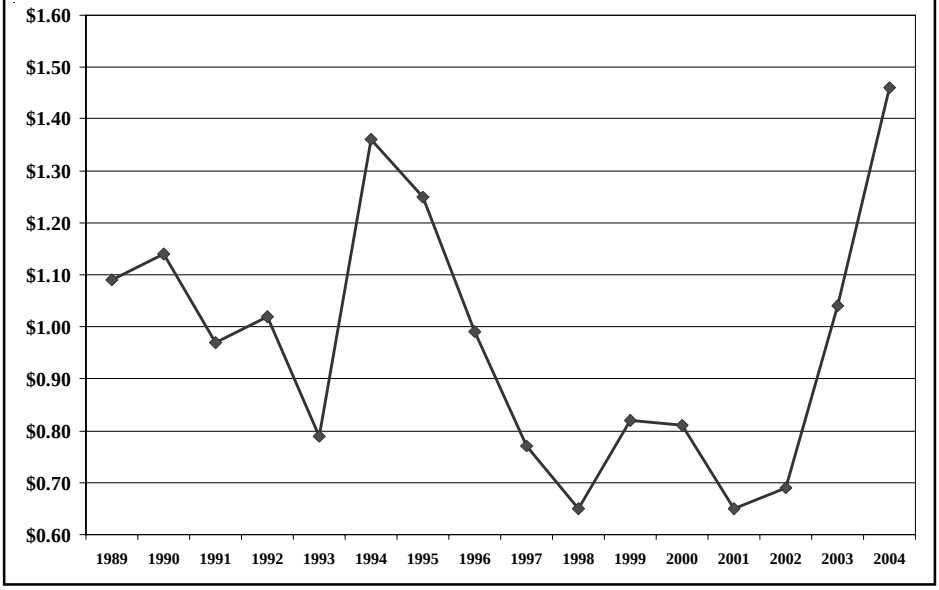
Appendix 2. Minera las Piedras Balance Sheets, 2001-2004 (December 31)

Millions of US dollars	2001	2002	2003	2004
ASSETS				
Cash and equivalents	22.8	26.0	23.0	528.6
Trade accounts receivable, net	49.6	64.4	79.0	180.1
Other receivables	2.2	2.6	2.9	5.0
Inventories	30.0	33.6	35.4	38.3
Prepaid expenses & other	8.4	10.6	8.4	8.1
Total current assets	**113.0**	**137.1**	**148.7**	**760.1**
Land	8.2	8.2	8.2	65.7
Plant and machinery	476.4	498.2	521.5	531.2
Constructions and Infrastructure	741.4	767.4	787.1	813.5
Other	41.6	29.4	38.3	35.6
Less: accumulated depreciation	146.0	221.0	287.7	358.1
Total plant, property & equipment	1,121.6	1,082.2	1,067.4	1,087.9
Mining properties, net	53.3	51.4	49.5	(38.4)
Other noncurrent assets	3.1	3.4	4.2	7.5
Intangibles, net	159.7	155.0	148.5	174.0
Total noncurrent assets	**1,337.7**	**1,292.0**	**1,269.5**	**1,231.0**
Total Assets	**1,450.7**	**1,429.1**	**1,418.2**	**1,991.2**
Current maturities of long-term debt	47.2	52.3	54.8	82.3
Short-term notes payable- Bank	-	-	14.0	-
Short-term notes payable- Other	46.5	41.8	36.1	0.5
Accounts payable	29.2	25.6	26.5	34.4
Taxes payable	-	-	-	146.1
Other accrued liabilities	9.0	24.3	25.1	41.2
Total current liabilities	**132.0**	**144.0**	**156.4**	**304.5**
Senior long-term debt - Bank	618.1	595.5	529.9	397.7
Senior long-term debt - Other	111.4	45.3	0.2	0.2
Deferred income taxes	46.9	72.7	116.1	125.5
Other liabilities	5.9	8.0	11.0	14.4
Total noncurrent liabilities	**782.3**	**721.5**	**657.2**	**537.7**
Stockholders' equity				
Paid in capital	373.8	373.8	373.8	373.8
Retained earnings	162.6	189.7	230.8	775.2
Total Stockholders' Equity	536.4	563.6	604.6	1,149.0
Total Liabilities & Stockholders' Equity	**1,450.7**	**1,429.1**	**1,418.2**	**1,991.2**

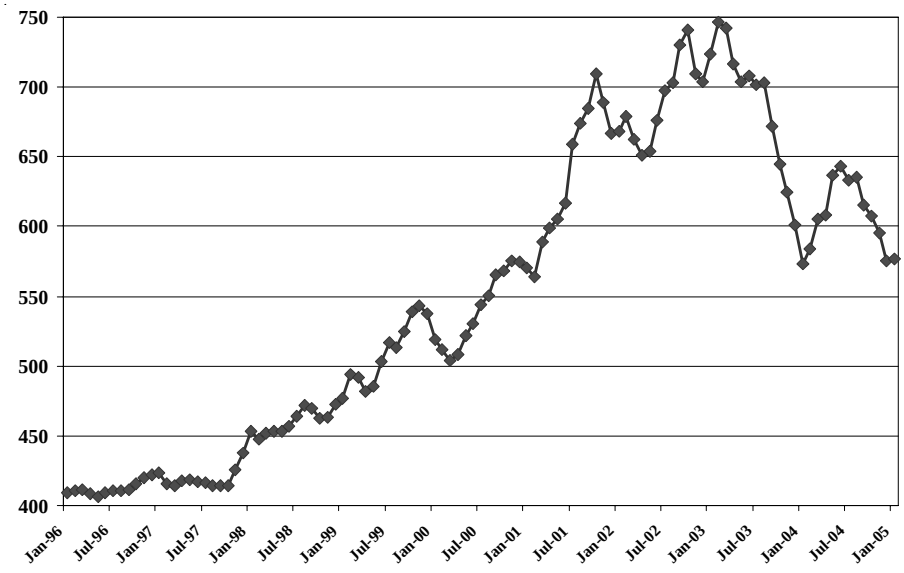
Appendix 3. Molybdenum Prices, 2003-2004 (monthly, US$/pound)



Appendix 4. Copper Prices, 1989-2004 (annual average, US$/pound)



Appendix 5. Chilean peso/US dollar Exchange Rate, 1995-2005



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ZAPA Chemical and BuBa

"...there is a tendency in Europe to treat the exchange rate as a type of virility symbol. I, myself, have never felt the need for such a symbol."

- British Prime Minister Margaret Thatcher

Stephanie Mayo, currency analyst for ZAPA Chemical of Cleveland, stared at her Reuters screen, her option pricing screen, and then out the window. It was Monday, September 21, 1992, and the markets seemed much calmer this morning. The French had voted *oui* by 50.95% to *non* of 49.05% to approve the Maastricht treaty the previous day. Stephanie was now debating what to do about her put option on Deutschemarks she had been holding for the last month.

The Original Exposure and Rate View

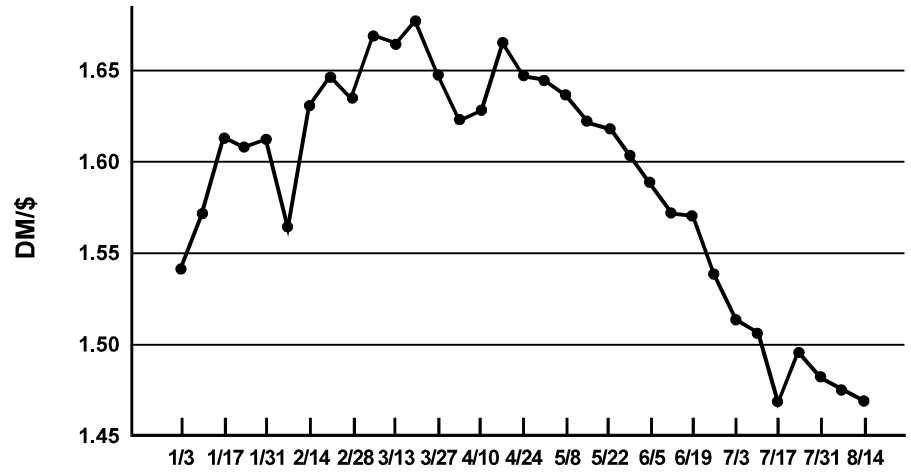
Stephanie had originally been given the exposure for management in mid-August. ZAPA Chemical had sold a specialty chemical distributorship in Stuttgart, Germany. The proceeds of the sale, approximately DM7.6 million, would be brought back to the United States sometime in November. Because of special tax and sales document filings in Germany, it could not yet be determined when exactly the funds would be available for repatriation.

The U.S. dollar had been falling like a rock since late March. The central bank of Germany, the Bundesbank, or as it is affectionately known — "BuBa," had added momentum to the drop when it had increased the German base lending rate by 75 basis points (3/4 of a percent) to 9.75% on July 16th. By August 17th, when Steph was given the exposure, the DM/$ rate looked as if it had settled down to a historically weak dollar of DM1.4649/$ (see Exhibit 1). At that time Steph had debated whether the dollar was as low as it was going to go, or just hesitating before sliding further. Steph *felt* there were a number of forces which could drive the dollar still lower.

- The Bundesbank. The Bundesbank had become very high profile in the last month as German interest rates continued to rise. The Bundesbank was slowing monetary growth

This case was prepared by Michael H. Moffett for the basis of classroom discussion only and is not intended to illustrate either effective or ineffective management. The case concerns a Fortune 500 company; all names and values have been changed to preserve confidentiality.

EXHIBIT 1 **The Falling Value of the U.S. Dollar versus the Deutschemark (Friday closing, Jan-Aug 1992)**



to a crawl and driving interest rates up, all in an effort to stop the inflationary forces resulting from reunification. Of the many rumors emanating from the central bank, the ones about further interest rate hikes were the loudest.

- Dollar-DM Interest Differentials. The anemic growth of the U.S. economy continued. The U.S. Federal Reserve was attempting to provide needed stimulus through lower interest rates. The United States was now enjoying the lowest interest rates in twenty years. The high interest rates in Germany and the low interest rates in the U.S., an unusual scenario by any account, was resulting in a massive capital flow from dollar-denominated assets into Deutschemarks.

  Three-month Eurodollar deposits were paying 3.3125%, while similar Euro-Deutschemark deposits were paying 9.750%. And there were no signs of either rate moving toward the other.

- The French Vote on the Maastricht Treaty. The European Community had now painted itself into a corner with the escalating debate on the willingness of individual countries to actually pursue true European economic integration. The Maastricht Treaty had been signed by the Council of Ministers in December 1991, but had to be ratified by each country. The Treaty had formalized the steps and timetable for the adoption of a single European banking system and currency by the end of the decade. But the Danes had voted no in June 1992, when the French vote was pending. The outcome had been impossible to call. The vote was September 20th.

- Stress in the European Monetary System (EMS). Not only were the high German interest rates causing a strengthening of the DM versus the dollar, but for the same reasons, they were putting pressure on all EMS currencies as they tried to maintain their parities with the Deutschemark. The Italian lira and the British pound were both trading at the bottom of their allowable ranges (according to the agreed ranges within the Exchange Rate Mechanism (ERM) of the EMS) versus the Deutschemark.

To top it all off, 1992 was an election year in the United States. In mid-August President George Bush was 18 to 20 percentage points behind Democratic presidential candidate Bill Clinton in the polls. The markets had historically favored and rewarded Republican economic policies as opposed to the policies of the Democrats.

The Risk Tolerance of ZAPA

ZAPA was a rather unusual firm in its approach to currency risk management. Although the parent corporation, ZAPA Oil, did not use foreign currency options for risk management, ZAPA Chemical used them exclusively. Because of losses caused by forward contracts in the previous year, Zapa's Treasury now used foreign exchange options whenever possible. If needed, synthetic forwards were created by simply buying calls and selling puts for the same strike prices and maturities (or vice versa).

ZAPA Chemical considered Treasury a cost-center. Treasury therefore saw its primary responsibility as conservative management of exposures. Profit through currency speculation was not its purpose. In addition to an in-house aversion to forwards, the group could not write uncovered options (with their corresponding unlimited loss potential). The fiasco in 1991 at Allied-Lyons, the British food conglomerate, had sparked an internal review of all activities of international treasury at ZAPA Chemical. Allied-Lyons had suffered losses of $150 million as a result of unwise and uncontrolled currency speculation. Although ZAPA did not in any way mirror Allied-Lyons, the review had resulted in the exclusion of writing uncovered call options, as well as the requirement that the use of new instruments be allowed only after approval of the operating committee. But, all things considered, management was appreciative when the expenses of running the cost-center were lower.

Hedge Decision: August 17th

On August 17th the Deutschemark had traded around the DM1.4649/$ point all day. After discussion with her risk manager, Steph had decided that a safety net was called for. Her logic was relatively simple. First, she believed that the dollar would fall further. Most currency forecasters felt the dollar was already at bottom, but then again, they had said the same thing at the magic DM1.50/$ level. She believed the DM would move in her favor. Secondly, although she held the directional view of dollar-down, she also felt there were too many unknowns to feel secure. Currency volatility would by all guesses increase in the coming 4 to 6 weeks, with uncertainty over Bundesbank policies rising and the French vote on Maastricht forthcoming.

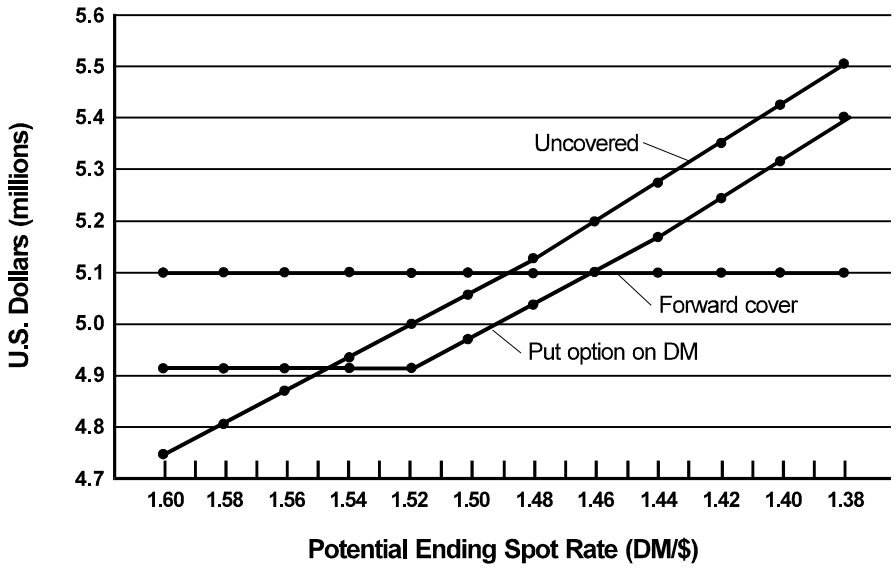
Before making her decision, Steph had reviewed an alternative which was not considered by ZAPA to be a true alternative: the forward. The coming volatility of the markets — and Stephanie felt sure that things would be heating up — posed many uncertainties. Selling the entire DM exposure forward would at least allow her to sleep nights. But there were two distinctly negative characteristics of the forward at this time. First, the huge interest differentials between U.S. dollar and Deutschemark assets resulted in forward rates which were extremely unattractive. The 120-day forward on August 17 was DM1.4957/$. Given the spot rate of DM1.4649/$, this was an annual discount of nearly 6.2%, — expensive

protection. By selling the Deutschemarks forward she would be locking in a rate which she sincerely felt was in the wrong direction from that which the spot rate would move. The forward was quite unattractive.

The safety net Steph had chosen was an out-of-the-money (OTM) put option (bank option) on Deutschemarks. Gotham Bank (NY) was willing to sell ZAPA a December put on the DM7.6 million for a premium of 1.40 cents per DM ($0.0140/DM) for a strike of 66 ($0.66/DM or DM1.5152/$). This was a total outlay of $106,400 for the DM December put option. Although seemingly a lot of money, the option price was a paltry 2.1% premium ($0.0140 ÷ $0.6600/DM) for a substantial amount of protection against a dollar rebound.

Steph, as she did with all her major stand-alone exposures, took a look at her option position versus the totally unhedged and total forward cover alternatives. Exhibit 2 reproduces her exposure valuation analysis. The put option's value would parallel the uncovered position, but with the added benefit of a safety net if the spot rate were to actually move in the opposite direction.

EXHIBIT 2 Hedge Alternatives for ZAPA Chemical's DM Exposure (millions of US$)



Daily Position Monitoring

Given the size of the position and the tension in the markets, Steph had watched the markets and the DM put option position daily. The next two weeks yielded good news and bad news. The good news was that Steph's intuition had been right on target. The dollar had declined rapidly in the days following her put option purchase, so that the prospective dollar value of the DM7.6 million was rising by the minute. The bad news, however, was that the December 66 put option was also falling, falling in value. As the put option had

moved further and further out-of-the-money, the market value of the option (the premium) had fallen.

By September 1st the U.S. dollar was at an all-time low of DM1.39/$, and the option's premium was approximately 0.50 cents per DM. The potential loss on the option was $68,400.

($.0050/DM - $.0140/DM) x DM7,600,000 = ($68,400)

Although it was a bit unsettling when expressed in this manner, Steph recognized that this was what the corporate hedger wanted to happen when purchasing an OTM put option for protection. The U.S. dollar declined to approximately DM1.40/$ and stayed there for the first two workweeks of September. Stephanie watched and waited.

September Turbulence

The week of September 14th had been a literal nightmare. The dollar had fallen, risen, and fallen again. The British pound had been withdrawn from the ERM. The Italian lira had been first devalued by over 7%, then finally withdrawn from the ERM as it came under further pressure. The Spanish peseta had been devalued 5% in the ERM. Other currencies had come under speculative attacks on Friday. The high interest rates in Germany had continued to bleed capital out of the other major European capital markets. Exhibit 3 reviews the roller coaster of events in these turbulent times.

In Great Britain the events of the previous weeks continued to have substantial news value. With the pound still floating freely against the Deutschemark, the long-standing critics of Britain's participation in the EMS were once more making a lot of noise. The leading critic, former British Prime Minister Lady Margaret Thatcher (often known as the "iron-maiden" for her tough political stands), commented in a speech on September 20th that "...there is a tendency in Europe to treat the exchange rate as a type of virility symbol. I, myself, have never felt the need for such a symbol."

The cynics still seemed to have carried the day. Many EC analysts saw the Maastricht Treaty and the idea of economic integration as something of a dead issue. The fundamental economic pressures which had led to the currency events of the first weeks of September were still present: extremely high interest differentials between Germany and the United States; extreme devaluation pressures on most of the currencies of the EMS versus the Deutschemark.

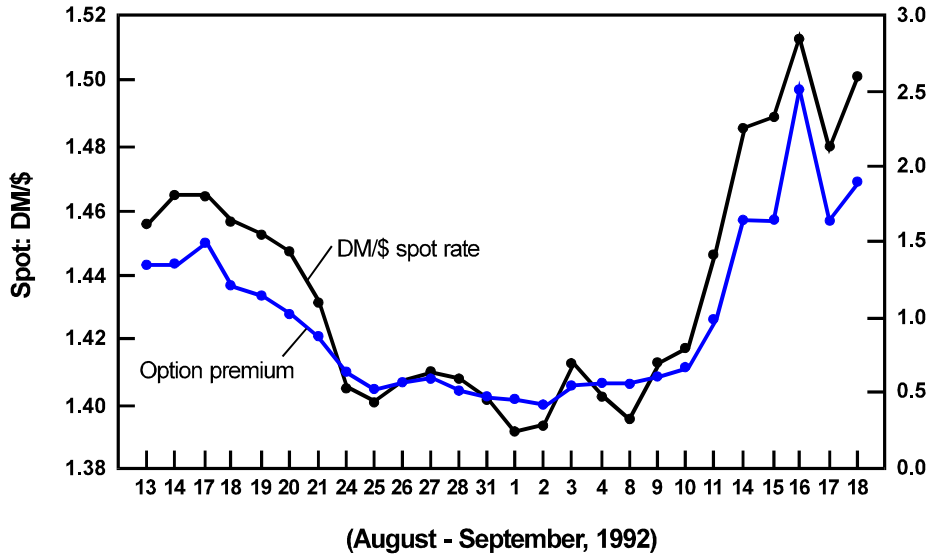
Steph now wished to reevaluate her put option hedge position on the DM exposure. She knew that the DM7.6 million would be repatriated to the American parent on December 15th. This would match the maturity of the DM put option's expiration. But the massive volatility in the markets in the week before the September 20th vote had sent option values straight up. Steph was wondering whether it would be better to sell her put option and either cover the position with a forward or wait a few days until the markets calmed to replace the put position.

EXHIBIT 3 EMS in Crisis: The Events of September 1992

Sept 1	The U.S. dollar falls below DM1.39/$.
Sept 4	The Italian lira trades below the ERM floor. Italian central bank raises discount rate from 13.25% to 15% to protect the lira.
Sept 6	EC finance ministers and central bank governors reaffirm their unwillingness to realign the EMS and promise massive intervention to protect the status quo.
Sept 8	Finland announces that it will no longer fix the markka to the ECU following a week of increasing speculation against the markka. The markka immediately falls against the DM and the dollar. The Swedish krona is hit by speculation as capital flows accelerate out of the Nordic countries into Deutschemark-denominated assets; Swedish monetary authorities begin raising interest rates to protect the krona.
Sept 9	Swedish central bank raises interest rates from 24% to 75% and plans to raise up to ECU 31 billion to protect the krona. Bundesbank is quoted as believing the Italian lira, Spanish peseta, and British pound should be devalued.
Sept 13	The Bundesbank cuts the Lombard borrowing rate, the base bank borrowing rate, by 25 basis points, from 9.75% to 9.50%. It is the first interest rate cut by the Bundesbank in five years. Italy/EMS announce that the Italian lira will be devalued by 7.6%. The Netherlands, Belgium, Austria, and Switzerland announce that their interest rates will be allowed to fall. Sweden announces that it will lower its marginal lending rate, the rate of interest which governs overnight interest rates between banks, to 20%.
Sept 14	The currency markets react favorably, the dollar rising from Friday's close of DM1.44/$ to DM1.49/$, a 2.4% appreciation. The markets wait for more interest rate cuts from the Bundesbank.
Sept 15	Bundesbank president Helmut Schlesinger makes it clear in an interview that the German monetary authority has not changed course towards expansionary policy. The Italian lira finds itself once more under attack as no interest rate cuts follow Sunday's devaluation. Rumors abound that Giuliano Amato, the Italian Prime Minister, is about to resign. The British pound comes under increasing speculative pressure as it falls below the allowed floor value against the Deutschemark.
Sept 16	The Bank of England raises its base lending rate to defend the falling British pound. By afternoon the Bank considers a further rate increase, but instead withdraws from the Exchange Rate Mechanism (ERM) of the EMS. Sweden raises the base lending rate from 75% to 500% to stop speculators from shorting the krona. Currency volatilities and option premiums skyrocket as crisis continues.
Sept 17	The Bundesbank refuses all pressure to cut German interest rates. The Spanish peseta is devalued 5% in the European Monetary System grid. The Italian lira withdraws from the exchange rate mechanism of the EMS. Official trading in the lira is suspended until the following Tuesday. The U.S. dollar falls from the previous day's high against the Deutschemark in response to rumors that the Bundesbank may be waiting to cut interest rates until after Sunday's French vote on Maastricht.
Sept 18	Sweden announces that it will cut the bank borrowing rate from 500% to 50%. The markets remain tense as all is put on hold awaiting the results of the French referendum on Sunday the 20th.
Sept 20	The French vote on the Maastricht Treaty and its proposed monetary unification of the EC.

Steph quickly downloaded data on the daily spot rate and the December put option premium value. The graphic results of the comparison are shown in Exhibit 4. The put option premium had closed at 1.95 cents per DM on Friday (September 18th), while the spot and 90-day forward rates were DM1.5015/$ and DM1.5255/$, respectively. 90-day Eurocurrency interest rates had not changed since August. Steph thought she would have to move fast if — and it was a big if — she wished to sell her option while values (and volatilities) were still high.

EXHIBIT 4 **Daily Changes in the DM / $ Spot Rate and the DM Put Option Premium**



Case Questions

1. Should Stephanie Mayo sell the put option protection already in place? Use the current market rates and prices to defend your logic.

2. How have the events of September altered Stephanie's view of the DM/$ exchange rate?

3. How has the volatility of the put option changed between August and September?

4. If you were the Vice President for Treasury at Zapa, what *benchmarks* would you use to measure Stephanie's hedging effectiveness? How would this alter Stephanie's hedging?

THUNDERBIRD
SCHOOL OF GLOBAL MANAGEMENT

TB0139
June 3, 2004

Tirstrup BioMechanics

The objects of a financier are, then, to secure an ample revenue; to impose it with judgment and equality; to employ it economically; and, when necessity obliges him to make use of credit, to secure its foundations in that instance, and for ever, by the clearness and candor of his proceedings, the exactness of his calculations, and the solidity of his funds.

Edmund Burke (1729–1797)

Although it was still August, Julie Harbjerg bent over against the first chill of autumn and hurried up Copenhagen's *strøget*—the historic cobblestone walking street which began at City Hall and extended through the heart of the old city—toward her office in the Tirstrup headquarters building. She tried to keep her mind clear so that she could properly evaluate the various financing proposals that had been discussed in previous weeks with the many bankers who had visited Copenhagen. As Assistant Treasurer (International) for Tirstrup, Julie was responsible for the initial assessment of financing proposals for Tirstrup's international investments. Once the Finance Committee had approved the underlying concept, the actual implementation was divided between Tirstrup's International Finance Office in Geneva and Corporate Treasury in Copenhagen, depending on the regulatory constraints and tax considerations.

In 2003, the Tirstrup Group's products encompassed a full array of electro-mechanical medical devices including cardiac rhythm devices, pacing systems, and implantable defibrillators, among others, with a recent emphasis on international production and sales of thoracolumbar and interbody spinal devices and surgical navigational tools. A major corporate objective was to reduce Tirstrup's dependency on cardiac products. In 2003, 60% of its estimated U.S. $2.1 billion sales (Dkr6.6044/$) were outside Denmark (Exhibit 1), although 85% of the Group's $2.4 billion in assets remained within the country (Exhibit 2).

Exhibit 1 Tirstrup's Sales (millions of Danish kroner, DKr)

Sales in	*2003 Estimate*	*2002*
Denmark	5,574	4,856
Exports from Denmark	4,710	4,187
Foreign subsidiaries	3,714	2,951
Total	13,998	11,994

Group exports and turnover of foreign subsidiaries by market area were EU 52%, other Organization for Economic Cooperation and Development (OECD) 12%, Eastern Europe 22%, OPEC and other 14%.

Tirstrup was considering an investment of $410 million in the United States, and Julie Harbjerg was responsible for constructing a financing package for presentation to the Finance Committee's monthly meeting the following Friday. The bankers had proposed everything from a private placement to a floating rate note (FRN) issue with an interest rate swap. And Julie had some other ideas up her sleeve. But first, she thought, "I had better nail down the actual funding needs."

Exhibit 2 Tirstrup Group Balance Sheet—Projected December 31, 2003 (millions of Dkr)

Assets		*Liabilities*	
Cash and cash equivalents	621	Accounts payable	2,782
Accounts receivable	5,870	Short-term debt	1,246
Inventories	2,854	Current liabilities	4,028
Current assets	9,345		
		Long-term liabilities	1,781
Fixed assets, net	5,764	Minority interests in group companies	629
Goodwill	718	Shareholders' capital[1]	9,389
Total	15,827	Total	15,827

[1] Includes retained earnings for the past year of Dkr187 million.

Financing Needs

Tirstrup was no newcomer to the international capital market. It had borrowed over $200 million in various currencies from international banks, and had issued a $40 million, seven-year Swiss franc bond in 1997. Its shares were traded on the Copenhagen stock exchange. Already well-known in the area of biomechanical devices for cardiac rhythm management (CRM), Tirstrup had earlier in the year successfully launched a subsidiary called MediNav. Initial sales looked good and Tirstrup's top management was keen to get a jump on the U.S. medical device market by producing a low-cost, handheld, surgical navigational device and terminal. This device would combine the ease of a handheld manipulator with radio-linked network support. Even the leading U.S. medical device manufacturers had not quite caught up with that technology, although Tirstrup expected that they would be formidable competitors in the long run. Tirstrup's MediNav had developed a prototype that was reportedly reliable and cost efficient.

Knut Wiksell, Tirstrup's director of finance, was keeping an eye open for a U.S. assembler and distributor when he learned in early 2003 that Medtechnics, one of the U.S.'s leading medical device firms, was seeking a buyer for its troubled vascular unit. The Board agreed with his view that such an acquisition could give Tirstrup a firm footing in the U.S. medical device industry and serve as a base from which to launch the MediNav product.

The Bank of Denmark and the Ministry of Finance had been informed of Tirstrup's interest—the authorities monitored all capital movements, especially outward investments—and Tirstrup was seeking an export credit guarantee for the $25 million of equipment they expected to supply to any new U.S. subsidiary. Preliminary discussions with Medtechnics were under way, although the purchase price was by no means set in stone. Medtechnics refused to accept Tirstrup's Free Preferred Shares, but had agreed that part of the purchase price could be in the form of a $75 million five-year note at 7.50%; the rest would have to be cash. Tirstrup was being advised in the acquisition negotiations by the American investment banking firm, Goldman Sachs. Wiksell's intention was to assemble the handheld terminals at Medtechnics's plant in Minneapolis and initially sell them in the United States. After two years, if they were a success in the United States, the terminals would be sold in Europe as well; the aim was to achieve an 80% North America, 10% Europe sales mix, with the remainder going to the rest of the world.

Wiksell had told Julie that Tirstrup or its new subsidiary (with a parental guarantee) would have to raise from outside sources all but $30 million of the $410 million purchase price. The $30 million had been generated from the sale of Tirstrup's Swedish robotics subsidiary, Lund Robotics A/B. On the other hand, it was possible that Tirstrup's other bio-robotics unit located in Sweden, Malmø Robotics A/B, might be sold. This sale would reap at least Dkr1.077 billion or US$163 million. Julie knew that Tirstrup's board was indeed considering such a move, but the outcome was quite uncertain as the Board

was split right down the middle on this issue. "If they could only make up their bloody minds," she thought.

Wiksell felt that funding should be such that repayment was deferred for at least seven years. Since Tirstrup had been burned during the last rise in short-term rates, it was generally understood that management's goal was to increase the proportion of fixed-rate debt to about 60%. At present, 53% of the company's total debt was short-term or variable-rate debt.[1]

Sources of Funds

Julie began by writing down the likely mix of funding sources for the acquisition:

Purchase price	$410 million
Five-year note to Medtechnics	($75) million
Cash on hand	($30) million
New funds required	$305 million

Julie had already been told by Wicksell that any equity issuance was out of the question. Although profits had been strong of late, Tirstrup's share price had been sluggish, and the senior management team did not want to take any action which could be interpreted as dilutive of ownership.

The obvious source of financing, she mused, was a syndicated revolving credit facility—a bank loan. BNP (France) had been pestering Tirstrup's treasury people about this, saying that the bank could put together a $150 million syndicated credit at a cost of 5/8% above 6-month LIBOR, the London Interbank Offered Rate (see Exhibit 3), plus the usual front-end bank fees of 1.5%. Such credits ranged up to 12 years' maturity and could be drawn down when needed. It was a no-brainer (one of Knut Wicksell's favorite Americanisms). The only problem was that Denmark's two biggest banks together owned 24% of Tirstrup's stock and had board representation who resisted BNP's lead management of any loan because they had been excluded from the management group of recent Scandinavian issues led by BNP. In any case, in a recent telephone conversation, Julie sensed that the French had back-pedaled a bit from the syndicated loan idea, so she was none too confident on the principal or pricing.

Exhibit 3 Market Interest Rates (percent per annum)

	One month	*Three months*	*Six months*	*One year*
US$ LIBOR	1.11000	1.13000	1.19000	1.39500
Euro LIBOR	2.11325	2.13150	2.16275	2.27625
£ LIBOR	3.49125	3.50813	3.59313	3.85125
Swiss Fr LIBOR	0.21667	0.25000	0.31833	0.49833

Source: *Financial Times*, August 19, 2003, p. 23 (quotes are for August 18).

An alternative source of short-term funds would be for Tirstrup to issue commercial paper, either in Europe or preferably in the United States. To do the latter, the company would have to get an A1/P1 rating and pay about 1/2% for a backup line from a decent bank. Nordeabank alone was willing to provide a line for up to $100 million and to assist in placing the commercial paper. It had argued that this would be a good way for Tirstrup to become better known in the United States. Despite their recent rapid expansion into the United States, Danish companies still had a very low profile in North America. To assist Tirstrup in ensuring its paper's acceptability to U.S. institutional investors, Nordeabank had offered a letter of credit support for a fee of 1/4%. This would give Tirstrup an A1/P1 rating. The A1/P1 commercial paper rate yields were currently about 70 basis points below the 3-month LIBOR.

[1] The currency mix of the company's debt at the end of 2002 was 56% Danish kroner, 16% U.S. dollar, 6% euro, 3% Swedish krona, 4% British pounds sterling, 7% Swiss francs, and 8% other.

After her discussions with Nordeabank, Julie Harbjerg was leaning towards the shorter maturity paper; it certainly was one way to reduce the cost of funds substantially. However, she wondered whether top management—specifically Knut Wicksell—could live with the uncertainty surrounding commercial paper. The commercial paper would have to be rolled over on a quarterly basis, and would therefore be subject to not only *re-pricing risk* (the rate of interest new issuances were sold at) but also *re-funding risk* (the actual ability to issue the paper). Julie was afraid that the current interest rate environment, with record low rates in nearly every major currency market, made floating rates or shorter-term maturities even more debatable. Many of the largest corporate borrowers had been moving quickly to lock in fixed rates at what many believed was the bottom of the interest rate cycle.

On the other hand, Nordeabank had suggested creating fixed-rate funds out of variable-rate financing by using an interest rate swap. Julie pondered how that would work, and what it would cost. She recalled a luncheon conversation at Peder Oxe's, a fashionable restaurant in Copenhagen, with Peder Nielsen, the local corporate banking rep of Nordeabank.

Harbjerg: Peder, if we drew down a Eurodollar loan at a spread, you quoted me 50 basis points over three-month LIBOR when we talked yesterday, how would you fix our cost of funds?

Nielsen: Well, in a floating/fixed interest rate swap, we would pay LIBOR to Tirstrup every three months, which you could then use to service your floating interest payments. In return, Tirstrup would pay us a fixed rate set at, I would guess, 4.39/4.42% bid-ask, using yesterday's swap quotes (see Exhibit 4).

Exhibit 4 Interest Rate Swaps

	Euro €		£ Stg		Swfr		US$	
Years	*Bid*	*Ask*	*Bid*	*Ask*	*Bid*	*Ask*	*Bid*	*Ask*
1	2.32	2.35	3.81	3.84	0.46	0.52	1.36	1.39
2	2.74	2.77	4.17	4.21	0.98	1.05	2.10	2.13
3	3.09	3.12	4.37	4.41	1.45	1.53	2.80	2.83
4	3.38	3.40	4.47	4.52	1.82	1.90	3.35	3.38
5	3.60	3.63	4.54	4.58	2.11	2.19	3.78	3.81
6	3.78	3.81	4.58	4.63	2.34	2.42	4.12	4.14
7	3.94	3.97	4.63	4.68	2.53	2.61	4.39	4.42
8	4.07	4.10	4.67	4.72	2.69	2.77	4.61	4.64
9	4.18	4.21	4.70	4.75	2.83	2.90	4.78	4.81
10	4.27	4.30	4.73	4.78	2.94	3.02	4.93	4.96
12	4.42	4.45	4.76	4.84	3.12	3.23	5.17	5.20
15	4.60	4.63	4.80	4.89	3.36	3.46	5.42	5.45
20	4.79	4.82	4.80	4.93	3.61	3.71	5.63	5.66
25	4.88	4.91	4.81	4.94	3.75	3.85	5.70	5.73
30	4.92	4.95	4.80	4.93	3.81	3.90	5.73	5.76

Source: *Financial Times*, August 19, 2003, p.23. Bid and ask rates as of close of London business. US$ is quoted annual money actual/360 basis against 3-month LIBOR. £ quoted on a semi-annual actual/365 basis against 6-month LIBOR. Euro/Swiss franc quoted on annual bond 30/360 basis against 6-month Euribor/LIBOR with the exception of the one-year rate which is quoted against 3-month Euribor/LIBOR.

Harbjerg: LIBOR flat? What about the other 50 basis points?

Nielsen: The LIBOR component is the only floating component, and the swap market doesn't price or carry credit spreads. The 50 basis points is the credit spread applicable to Tirstrup. What you would do, since this would just be a *plain vanilla* interest rate swap, is add the 50 basis points to the swap rate, the 4.39/4.42%.

Harbjerg: *Plain vanilla*? Sounds like ice cream.

Nielsen: That's just the term for ordinary fixed-to-floating or floating-to-fixed interest rate swaps in the same currency. We also do *leveraged swaps*, *off-market swaps*, *cross-currency swaps*...

Harbjerg: Yeah. Any fees? And how much could we get at this pricing?

Nielsen: Usual fees on the issuance, one-and-a-half, but we typically waive any fees related to the swap for clients such as Tirstrup. We could do a seven-year deal as big as $150 million for Tirstrup, given its single-A rating. The only thing I would say is that you would have to do a minimum of $10 million to make it worthwhile. And, of course, we would have to get credit approval.

Harbjerg: By the way, could you do these swaps in other currencies?

Nielsen: Yes, interest rate swaps are done in most of the major European currencies, Japanese yen, and a few others. I brought a rate sheet along, for indications only.

Harbjerg: How about Danish kroner?

Nielsen: Anything's possible ... at a price. We could, of course, make you an attractive deal on kroner, say 650 million kroner in the current market. Probably seven years at 4.65%—a very low rate just for Tirstrup—and with lower fees because you guys are an established client. Maybe as low as 1-1/2% for the whole deal.

Harbjerg: That does sound promising. Any other thoughts?

Nielsen: We could also fix you up with a cross-currency swap, in case you need dollars but feel you have an advantage in the euro or Swiss franc market. These would be priced as an interest differential for fixed-rate funds in the two currencies. Take a dollar-market swap. The indicative rate for a seven-year fixed US$ against fixed euro swap is 4.39/4.42% against 3.94/3.97% in euro. For Swissies, it would be 4.39/4.42% against 2.53/2.61%. The Swiss franc is at Sfr.1.3919/$.

Harbjerg: Whoa, hold it, not so fast.

Nielsen: For example, if Tirstrup has euro debt on which you're paying 3.97% fixed, we would give you 3.94% annually in euro and you would pay us 4.42% annually in dollars. At maturity, we would pay you the euro amount of your principal and you could pay us the same amount in dollars, calculated at today's exchange rate. So as far as you're concerned, it's dollar debt. Again, we would waive the fee.

Harberj: But we can't get euro at 3.97% fixed; more like 4.80%. How would we swap out all of our euro interest into dollars then?

Nielsen: Right, well, again, the swap market doesn't carry the credit spread, which is what the difference is in those rates, the 4.80 versus 3.94. What we could do is lay out the cash flows in euro, isolate the residual—the cash flows for the difference between 4.80 and 3.94, and find their present value using the 3.94% current euro fixed rate for that maturity. That present value, essentially the PV of the credit spread, could then be converted into U.S. dollars at the current spot rate, then added to the notional principal which you are paying the 4.42% dollar rate on. *Voilá* (French for *voilâ*).

Harbjerg: Uh-huh. *Tak for det* (Danish for "thanks for that"). That doesn't sound so simple, but we can go over the details. I'll have the ham smørbrød, please. And Peder, *thanks*; I assume you're buying today.

Upon returning to the office, Julie reviewed a number of other possibilities. Dresdner Bank (Germany) had recommended that Tirstrup consider a euro-denominated Eurobond for as much as €100 million, $112 million at that day's exchange rate of $1.1160/€. The amount would be higher if the euro strengthened, as many economists expected would happen soon. Tirstrup would have to pay 4.80% (the rate Julie had recalled when talking with Peder Nielsen), probably about 5.0% "all in" for 7-year euro funds after the 2% fees paid for security issuances.

Dresdner had also suggested issuing *floaters*, Floating Rate Notes (FRNs). FRNs could be issued for probably anywhere from five to ten years in maturity and €100 million in principal. Dresdner had told Julie that it made most of its FRN market in euros (and specifically in Germany), and was skeptical of being able to successfully issue a dollar-denominated version. One particularly attractive characteristic of the FRNs was that they would probably carry a smaller spread (maybe 0.50% in this case) over 6-month LIBOR than syndicated loans. Because investors buying the notes would see less value changes in the notes as a result of the interest rate resets every six months, they were frequently willing to take smaller spreads. Julie assumed that the notes, like floating-rate loans, could also be swapped to provide fixed-rate financing.

As the Nordeabank people from London had pointed out, however, the obvious choice to finance a U.S. acquisition for MediNav was a Eurodollar bond—a Eurobond denominated in U.S. dollars. This market could give the company fixed-rate funds for maturities up to twelve years. The bankers felt that Tirstrup's name was sufficiently well-known in Europe that it could float eurobonds at a fixed rate of 5.60%. However, the $100 million issue would be the most Tirstrup could expect. Another source worth considering was the Swiss franc foreign bond market, an issue in Switzerland by a nonresident borrower, where Tirstrup could probably get $80 million equivalent at an attractive rate of 4.10% right away. The maturity also looked good, probably up to twelve years.

All of the international bond issues, of course, would entail managing, underwriting, and selling fees up front, which totaled about 2% of the amount issued. And with a Eurobond, or for that matter any bond, there was always the possibility that if the issue were mispriced or badly timed, the price would have to be dropped or the issue withdrawn. Investment bankers, who had done their homework in advance of an issue, should usually be able to avoid this, but that was not always feasible if market conditions changed or if the issuer was a newcomer to the market. Some issuers tried to sweeten their offering by adding warrants, or denominating the issue in a basket of currencies designed to appeal to the individual investor.

Julie had also talked to her boss about the merits of doing a convertible Eurobond issue, which could cost 1-2% below a straight issue and which might strengthen Tirstrup's capital structure. The problem with the latter was that Tirstrup was still only listed in Copenhagen, and the investment bankers had been relatively pessimistic about the marketability of such an issue.

The more she pounded the numbers, the more attractive the Danish kroner offering by Peder Nielsen at Nordeabank looked. But there would be a problem. The Danish government had recently tightened restrictions on interest deductibility on debt raised for international investments. New debt would come at a cost of reduced tax proceeds in-country, and there was little guarantee that the foreign investments would ever generate taxable income back in Denmark. It did not seem promising.

All things considered, the recommendation of several bankers was that Tirstrup would be well-advised to undertake a private placement of debt with an institutional investor in the United States. Although they had internal limits on foreign holdings, two or three life insurance companies had shown an interest in fixed-rate, long-term paper of prominent Scandinavian issuers. Long-term in the U.S.

private placement market probably meant ten years. Nordeabank felt that their New York specialists could place as much as $200 million of Tirstrup's paper in this manner. The immediate cost would be about 5.3%, a little bit higher than a public issue in the United States (a *Yankee bond*), but the fees were significantly lower—about 7/8% of the principal. This approach would provide a big chunk of the funds needed with the only drawback being that it would not help Tirstrup gain the visibility that top management felt it needed in the public markets. "We have to get out of this Danish gloom and into the light," Wiksell had once growled to Julie.

Evaluation of Alternatives

Julie began to organize her notes and thoughts in preparation for next month's meeting. First, she felt she should divide the choices into those involving variable interest rates and those involving fixed. And, for now, she would assume all would carry bullet repayment. Should all the funds be at fixed rates? If so, could this be done by means of swaps? If swaps were used, would this entail any additional risks? What about the sale of Malmø? Could Tirstrup get out of the swaps? If a fixed rate issue were done, should it be a public issue or a private placement? A straight bond or a convertible? Which corporate entity should issue the debt?

Julie wondered about the wisdom of denominating the issue in U.S. dollars. The dollar had risen substantially against the Danish kroner in recent years, and if that were to continue, the value of the debt to be repaid would increase just as the Swiss franc issue had done. Although Denmark was not a participating member of the euro (it had voted against replacing the kroner with the euro), the Danish kroner was held at a fixed rate against the euro (see Appendix 1).

Finally, she wanted to be able to recommend a package of financing that would meet the company's needs, that would comply with Danish government requirements, and that would minimize cost and risk while not closing the door to future Tirstrup financing requirements. "Why not invite a number of financial institutions to submit proposals," she thought. "We can always reward the best ideas with a mandate and the promise of some future business. Let's just have them show us the numbers." She then began to sketch out a funding matrix which would combine all elements in one form—one which would focus, after all fees and spreads, on the all-in-cost of capital (AIC).

Exhibit 5 Tirstrup BioMechanics: Financing Alternatives Worksheet

		Alternative #1	*Alternative #2*	.... *Alternative #?*
Currency of denomination		_____	_____	_____
Principal (millions)		_____	_____	_____
Maturity (years)		_____	_____	_____
Interest rate (%)		_____	_____	_____
Fees (%)		_____	_____	_____
Cash Flows by Period				
0	Proceeds	_____	_____	_____
1	(Interest)	_____	_____	_____
2	(Interest)	_____	_____	_____
3	(Interest)	_____	_____	_____
4	(Interest)	_____	_____	_____
..				
n	(Principal + Interest)	_____	_____	_____
AIC (%)		_____	_____	_____

All-in-cost (AIC) is calculated by finding the internal rate of return of the payment stream by issuance, from initial net proceeds through final interest payment combined with bullet repayment of principal.

Appendix 1 Denmark and the Euro

Denmark has not introduced the euro. Danish participation in the euro was rejected by referendum on 28 September 2000. The EU Treaty gives Denmark the right to remain outside the euro area, even when all convergence criteria are met. The reservation concerning euro participation can be abolished by referendum.

The euro is one of the most important currencies for the Danes, some of whose preferred holiday destinations are in one of the euro area member states. Denmark's trade with the euro area is substantial. The euro area member states account for almost half of Denmark's exports. Foreign tourists visiting Denmark have also led many Danish shops to accept payment in euro.

The central element of Danmarks Nationalbank's monetary policy is Denmark's fixed-exchange-rate policy vis-à-vis the euro within the framework of ERM II. Even though Denmark has not introduced the euro, Danmarks Nationalbank participates in the European System of Central Banks, ESCB, which comprises the European Central Bank, ECB, and the central banks of the 15 EU member states.

Exchange Rate Mechanism / ERM II

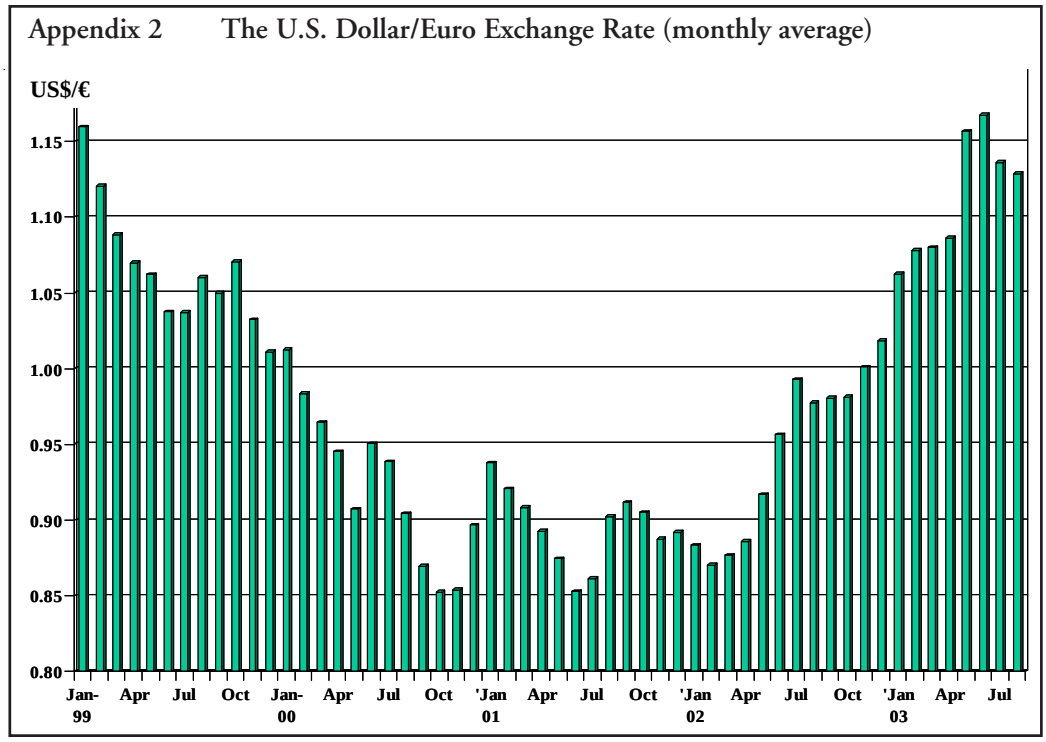
Denmark has maintained a fixed-exchange-rate policy since the beginning of the 1980s. Since the start of the third stage of Economic and Monetary Union (EMU) on 1 January 1999, Denmark has participated in the European Exchange Rate Mechanism, ERM II.

Denmark participates in ERM II at a central rate of Dkr. 746.038 per 100 euro. The central rate is a conversion of the central rate vis-à-vis the D-mark before the third stage of EMU and was last adjusted in January 1987. The standard width of the fluctuation band in ERM II is +/– 15 per cent. Due to its high degree of convergence, Denmark has entered into an agreement with the European Central Bank (ECB) and the euro area member states on a narrower fluctuation band of +/– 2.25 per cent. This means that the krone can only fluctuate between Dkr. 762.824 per 100 euro and Dkr. 729.252 per 100 euro. In recent years Danmarks Nationalbank has maintained a stable krone rate closer to the central rate.

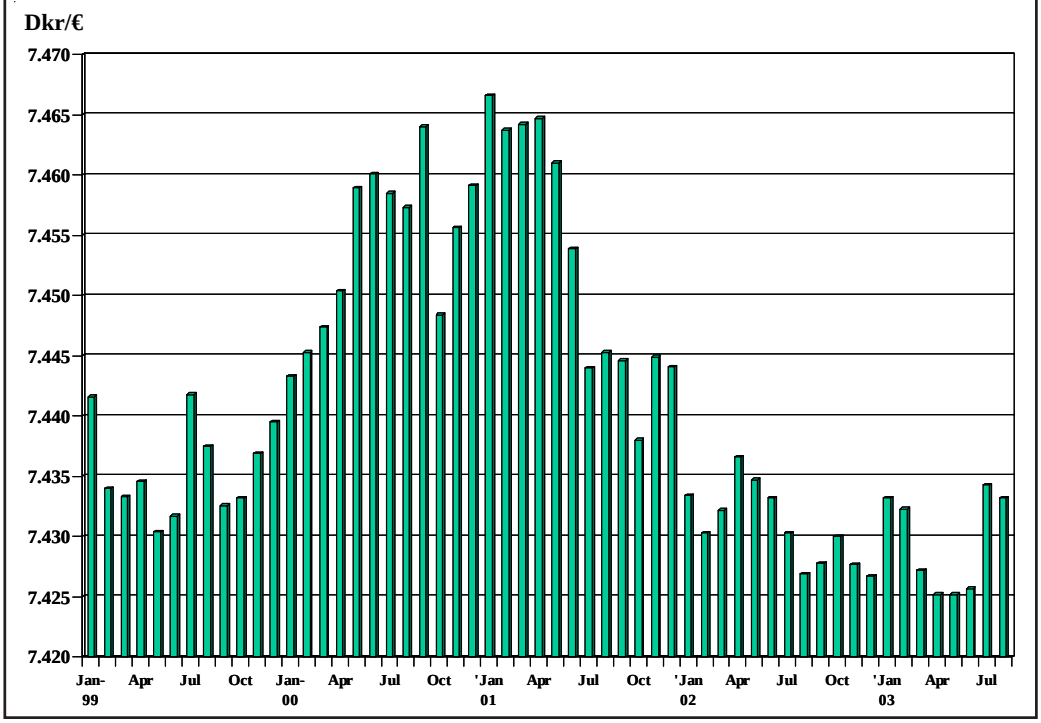
If the exchange rate of a participating country fluctuates close to the upper or lower limit in ERM II, both the ECB and the central bank of the participating country must intervene to strengthen the weaker of the two currencies, so that the exchange rate is kept within the fluctuation band. ERM II also comprises a commitment to unlimited intervention credit between the ECB and the central bank of the participating country. Denmark is currently the only participant in ERM II. One of the convergence criteria for euro participation is observance of the normal fluctuation band within ERM II for at least two years without devaluing.

www.http://www.nationalbanken.dk. Accessed August 17, 2003.

Appendix 2 The U.S. Dollar/Euro Exchange Rate (monthly average)



Appendix 3 Danish Kroner/Euro Exchange Rate (monthly average)

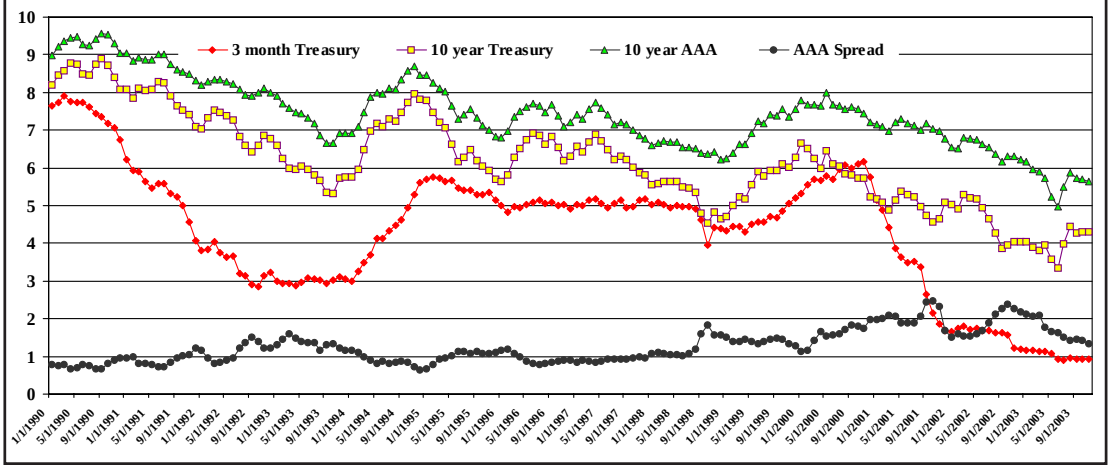


Appendix 4 Global Investment Grade Bond Quotes by Currency

August 18 US$	Red Date	Coupon	S&P Rating	Moody's Rating	Bid Price	Bid Yield	Spread vs Govts
Ford Motor Cr	02/06	6.88	BBB	A3	104.7830	4.77	3.08
Walt Disney	03/06	6.75	BBB+	Baa1	109.0470	3.11	1.42
Morgan Stanley	04/06	6.10	A+	Aa3	107.7227	3.04	1.35
American Elec	05/06	6.13	BBB	Baa3	106.7256	3.52	1.83
FHLMC	07/06	5.50	AAA	Aaa	107.7453	2.70	1.01
Canada	11/08	5.25	AAA	Aaa	107.8618	3.58	0.32
Wal Mart	08/09	6.88	AA	Aa2	113.6153	4.26	-0.14
Du Pont	10/09	6.88	AA-	Aa3	114.4776	4.18	-0.22
Philips Petr	05/10	8.75	A-	A	121.9311	4.89	0.49
Unilever	11/10	7.13	A+	A1	114.4586	4.72	0.32
Bank America	01/11	7.40	A	Aa3	114.8834	4.97	0.57
JP Morgan	02/11	6.75	A	A2	109.2277	5.23	0.83
France Telcom	03/11	9.25	BBB	Baa3	118.6101	5.89	1.49
FNMA	05/11	6.00	AAA	Aaa	108.7717	4.63	0.23
ADB	07/18	5.59	AAA	Aaa	102.1689	5.37	0.01
Italy	09/23	6.88	AA	Aa2	114.3891	5.66	0.30
Pacific Bell	03/26	7.13	A+	A1	107.8687	6.45	1.09
Lockheed	12/29	8.50	BBB	Baa2	123.3987	6.61	1.25
Daimler Chrysler	01/31	8.50	BBB+	A3	110.1733	7.61	2.25
FHLMC	03/31	6.75	AAA	Aaa	109.9006	6.01	0.65
AOL	04/31	7.63	BBB+	Baa1	104.2398	7.26	1.90
Firstenergy	11/31	7.38	BBB-	Baa2	91.8180	8.11	2.75
Euros							
UK	01/03	4.750	AAA	Aaa	100.0000	-	-2.71
Hypothekenbank	01/04	3.250	AAA	Aaa	100.4386	2.15	-0.12
Ford Motor Cr	02/04	5.625	BBB	A2	101.0486	3.17	0.90
EIB	04/04	5.250	AAA	Aaa	101.9446	2.18	-0.09
Tecnost Int	07/04	5.825	BBB+	Baa2	102.3250	3.26	0.99
BNNG	04/05	5.000	AAA	Aaa	103.8394	2.62	-0.01
BASF	07/05	5.750	AA-	Aa3	105.4566	2.80	0.17
Deutsche Telc	07/06	6.375	BBB+	Baa3	106.7500	3.86	0.88
Eurohypo	02/07	4.000	AAA	Aaa	102.4509	3.23	-0.04
Depfa Pfandrbnk	01/09	3.750	AAA	Aaa	100.2604	3.69	-0.01
Mannesmann Fin	05/09	4.750	A	A2	102.5942	4.23	0.53
Deutsche Fin	07/09	4.250	AA-	Aa3	100.9886	4.06	0.36
Repsol Int Fin	05/10	6.000	BBB	Baa2	106.9100	4.77	0.92
Elec de France	10/10	5.750	AA	Aaa	109.1223	4.25	0.40
HVB	09/11	5.000	n/a	Aa3	104.8476	4.28	0.30
Pounds Sterling							
Gen Elec Cap	01/04	5.125	AAA	Aaa	100.3257	4.15	0.59
Daimler Chrysler	12/06	7.500	BBB+	A3	105.8400	5.50	1.35
Halifax	04/08	6.375	AA	Aa1	106.6800	4.72	0.38
Boots	05/09	5.500	A+	A1	102.4786	4.99	0.58
France Telecom	03/11	9.000	BBB	Baa3	116.1000	6.29	1.76

Source: *The Financial Times*, Tuesday, August 19, 2003, p. 23.

Appendix 5 Three-Month and Ten-Year U.S. Treasury and AAA Corporate Bond Yields, 1990-2003 (percent per annum)



THUNDERBIRD
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A06-99-0025
Rev. 12/02

P.T. Semen Gresik

Mismanagement, poor regulation or simple inertia had left more than half of state-owned enterprises "unhealthy." State-appointed managers ran companies like fiefdoms; bloated, failing industries were kept alive more from national pride than economic sense. As 1997 came to a close, 164 state firms were reporting a combined pre-tax profit of just $1.2 billion. Yet state enterprises employed more than 700,000 Indonesians and were worth some $60 billion. They were overseen by touchy ministers and entrenched managers. They were wrapped in a mythology of development. Slimming down or selling off these sacred cows meant playing with fire.
"Anatomy of a Deal," by Jose Manuel Tesoro, *AsiaWeek*, January 22, 1999.

On July 6, 1998, the Indonesian government announced that Cementos Mexicanos (Cemex) was the *preferred bidder* for the largest government-owned cement company—PT Semen Gresik. The first round of bidding had pitted Cemex against Holderbank of Switzerland and Heidelberger of Germany, two of the largest cement manufacturing firms in the world. And a mere seven weeks had passed since the resignation of President Suharto, a turning-point in Indonesia's politics and economics.

In a surprise announcement on August 20, Cemex was informed that its first-round bid would have to be restructured, the primary change being a maximum of 14% of ownership passing from the government to Cemex. Then, as *preferred bidder*, Cemex would wait for the other first-round bidders to submit second bids no later than September 28. If their second bids were superior to that of Cemex's first bid, Cemex would have the right to match theirs if it wished. In the event the second bids did not match that of Cemex, Cemex would automatically be declared the winner. Cemex was also required to bid in the second round. The vice president for finance of Cemex, Hector Medina, and his acquisition staff now had only a few weeks to finalize their position.

Indonesian Privatization

The entire process of selling-off Indonesian state firms was directed by Mr. Tanri Abeng, a former deal-maker in Indonesia's private sector and thought to be well-suited for the position as a result of his lack of ties with politicians. Abeng's background encouraged foreign investors to believe that Indonesia's government was serious about its privatization program. Abeng had previously held positions as the head of Indonesian operations for Union Carbide (United States), Heineken (the Netherlands), and finally the Bakrie Group, a diversified Indonesian conglomerate. After being named State Enterprises Minister in 1997 by then President Suharto, he was given a very ambitious revenue target: raise $1.5 billion from the sale of stakes in selected Indonesian state-owned enterprises.

Abeng moved quickly, placing 12 government-owned companies up for sale. The 12 included port-operator *Pelindo*, highway and airport operators, mining companies, agricultural plantations, and telecommunications companies—including *Indosat*. These 12 possessed assets of 461 trillion rupiah

(Rp), or $50.6 billion. By early June of 1998 Abeng had arranged for nine different investment banking firms to act as financial advisors and agents to the 12 companies on the auction block.

Goldman Sachs's Indonesian partner, Bahana, was hired to represent the Indonesian cement producer Semen Gresik. In May Abeng appointed Goldman Sachs and Lehman Brothers senior advisors to the Indonesian government in its privatization drive. Exhibit 1 summarizes the firms.

Exhibit 1 Indonesian Enterprises Slated for Privatization and Their Financial Partners

State-Owned Company	Industry	Financial Adviser
1. Telekomunikasi Indonesia	Telecommunications	Merrill Lynch, Lehman Brothers
2. Indonesia Satellite (Indosat)	Telecommunications	Goldman Sachs
3. Semen Gresik	Cement	Goldman Sachs
4. Tambang Timah	Tin mining	Morgan Stanley, Banque Paribas
5. Aneka Tambang	Gold mining	Morgan Stanley, Banque Paribas
6. Tambang Batubara Bukit Asam	Gold mining	Morgan Stanley, Banque Paribas
7. Jasa Marga	Toll road operator	Lehman Brothers
8. Pelabuhan II (Pelindo II)	Port operator	Goldman Sachs
9. Pelabuhan III (Pelindo III)	Port operator	Credit Suisse First Boston
10. Angkasa Pura II	Airport manager	UBS/SBC Warburg Dillon Read
11. Perkebunan Nusantra IV	Plantation	Jardine Fleming
12. Krakatoa Steel	Steel	Salomon Smith Barney

The Indonesian privatization drive was the direct result of the economic crisis in which Indonesia was currently mired, and the subsequent promises made by President Suharto to the International Monetary Fund (IMF) in order to obtain economic and financial assistance. The structural reform program agreement signed with the IMF required Indonesia and President Suharto to open the Indonesian economy to outside investors and market forces. Under the terms of the agreement, Indonesia would sell stakes in four firms by the end of 1998, all 12 companies by the end of 1999.

The World Bank would supervise the privatization process implemented by the government. In stage one, each bidder—upon the completion of due diligence—would submit a binding offer for shares in the company based on directives given by the government (typically on how much of the government's share was actually up for sale). The winning bid would combine financial, social (employment guarantees), and environmental dimensions. The winning bidder of stage one would then enter into a provisional sales agreement with the government. Third parties were then allowed to submit bids in a second stage to improve upon the winning bidder's offer. The winning bidder of stage one was then given the right to match the better offer, if it wished, in order to win the bid.

Many of these state-owned enterprises were already publicly traded (minority shares), so that market values did exist for these firms. However, these market capitalizations had been severely degraded following the onslaught of the Asian economic crisis. Markets, in addition to the individual equities traded in these markets, had fallen across Asia. For example, official forecasts for the Indonesian economy expected a 10% fall in total gross domestic product (GDP) for 1998. (The magnitude of this depression and economic collapse is seen when this 10% fall is compared with the deepest recessions in recent U.S. economic history—when GDP fell by a mere 2% during the 1930s.)

Cemex S.A. de C.V.

Founded in 1906, Cementos Mexicanos S.A. (Cemex) is the largest cement manufacturer in the Americas and the third largest cement producer in the world, just behind Holderbank of Switzerland and Lafarge of France. Based in Monterey, Mexico, Cemex has operations in 22 countries and trade rela-

tions with over 60 countries worldwide. Cemex is the market leader in Mexico, Spain, Venezuela, Panama, and the Dominican Republic, with a rapidly expanding presence in Colombia, the Caribbean, the southwestern portion of the United States, and most recently the Philippines. Exhibit 2 provides an overview of Cemex's recent financial results. (Appendix 1 provides additional Cemex results.)

Exhibit 2 Selected Consolidated Financial Results of Cemex SA (December 31, millions of constant pesos)

	1993	1994	1995	1996	1997
Net sales	25,759	27,687	33,924	35,540	38,464
Operating income	6,269	7,431	8,100	8,482	9,088
Majority net income	4,637	4,951	10,045	10,319	7,725
Earnings per share (EPS)	4.39	4.60	7.81	7.95	6.01
Operating margin (%)	24.4	26.8	23.9	23.8	23.6
EBITDA	8,120	9,471	10,786	11,483	12,116
EBITDA margin (%)	31.6	34.2	31.8	32.3	31.5

EBITDA = earnings before interest, taxes, depreciation and amortization.

Source: Cemex, http://www.cemex.com.

Cemex has a corporate strategy which provides much of the impetus for its Asian expansion: 1) to leverage its core cement and ready-mix concrete franchise; 2) to concentrate on developing markets; and 3) to maintain high growth by applying free cash flow toward selective investments that further its geographic diversification. This strategy was focused on repositioning the company from being a dominant regional producer to a true global player in the cement industry.

Most notable regarding Cemex's performance had been its ability to maintain its operating and EBITDA margins over the tumultuous 1990s. Consistently higher than all of its European-based global competitors, the source of its efficiencies rested with a capable combination of relatively new vintage capital facilities, pricing-power and market dominance in its primary markets, and a progressive management group and strategy which focused on customer satisfaction and service (a rare concept in cement markets). The bottom line in all commodity-based industries, however, was operating excellence. Cemex consistently attained margins, even in new acquisitions, which competitors could not match. Operating margins expanded by 18% in Spain after Cemex acquired Valenciana and Sanson, and 19% in Venezuela after acquiring Vencemos.

Cemex had little experience in Asia, but it did possess significant experience of its own in surviving an economic crisis. The devaluation of the Mexican peso in December 1994 and the resulting Mexican economic crisis of 1995 had provided Cemex with some in-house insights into enterprise value. Cemex's own price-to-book value had plunged to 1.16 in March 1995 following the fall of the peso, yet Cemex was able to recover remarkably quickly from this discounting by the equity markets. It hoped to use some of these insights into market valuation in expanding its presence in Asia when Asian cement stocks were themselves trading at significant discounts to what their true values likely were.

> *This is most definitely the right time to buy in Asia. The current crisis in Asia has resulted in a fall in value per tonne of capacity for cement companies to US$100 per tonne from US$500 per tonne.*
>
> Lorenzo Zambrano, Chairman, Cemex[1]

Cemex's first direct operating activities in Asia commenced with its acquisition of a 30% stake in Rizal Cement of the Philippines in September 1997 for US$100 million. Although Cemex itself had

[1] *The Financial Times,* November 7, 1997.

aspirations of expanding across Asia, and the Asian economic crisis had made many firms throughout the Far East relatively cheap, many analysts had grave concerns over the ability of Cemex to digest more acquisitions in the region rapidly. Nonetheless, Cemex continued to pour over the possibilities in the region, paying significant attention to the movements of its major global competitors.[2] In early 1998 Cemex directed Goldman Sachs to find a company in Indonesia in which the firm might acquire a strategic stake. Exhibit 3 provides an overview of the major cement manufacturing firms across the region, their recent earnings and share price performance, and several measures of cement producer valuation.

Valuation

> *Value, in our opinion, should be the guiding principle in such turbulent times. While stock prices in efficient markets naturally respond to day-to-day changes in life, this should not cloud the fact that the underlying assets possess an intrinsic economic value. When the market price falls below that value, a profit opportunity arises.... Is there value in the Indonesian cement sector and, if there is, when is it going to be realised?*[3]

In addition to most of the traditional valuation techniques (price to earnings, price to free cash flow, earnings per share growth) there are typically additional techniques useful in specific industries. Two such techniques widely used in the cement industry are e*nterprise value to capacity* and *enterprise value to EBITDA* (earnings before interest, taxes, depreciation and amortization).

Enterprise value to capacity is a frequently used method of valuation in the cement industry, and is calculated by dividing *enterprise value* (the total of market capitalization and net debt) by the existing installed capacity of the cement producer. Because of standardized technology across countries, EV/capacity provides a very clear indicator of how different companies may be described as under- or over-valued. Industry experts estimated the *set-up costs* (*replacement cost*) in Asia to be roughly US$160/tonne for a standard 1.5 million metric tons per year (mmt/y) production facility.

Enterprise value to EBITDA is a more common measure of value used across all industries, and focuses on the market's current market capitalization to the current pre-financing and tax based operating earnings of the firm. Similarly, *price to free cash flow* (P/FCF) and *price-to-earnings* (PE) ratios also provide market values to firm cash flows and earnings by more standard methodologies.

As illustrated in Exhibit 3, the lowest EV/capacity in Asia in 1998 were the producers in Indonesia (52), South Korea (52), and Malaysia (55). The lowest EV/EBITDA values were found in a different subset of countries, with the lowest being the Philippines (4.1), South Korea (6.1), and India (7.2). The cement producers of Indonesia and Thailand had suffered negative earnings in 1997 and 1998, although the expectations for 1998 were for significant improvement (but still negative for these two countries). The other manufacturers across the region were still sliding, at least in regard to expected earnings for 1998. Share price performance for cement manufacturers since the inception of the crisis in June 1997 was, however, unambiguously disastrous.

The prospects of the Indonesian cement industry were not clear. In March the Indonesian government announced it would deregulate the local guideline price system (HPS), and the Indonesian Cement Association (ASI) would assume responsibility for supervision of cement distribution and control

[2] Within months of the start of the Asian crisis Holderbank (Switzerland) and Blue Circle (United Kingdom) were both moving on properties in Malaysia and the Philippines, while LaFarge (France) moved to expand into the Philippines and India.

[3] "On the Brink of Value Realization," Indosuez W.I. Carr Securities Limited, June 22, 1998, p. 5.

of cement prices. This was expected to result in price wars as excess supply of cement was expected to continue through the year 2002. Prices could fall by 10% to Rp139,500 per tonne. Because cement is a bulk commodity with high transportation costs, markets are typically geographically defined. Prices therefore vary significantly from one region or country to another.

Exhibit 3 Financial Characteristics of Cement Producers in Asia (March 1998)

Firm (Country)	Market Cap (US$ million)	EV/ Capacity	EV/ EBITDA	Price/ FCF	Price/ Earnings	Earnings Per Share (EPS) 1997	1998E	Change	Share Price Performance 12 months	Relative
INDIA										
Associated Cement	460.0	77	12.4	22.1	142.4	56.2	9.2	-84%	3%	6%
Gujarat Ambuja Cement	433.5	128	8.0	11.5	12.4	18.0	18.6	3%	-10%	-8%
India Cement	97.8	64	4.3	4.3	4.9	12.8	12.0	-6%	-8%	-6%
Madras Cement	102.7	73	4.2	3.8	5.8	642.7	572.2	-11%	-59%	-58%
Average		86	7.2	10.4	41.4			-19%	-17%	
INDONESIA										
Indocement	957.9	39	12.6	15.8	(27.9)	(371.1)	(123.8)	improved	38%	82%
Semen Gresik	461.9	53	8.5	11.4	56.0	(90.2)	121.0	improved	-14%	14%
Semen Cibinong	49.5	65	5.5	0.5	(1.1)	2.0	(334.0)	-16800%	-61%	-48%
Average		52	8.9	9.2	9.0			-12%	16%	
THAILAND										
Siam Cement	926.6	190	7.2	4.1	(1.5)	(440.3)	(37.5)	improved	-48%	-23%
Siam City Cement	338.3	97	9.8	10.0	(3.7)	(96.0)	(36.6)	improved	-2%	44%
TPI Polene	71.7	150	15.2	(1.3)	(1.3)	(53.4)	(28.4)	improved	-79%	-68%
Average		146	10.7	4.3	(2.2)			-43%	-16%	
MALAYSIA										
Cement Industries	69.6	26	9.3	11.5	(91.3)	52.7	(2.3)	-104%	-70%	-44%
Kedah Cement	109.4	93	5.1	2.7	4.0	28.3	26.5	-6%	-76%	-55%
Malayan Cement	238.9	45	20.1	11.0	6.7	29.8	10.0	-66%	-56%	-17%
Average		55	11.5	8.4	(26.9)			-67%	-38%	
PHILIPPINES										
Alsons	54.0	40	4.0	4.6	4.4	0.6	0.5	-17%	-74%	-56%
Davao Union Cement	19.3	56	3.0	2.0	1.9	0.4	0.3	-25%	-89%	-81%
Fortune Cement	120.6	96	6.2	7.2	10.0	0.4	0.4	0%	-66%	-44%
Hi Cement	60.3	39	3.1	3.1	5.8	0.7	0.5	-29%	-68%	-47%
Average		58	4.1	4.2	5.5			-74%	-57%	
TAIWAN										
Asia Cement	1,716.2	228	10.1	8.9	13.9	2.3	2.4	4%	-23%	-33%
Taiwan Cement	1,343.7	147	14.1	14.1	25.4	1.2	1.4	17%	-38%	-46%
Average		188	12.1	11.5	19.7			-30%	-40%	
SOUTH KOREA										
Hanil Cement	65.4	25	4.2	3.0	11.5	2,186.5	2,031.0	-7%	-48%	-29%
Ssaangyong Cement	84.8	70	8.0	2.1	11.5	529.2	392.3	-26%	-60%	-45%
Tong Yang Cement	35.5	62	6.0	1.5	6.8	1,151.0	1,061.7	-8%	-59%	-45%
Average		52	6.1	2.2	9.9			-56%	-40%	

All values are estimates for 1998 unless otherwise stated. Market capitalization as of March 2, 1998.
Enterprise Value (EV) calculated as total market capitalization plus net debt.

Source: Constructed by author from Paribas Asia Equity and other sources.

The Asian currency crisis had led to a significant differentiation—some would say *distortion*—of relative costs and prices across the Asian cement industry. As seen in Exhibit 4, cash costs ranged from a low of $10/tonne in Indonesia to $30/tonne in Taiwan. At the same time, prices were also the lowest

in Indonesia, currently falling to $16/tonne, while Pakistan and Taiwan earned $55 and $54/tonne, respectively. The result was an Indonesian industry which was the lowest cost, but also relatively low in gross margin.

Exhibit 4 Bagged Cement Prices and Cash Costs Across Asia, June 1998

Country	Ex-Factory Price (US$/tonne)	Cash Costs (US$/tonne)	Margin (US$/tonne)	Gross Margin (per tonne)
Pakistan	55	29	26	47%
Malaysia	40	26	14	35%
India	46	27	19	41%
Philippines	39	23	16	41%
Korea	39	28	11	28%
Taiwan	54	30	24	44%
Thailand	38	20	18	47%
Indonesia	16	10	6	38%
Average	41	24	17	40%

Source: Indosuez W.I. Carr Securities, June 12, 1998.

The large discrepancies in costs and prices had led many of the world's largest cement producers to consider something long forgotten, large scale low-cost production and international distribution through exports. For example, the Taiwanese cement market may be quite vulnerable to Indonesian exports. Assuming cash production costs in Indonesia of $10/tonne, loading costs (on both ends) of $2/tonne, and shipping costs to Kaohsiung (Taiwan) from East Java (Indonesia) of $10/tonne, Indonesian exports could severely undercut domestic Taiwanese producers.[4] Several analysts argued that even the United States cement markets may be vulnerable to Indonesian exports if shipping costs between Indonesia and the U.S. could be kept at $35 to $40/tonne. Cement prices in the U.S. hovered just below $75/tonne. Semen Gresik was currently in the process of a significant upgrading of its port facilities to increase its export capabilities. (Appendix 2 provides a discounted cash flow valuation of PT Semen Gresik.)

PT Semen Gresik

> *We believe that Gresik would be on the top of the list of acquisition targets for foreign cement players. The partial sell-down of the government's 65% stake will represent a unique opportunity for the foreign players to take a meaningful stake in the Indonesian cement industry (previously closed). However, in our view this foreign interest is dependent on, at a minimum, gaining management control.*[5]

Semen Gresik began producing cement in 1957 by exploiting large and readily accessible limestone deposits in East Java, and was the first government-owned cement producer in Indonesia to go public, issuing 35% of its shares on the Jakarta exchange in July 1991. The ownership structure had not changed since 1991, with 65% of the shares held by the Indonesian government and 35% free float on the Jakarta exchange. The 1998 Indonesian privatization program was focused on maximizing the revenues per share received by the government for some proportion of the 65% held by the government.

Semen Gresik had become the largest Indonesian cement producer in September 1995 when it had purchased Semen Padang (West Sumatra) and Semen Tonasa (South Sulawesi) for a total of $476 million. The three companies still operated separately, maintaining independent administrative struc-

[4] Export cost estimates drawn primarily from Indosuez I.D. Carr Securities, June 12, 1998, p.11.
[5] Ibid, p.17.

tures. Although this added substantial capacity to Semen Gresik's resources, it was also an unpopular government-directed consolidation as fears arose over possibilities of layoffs and reorganizations away from the outer island/provinces.

The Indonesian market, however, like all cements markets around the globe, was regional in nature. The largest markets in Indonesia were Jakarta—dominated by Indocement—and West Java—dominated by Semen Cibinong. Regardless of which region the individual producer dominated, the Asian crisis had hit all the major producers. Indocement and Cibinong were expected to only reach 37% and 27% capacity utilization rates in 1998, respectively. All producers were expected to see 1998 annual sales volumes fall by roughly 40% from the previous year. Exhibit 5 provides an overview of the major Indonesian cement producers as of July 1998.

Exhibit 5 Indonesia's Major Cement Manufacturers

	Semen Gresik	Semen Indocement	Semen Cibinong	Andalas
Installed capacity (mmt/y)	17.0	15.5	10.5	1.2
Market share	43%	35%	17%	5%
Dominant market in Indonesia	East Java	Jakarta	West Java	—
1997 sales (mmt)	11.7	9.5	4.6	1.4
1998e sales (mmt)	7.0	5.7	2.8	0.8
Change in sales, 1997 to 1998	-40%	-40%	-39%	-43%
1998e capacity utilization	41%	37%	27%	67%
Costs comparison:				
Production costs (Rp/tonne)	135,478	145,956	155,009	na
Production costs (US$/tonne)	13.6	14.6	15.5	na
Cash costs (Rp/tonne)	115,949	117,844	129,411	na
Cash costs (US$/tonne)	11.6	11.8	12.0	na
Debt in Rupiah (billion)	Rp 1,792	Rp 391	Rp 40	na
Debt in U.S. dollars (million)	$226	$889	$903	na
Primary owner	Government	Private	Private	Government
Minority owner	Market	None	Holderbank	None
Status	Privatizing	Partner?	Stable	Privatizing

na=not available. e= estimated. Costs for Semen Gresik are numerical average of the three primary production facilities.

Source: Deutsche Bank Research, Mexican Special Report, July 6, 1998, p. 5.

Semen Gresik's management of the Asian economic crisis had, however, been relatively successful. As a result of rising input costs (roughly 10% of Gresik's production costs were imported), the firm—all three operational units—had increased its ex-factory prices by over 40% in the spring of 1998, to an average of Rp 229,000 per tonne (US$23/tonne at the then current exchange rate of Rp 10,000/$). Appendices 3 and 4 provide recent and pro forma income statements, cash flows, and balance sheets for Semen Gresik.

Bidding for Semen Gresik

Tari Abeng believed that Semen Gresik was the proper choice to begin the state's privatization program. President Suharto agreed, and allowed Abeng to proceed without interference.[6] The firm was considered one of the best managed government-run enterprises, and had shown some resiliency in the declining business conditions suffered by most in the current crisis. Gresik was not only the largest Indonesian

[6] Krakatoa Steel had actually been the first privatization subject, but had run into a variety of delays resulting in a still-borne privatization program.

cement producer, it was generally regarded as potentially the most efficient, particularly with so much of its existing capacity using the latest technology, and being of such a recent vintage. Roughly 30% of Semen Gresik's installed capacity had come on-line in 1996 and 1997.

In the midst of rising political tension throughout Indonesia—focused primarily on the push for President Suharto's resignation—Abeng initiated negotiations on May 5 with three of the world's largest cement manufacturers: Holderbank, Heidelberger, and Cemex. Holderbank, fresh off the acquisition of Union Cement (Philippines) and Siam City (Thailand), appeared the most aggressive. Cemex's due diligence team of 30 professionals arrived in Indonesia six days later. On May 17, President Suharto resigned. After a temporary pause in the process, Abeng proceeded with the privatization process. Heidelberg withdrew at this stage, leaving only Cemex and Holderbank to pursue the allotted two-week period of due diligence. On June 19, both companies filed their bids. Holderbank offered $0.96/share, roughly $200 million. The Cemex bid was much higher—$1.38/share—a potential investment of $287 million (both bids were for 207.6 million shares).

At this point Tari Abeng's gamesmanship became apparent. Departing from the original privatization program outlined by the World Bank, Abeng invited both bidders to up their bids at this point without revealing the bids submitted by either party. While Cemex confirmed its existing bid, Holderbank increased its bid to $1.21/share, or $251 million. Cemex was officially declared the winner and the *preferred bidder* for the final stage two.

Cemex's winning stage one bid was actually a complex combination offer:

1. A bid of $1.38/share for 35% of Semen Gresik's shares held by the Indonesian government. Given a current share price of Rp 9,150 (about $0.63/share at the current exchange rate of Rp14,500/$), this represented nearly a 100% premium.
2. An announced intention to purchase an additional 16% of the company's shares on the open market, bringing its total constructed position to 51%.
3. A five-year put option to the Indonesian government to sell its remaining shares to Cemex at a base price of $1.38/share plus an 8.2% annual premium.
4. A one-off payment of $129 million to the Indonesian government in 2006 if Semen Gresik's performance surpassed specific expectations.
5. A contribution of approximately $50 million to the on-going port facilities upgrade and capacity expansion of Semen Gresik (bringing it up to 17.5 mmt/y capacity; see Appendix 5).

This purchase of 207.6 million shares would reap the government approximately $287 million.[7] If the additional 16% were tendered at roughly the same price, the investment for control of Semen Gresik by Cemex would total $417.5 million. This was approximately one-quarter of what Indonesia had promised the IMF to raise through privatization—in just the first of the 12 firm sales.

Growing Opposition

Meanwhile, social and political tensions were rising over the falling employment levels of the Indonesian economy. A number of prominent Indonesian government officials raised questions regarding the wisdom of selling valuable Indonesian assets to foreign interests, particularly in light of the control these powers would exert over the companies and their employees. The management of Semen Gresik itself had previously been under pressure to assure employment levels at its Tonasa and Padang subsidiaries

[7] Of P.T. Semen Gresik's total 593,200,000 shares, 35% were publicly traded (207,620,000), and 65% were held by the Indonesian government (385,580,000).

(acquired in 1995), and now the prospect of this parent becoming further subordinated itself was not a popular one.

A second area of debate arose over the process itself. A number of prominent bankers in Jakarta were quoted in the press as questioning both the transparency of the process directed by Abeng, and the ethics of the process. At the center of the controversy was whether the investment banking firm—Goldman Sachs—was not actually playing both sides of the street. Goldman Sachs represented both the potential buyer (Cemex) and the seller (the Indonesian government). By mid-July the controversy reached its zenith, the pressure resulting in Goldman Sachs resigning as Cemex's advisor:

> *Goldman Sachs decided to withdraw in the interest of transparency. We didn't think there was anything illegal in what Goldman Sachs was doing. The bank simply wanted to avoid further public debate over its role.*
>
> Sofyan Djalil, Special Assistant to Minister of State Enterprises

Cemex immediately replaced Goldman with Jardine Fleming. Despite the resignation, Goldman Sachs' relationship with Bahana remained controversial. As described by Goldman Sachs, the relationship was "a joint operating agreement with no current cross-ownership." In principle, the problem was one of suspicion in an environment which could not at that time allow suspicion to arise.[8]

A third debate, one which erupted literally days after the culmination of the first stage, was the announcement by the Jakarta Stock Market's watchdog organization—*Bapepam*—of a probe into insider trading in Semen Gresik shares. Evidence put forward to suggest the possibility was that Gresik shares had risen 57% in the month of June while the general market fell. On the day of bid submission (June 19), a record 62 million shares of Gresik were traded, closing above Rp8,700/share for the first time. Bapepam announced that the investigation would focus on the trading activities at Jardine Fleming (now associated with Cemex), Bahana (aligned with Goldman Sachs), and the state-controlled investment bank Danareksa Securities.

Although the bids submitted by the two companies were for shares held by the Indonesian government, and the actual bids submitted secretly, both companies had been quite public in their plans to acquire additional shares sold on the open market in combination with a winning bid. Both firms wished to acquire control of Gresik, and that would have to be done by combining government shares with free-floating shares. The investigation into insider trading continued for months with no violations ever substantiated. The bidding process would continue.

Indonesia Backs Off

For months rumors had been circulating in West Sumatra that the new owners of Semen Gresik would lay off nearly half the 3,000 employees of Semen Padang's operations. Cemex's acquisition team had, during the due diligence process in which the team had direct contact with present Gresik management and labor, guaranteed that no one would be laid off before the year 2000. Demonstrations intensified in West Sumatra and Jakarta, however, after the first round of bidding. Protests in Jakarta grew in size and fervor, and by late July were occurring nearly daily (eventually resulting in the posting of signs designating a "Demonstration Area"). Rumors that management at Semen Padang paid demonstrators in both West Sumatra and Jakarta were denied by employees.

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[8] The sensitivity of this topic is summarized well by Michael Vatikiotis: "Indonesians cannot be accused of cynicism if they say that these investment banks are guilty of the same kind of collusion and nepotism which brought down the Suharto regime," from "Banking on Big Names," *Far Eastern Economic Review*, 11/19/98.

The governor of West Sumatra then threatened to remove certain land rights and concessions provided to Semen Padang if control of Semen Gresik was allowed to pass to foreign investors. The opposition parties became more and more public with their demands and threats, promising they would occupy the properties of Semen Padang in the event of foreign acquisition. The final tide turned when Azwar Anas, a former army general, former West Sumatra governor, and former CEO of Semen Padang (prior to acquisition in 1995) took the unofficial lead in opposing the privatization. On August 11 Tanri Abeng was called to testify before the Economic Committee of Indonesia's Supreme Advisory Council. Here Abeng finally capitulated to the growing pressure.

> *I was able to grasp that the real reason behind the resistance is purely emotional and cultural. Nothing to do with economics. From there on, I knew, no way. We are fighting a losing battle if we push so hard.*
>
> Tanri Abeng, August 12th

Abeng informed Cemex that the sale of Semen Gresik would have to be restructured and the second round of bidding would be postponed. Speculation on the structure of the new sale intensified, and in a conference call with Morgan Stanley Dean Witter, the Managing Director of Semen Gresik stated that he believed the company would still be sold as one, and not broken up into the individual units (Semen Padang, Semen Tonasa, Semen Gresik). It was also rumored that the winning bidder would be required to make a tender offer to the public minority shareholders at the same price as the bid price, but only if taking more than a 20% position from the government.

Final Bids

On August 20 Tanri Abeng's Office of State Enterprises announced that the government would entertain bids for only 14% of Semen Gresik rather than the original 35% offered, assuring that the government would remain the controlling shareholder after the sale. Tanri Abeng's office informed Cemex that its stage one bid would have to be restructured, keeping its preferred bidder status, and then the second round bids would be accepted. It was now up to Cemex to determine what it wished to do in its restructured stage one bid. Competitor bids were due no later than September 28, a little more than five weeks from now.

Appendix 1 Selected Consolidated Financial Results of Cemex SA (millions of constant pesos)

Income Statement Information	1993	1994	1995	1996	1997	1998
Net sales	25,729	27,687	33,924	35,540	38,464	42,720
Cost of sales	15,512	15,968	20,689	21,550	23,571	24,701
Gross Profit	10,217	11,719	13,235	13,990	14,893	18,019
Operating Expenses	3,948	4,288	5,135	5,518	5,805	6,360
Operating Income	6,269	7,431	8,100	8,472	9,088	11,659
Comprehensive Financing Costs	221	(213)	7,498	5,588	1,611	(1,309)
Other Income (Expenses)	(895)	(1,754)	(2,142)	(1,801)	(1,396)	(1,506)
Income Before Taxes & Others	5,595	5,464	13,456	12,259	9,303	8,844
Minority Interest	861	595	1,440	1,256	1,083	391
Majority Net Income	4,637	4,951	10,045	10,319	7,725	7,952
Earnings Per Share (EPS)	4.39	4.60	7.81	7.95	6.01	6.30
Dividends Per Share (DPS)	0.81	0.83	0.87	na	na	1.18
Number of Shares Outstanding	1,056	1,077	1,286	1,303	1,268	1,258
Balance Sheet Information						
Cash and Temporary Investments	2,900	6,385	4,691	4,316	3,862	4,027
Net Working Capital	5,285	6,954	7,498	6,452	5,971	6,320
Property, Plant & Equipment (net)	39,145	53,944	65,337	60,646	60,976	60,805
Total Assets	71,212	104,027	110,738	104,998	103,878	103,551
Short Term Debt	6,073	8,534	11,515	8,609	6,674	10,948
Long-Term Debt	25,455	41,059	40,135	41,757	40,213	31,049
Total Liabilities	35,723	56,546	60,901	59,197	56,198	52,682
Minority Interests	6,845	10,158	11,758	10,562	11,992	12,384
Stockholders Equity, ex Minority	28,644	37,323	38,079	35,239	35,689	38,484
Total Stockholders Equity	35,489	47,481	49,837	45,801	47,681	50,868
Book value per share	27.12	34.65	29.62	27.15	27.80	30.49
Other Financial Data						
Operating Margin	24.4%	26.8%	23.9%	23.8%	23.6%	27.3%
EBITDA Margin	31.6%	34.2%	31.8%	32.3%	31.5%	34.4%
EBITDA	8,120	9,471	10,786	11,483	12,116	14,697
Cash Earnings	4,950	5,873	3,020	4,993	7,316	10,263
Cash Earnings Per Share	4.69	5.45	2.35	3.85	5.70	8.13

Source: Cemex SA , http://www.cemex.com

Appendix 2 Discounted Cash Flow Valuation of the PT Semen Gresik Group

Assumptions	Value		Assumptions	Value
Cost of equity calculation:			FX rate (Rp/$)	8,000
Risk-free rate	33.7%		Inflation	29.4%
Equity risk premium	6.0%		Tax rate	30.0%
Beta	1.20		Terminal value growth rate	30.0%
Cost of equity	40.9%		Working capital to sales ratio	14.0%
Cost of debt calculation:			Percentage debt	50%
Cost of local debt	35.0%		Percentage equity	50%
After-tax cost of debt	24.5%		WACC	32.7%

Billions of Rp		1998	1999	2000	2001	2002
Assumed sales growth rate		*16.0%*	*26.9%*	*20.0%*	*20.0%*	*20.0%*
Net sales		1,842.0	2,337.5	2,805.0	3,366.0	4,039.2
COGS (% of sales)		*46.0%*	*47.0%*	*47.0%*	*47.0%*	*47.0%*
Cost of goods sold		(847.3)	(1,098.6)	(1,318.3)	(1,582.0)	(1,898.4)
Gross profit		994.7	1,238.9	1,486.6	1,784.0	2,140.8
Less selling G & A	15.0%	(276.3)	(350.6)	(420.7)	(504.9)	(605.9)
Operating profit (EBITDA)		718.4	888.2	1,065.9	1,279.1	1,534.9
Less depreciation & amortization		(261.0)	(276.0)	(276.0)	(276.0)	(276.0)
EBIT		457.4	612.2	789.9	1,003.1	1,258.9
Note: Estimated NWC	14.0%	257.9	327.2	392.7	471.2	565.5
For DCF Valuation:						
EBIT		457.4	612.2	789.9	1,003.1	1,258.9
Less taxes	30.0%	(137.2)	(183.7)	(237.0)	(300.9)	(377.7)
Net operating profit after-tax		320.2	428.6	552.9	702.2	881.2
Add depreciation & amortization		261.0	276.0	276.0	276.0	276.0
Less change in NWC		(35.6)	(69.4)	(65.4)	(78.5)	(94.2)
Less capex		(40.0)	(40.0)	-	-	-
Free Cash Flow (FCF)		368.4	411.5	526.5	598.7	685.3
Terminal value						32,996.4
FCF including TV		368.4	411.5	526.5	598.7	33,681.7
Present value factor		0.7536	0.5679	0.4279	0.3225	0.2430
Present value of cash flow		277.6	233.7	225.3	193.1	8,185.4
Cumulative present value		9,115.1				

Enterprise value	9,115.1	Terminal value as % of total EV:	88%
Less net debt	(4,113.5)	Implied Price to EBITDA (1998):	11.7
Less minority interests	(23.1)	Implied Price to FCF (1998):	22.8
Equity value, total	4,978.5		
Shares outstanding (millions)	593.2		
Fair value of equity per share, Rp	8,393	Semen Gresik share price, Rp:	6,500
Exchange rate (Rp/US$)	8,000	Exchange rate (Rp/US$)	8,000
In US dollars	$ 1.05	In US dollars	$ 0.81

The DCF analysis is assumed performed in May of 1998. Cash flows for 1998 are therefore, in reality, not a full year into the future as assumed here.

Appendix 3 PT Semen Gresik's Historical & Pro Forma Income and Cash Flows (billion rupiah)

Satement of Income	1996	1997	1998F	1999F
Sales by unit:				
Gresik	625	608	874	1,189
Tonasa	235	465	437	522
Padang	485	495	511	607
Non-cement	17	20	20	20
Total net sales	1,362	1,588	1,842	2,338
Growth in net sales (%)		17%	16%	27%
COGS Gresik	(365)	(377)	(534)	(734)
COGS Tonasa	(144)	(290)	(289)	(345)
COGS Padang	(273)	(286)	(277)	(317)
Total cost of goods sold	(782)	(953)	(1,100)	(1,396)
Gross profit	580	635	742	942
Gross margin (% of net sales)	43%	40%	40%	40%
Less selling, general & admin expenses	(259)	(313)	(284)	(328)
Operating profit	321	322	458	614
Less net interest	(43)	(101)	(279)	(535)
Contributions from subsidiaries	3	4	5	6
Others	5	9	10	10
Non-operating income	(35)	(89)	(264)	(519)
Pretax profit	286	234	194	95
Less Indonesian taxes	(65)	(44)	(29)	(11)
Minorities	(4)	(5)	(6)	(6)
Net profit	217	185	159	78
Return on sales (%)	16%	12%	9%	3%
Effective tax rate (%)	23%	19%	15%	12%

Cash Flow (billion rupiah)	1996	1997	1998e	1999e
Profit before interest & taxes	321	322	458	614
Depreciation & amortization	138	180	261	276
Associated adjustments	(3)	(4)	(5)	(6)
Change in net working capital	156	(466)	(96)	(144)
Operating Cash Flow	612	32	618	740
Taxes paid	(65)	(44)	(29)	(11)
Interest paid	(43)	(101)	(279)	(535)
Capitalized interest	(92)	(178)	(187)	(263)
Forex gains (losses)	-	(286)	(674)	-
Cash earnings	412	(577)	(551)	(69)
Dividends paid	(65)	(65)	(74)	-
Net capex (disposal)	(592)	(1,337)	(648)	(60)
Change in share capital	-	-	-	-
Others	(248)	-	-	-
Change in net debt	(493)	(1,979)	(1,273)	(129)
Ending cash (debt)	(1,003)	(2,982)	(4,255)	(4,384)

Source: Barings, March 3, 1998.

Appendix 4 PT Semen Gresik's Balance Sheet (billions of rupiah)

Assets	1992	1993	1994	1995	1996	1997
Cash & banks	336	140	52	275	220	461
Accounts receivable	14	5	17	145	179	238
Inventory	30	45	82	175	228	323
Other current	8	19	20	54	81	82
Total current assets	388	209	171	649	708	1,104
Fixed assets	108	109	769	1,471	2,090	2,282
Investments	14	3	6	45	14	14
Other assets	383	649	60	1,186	1,418	2,037
Total assets	893	970	1,006	3,351	4,230	5,437
Liabilities & Net Worth						
Trade payables	-	8	17	41	76	82
Accounts payable	6	21	17	62	309	414
Taxes payable	4	14	4	32	49	51
Other payables	17	4	18	70	47	-
Long-term debt (current)	-	40	79	287	227	93
Notes payable	-	-	-	-	136	-
Current liabilities	27	87	135	492	844	640
Long-term debt	182	181	139	532	900	2,339
Minorities	-	10	11	14	18	20
Share capital	148	148	148	593	593	593
Revaluation surplus	240	240	240	1,252	1,252	1,252
Reserves	293	302	333	468	622	600
Shareholders' funds	681	690	721	2,313	2,467	2,445
Total capital	863	881	871	2,859	3,385	4,804
Net assets (Total assets - current liabilities)	866	883	871	2,859	3,386	4,797

Source: Barings, March 3, 1998.

Appendix 5 Installed Capacity of the PT Semen Gresik Group (million metric tons / year)

	1994	1995	1996	1997	1998
Semen Gresik (Java):					
Gresik I	500	500	500	208	208
Gresik II	1,300	1,300	1,300	1,300	1,300
Tuban I	575	2,300	2,300	2,300	2,300
Tuban II	-	-	-	2,300	2,300
Tuban III	-	-	-	-	2,400
Total	2,375	4,100	4,100	6,108	8,508
Semen Padang (Sumatra, acquired 1995):					
Indatung I	254	254	254	254	254
Indatung II	660	660	660	660	660
Indatung III	660	660	660	660	660
Indatung IV	1,620	1,620	1,620	1,620	1,620
Indatung V	-	-	-	-	2,300
Total	3,194	3,194	3,194	3,194	5,494
Semen Tonasa (Sulawesi, acquired 1995):					
Tonasa I	-	-	-	-	-
Tonasa II	590	590	590	590	590
Tonasa III	590	590	590	590	590
Tonasa IV	-	-	2,300	2,300	2,300
Total	1,180	1,180	3,480	3,480	3,480
Total under Gesik Ownership	2,375	8,474	10,774	12,782	17,482
Percent change (%)	32%	257%	27%	19%	37%

Source: Morgan Stanley Dean Witter, June 22, 1998, p. 4, and ING Barings, March 3, 1998, p. 2.

Appendix 6 PT Semen Gresik's Share Price and Market Capitalization for Selected Dates (1998)

Date	Share Price (Rp)	Exchange Rate (Rp/$)	Implied Price (US$)	Market Capitalization (Rp)	Market Capitalization (US$)
Feb 3	6775	9,750	$ 0.69	3,997,250	410
March 3	5,600	9,300	$ 0.60	3,304,000	355
June 19	9,150	14,500	$ 0.63	5,398,500	372
July 6	9,150	14,700	$ 0.62	5,398,500	367
July 10	9,150	14,600	$ 0.63	5,398,500	370
Aug 18	10,775	12,000	$ 0.90	6,357,250	530
Aug 21	8,750	12,000	$ 0.73	5,162,500	430
Aug 28	10,500	13,000	$ 0.81	6,195,000	477

Note: Market capitalization on the basis of the following shares outstanding: 593,200,000

Appendix 7 Daily Exchange Rates: Indonesian Rupiah per U.S. Dollar

Appendix 8 PT Semen Gresik Share Price, April 1 - August 24, 1998