

**GLUCKSMAN FELLOWSHIP PROGRAM STUDENT
RESEARCH REPORTS:**

John McDowell, "A Look at the Market's Reaction to the Announcements of SEC Investigations"

Min Xu, "Resolution of Non-Performing Loans in China"

Jelena Strelcova, "Does Gender Matter? A Comparative Study of Performance of American CEOs"

Chris Ireland, "An Examination of Distress in the Electric Power Industry"

Matias Brechner, "Capital Restrictions as an Explanation of Stock Price Distortions during Argentine Financial Collapse: December 2001 – March 2002"

WILLIAM L. SILBER, EDITOR

PREFACE

The Glucksman Institute for Research in Securities Markets awards fellowships each year to outstanding second year Stern MBA students to work on independent research projects under a faculty member's supervision. Five research projects completed by the Glucksman Fellows of 2004-2005 are included in this special issue of the Finance Department Working Paper Series. These papers focus on important topics in empirical finance.

John McDowell, under the supervision of Robert Whitelaw, examines the impact on stock prices of announcements of informal and formal SEC investigations. Min Xu, under the direction of Paul Wachtel, analyzes China's Non-Performing Loan (NPL) resolution effort. Jelena Strelcova, under the supervision of Eli Bartov, examines the differences in performance between US public companies run by female CEOs and comparable US public companies run by male CEOs. Chris Ireland, under the direction of Edward Altman, examines the financial distress and bankruptcies within the electric power industry during 2002. Matias Brechner, under the supervision of David Backus, examines capital restrictions as an explanation for the stock market boom experienced in Argentina in the middle of its financial and economic collapse. These papers, reflecting the research effort of five outstanding Stern MBA students, are summarized in more detail in the Table of Contents on the next two pages.

William L. Silber, Director
Glucksman Institute

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This paper looks at the events surrounding the announcements of informal and formal SEC investigations. Prior to the announcement of an informal investigation the market's uncertainty of future stock prices is relatively high. The stocks under investigation have an abnormal return of minus 6.18% surrounding the event. The announcements of formal investigations appear to be unexpected but the stocks also show a similar abnormal return -- minus 6.23% -- surrounding the announcement. Corporate governance does not to have a significant effect on the magnitude of the loss in market value. A portfolio comprised of stocks following the announcement of an SEC investigation underperforms the market for three months following the event but this effect disappears for a holding period of one year.

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This paper examines China's Non-Performing Loan (NPL) resolution effort, both from a macro-level in comparison to other Asian economies and from a micro-level in terms of specific resolution methods. While the resolution progress has been somewhat disappointing to date, the government's commitment to maximizing and accelerating NPL recovery is strong. In order to overcome the inherent weaknesses of its lower-quality NPLs, China should continue to strengthen its regulatory and legal framework. The analysis finds little support for much value in debt-for-equity swaps, whereas direct sales and securitizations have yielded positive results and will continue to contribute significantly to China's resolution effort.

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This paper examines the difference in performance between US public companies run by female CEOs and comparable US public companies run by male CEOs. The data -- 58 female-run companies during the 1985-2004 period -- show that during the year following the female CEO appointments, these companies underperformed the comparable companies run by male CEOs. There was no statistically significant difference in stock price performance starting from the second year after the female CEO appointment. The observed under-performance during the first year might also result from other factors, such as the CEO succession itself or earnings management, which were not controlled for.

This paper examines the financial distress and bankruptcies within the electric power industry during 2002. The objective was to determine whether Altman's Z"-Score ("Z double prime") could have predicted which firms would declare bankruptcy. Z"-Scores were found to be uniformly low within the industry and not useful for discriminating between bankrupt and non-bankrupt firms. Three firms were then compared, two that became distressed and subsequently restructured and one that defaulted and reorganized under Chapter 11 bankruptcy. Financial ratios, capital structures, and management behavior are discussed. The primary cause of bankruptcy was the use of contingent liabilities – liabilities contingent on the firm's credit rating – which leads to questions about the actions of the ratings agencies leading up to the bankruptcy.

Matias Brechner, Capital Restrictions as an Explanation of Stock Price Distortions during Argentine Financial Collapse: December 2001 – March 2002 149

This paper examines capital restrictions as an explanation for the stock market boom experienced in Argentina in the middle of its financial and economic collapse. Argentine investors used the local stock market to escape the capital controls and transfer their wealth out of Argentina. The paper shows significant deviation from the law of one price between local cross-listed stock prices and their American Depositary Receipts (ADRs). The implication of this is that local investors were willing to pay to avoid capital controls and to hedge exchange rate risks. We also find that non-cross listed stocks were affected by capital controls because they represented a partial hedge against a potential devaluation.

**A Look at the Market's Reaction to the
Announcements of SEC Investigations**

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April 1, 2005

I. Introduction

The Securities and Exchange Commission was formed as a result of the stock market crash of 1929. During the crash, the market value of securities listed on the New York Stock Exchange dropped 83%, from \$89 billion to \$15 billion. Some of the causes of the crash were found to be a pre-crash speculative frenzy, artificially inflated trading activity, false and misleading information published by companies listed on the exchange, and insider trading.¹ Congress passed the Securities Act of 1933 and the Securities Exchange Act of 1934 to regulate companies that wanted to raise capital through the financial markets. The SEC was formed in 1934 to enforce these laws, protect investors, and maintain the integrity of the markets. SEC investigations have been a vital tool to allow the SEC to fulfill its objectives.

The purpose of this paper is to provide insight on the events that surround the announcement of an SEC investigation of a company, which includes the equity market's reaction to the announcement, the events leading up to the announcement, and the performance of the stock following the announcement. One cannot discuss investigations of fraud without considering corporate governance. This paper will also test the hypothesis that companies with strong corporate governance have lower agency costs, so investors' reactions to accusations of possible fraud will be less severe.

II. Background on SEC Investigations

Following an announcement by a company that it will restate past earnings, the SEC will generally commence an informal investigation that looks into the events that led up to the restatement. As the investigation proceeds, if the SEC finds sufficient reason to believe that fraud

¹ Afterman, Allan B., SEC Regulation of Public Companies, (Prentice-Hall, 1995).

did occur, the SEC can issue a formal order of investigation. The formal order allows the SEC to issue subpoenas that provide greater access to company documents and executives. A formal order may also be issued without a prior informal investigation. The SEC does not publicly announce the initiation of SEC investigations. Therefore, disclosure comes as a result of the company issuing a press release or through a filing made by the company with the SEC.

There is a clear distinction between the wording companies will use when they disclose informal and formal investigations. Investors will try to value the immensity of the investigation through the information provided by the company. Therefore, it is important to analyze the two types of investigations separately.

III. Data Sample

Because the SEC does not publicly disclose the initiation of an investigation, to gather the sample data I was reliant on the companies to disclose the event to investors through its annual filings with the SEC.

The sample time period for events to occur was defined to be 1998 through 2003. There were between 8,000 and 11,000 10-K's filed with the SEC each year from 1998 to 2004. A program was used to download all 10-K's filed with the SEC during this period from the SEC website. Another program searched through each 10-K, looking for announcements of SEC investigations. Two methods were used to find the disclosures: 1) the program searched for the "Legal Proceedings" section of each 10-K. Within this section, any mention of the SEC (or any variant on the name) was flagged. 2) The program searched the entire text of the 10-K for any mention of the SEC (or any variant on the name). It then searched for words such as investigation, complaint, injunction, action against, violation, or enforcement action within two text lines of the SEC reference. The program flagged all matches.

Because the layout and format of the 10-K's varied for each filing, and often the words SEC and investigation were in close proximity, but not as the result of an SEC investigation disclosure (particularly within the Sarbanes-Oxley sections of later filings), the program flagged many false positives. Each reference found by the program was manually checked to narrow down the list to actual SEC investigations of companies. SEC investigations relating solely to the actions of current or previous company executives were not included.

From this list I was able to backtrack from the original 10-K filing, looking in previous year's annual, quarterly, and current filings, as well as press releases to arrive at the exact date that the investigation was made public. For each investigation reference, I also looked for the data relating to the informal or formal investigation announcement, depending on which was originally found. If there were no press releases or 8-K filings with the SEC that referenced the investigation, I had to rely on the first occurrence of the investigation within a quarterly or annual filing as the date that the investigation was made public. Of the entire sample of informal and formal investigations, 65% were found in press releases, 7% in 8-K's, 12% in quarterly reports, and 16% in annual reports.

The data sample for which returns existed within the CRSP database consists of 71 informal investigation and 174 formal investigation events. For 34 companies, announcements of informal and formal investigations were found. Therefore, 34 companies that are included in the formal investigation sample are also included in the sample of informal investigations.

This procedure produced an unbiased sample of SEC investigations. The search program undoubtedly missed some SEC investigation references, or some companies may have chosen not to disclose an investigation within its annual reports. Therefore, the data sample should not

be considered to be the entire universe of SEC investigations that were announced during the sample period.

IV. Data Analysis Tools

The Eventus software program was used to calculate the abnormal returns of the stocks following the announcements of the investigations. Eventus analyzes stock returns that it reads from the Center for Research in Security Prices (CRSP) database. For each stock, it estimates a beta using an estimation period that ends before the event date. It then calculates the abnormal return for the stock during the event window by subtracting from the actual return the normal return for the stock, given the market's return during the event window. The market was defined to be a value weighted portfolio of all stocks within the CRSP database during the event period. The CRSP database includes stock price, volume, and return information from the NYSE, AMEX, and Nasdaq markets.

The Investor Responsibility Research Center (IRRC) provides research on corporate governance, proxy voting, and corporate responsibility issues. Gompers, Ishii, and Metrick used data published by the IRRC to construct a governance index that covers about 1,500 companies. The index is a measurement of the balance of power between shareholders and managers. A rating for each firm is calculated by adding one point for each provision that reduces shareholder rights, with a maximum rating of 24. Firms with low governance index ratings will have low management power and strong shareholder rights. Firms with high governance index ratings will have high management power and weak shareholder rights.²

OptionMetrics is a database of historical price and implied volatility data for the U.S. equity and index options markets. OptionMetrics computes a volatility surface through

² Gompers, Paul, Joy Ishii, and Andrew Metrick, "Corporate Governance and Equity Prices," Quarterly Journal of Economics (Feb 2003), 107-155.

interpolation of implied volatilities of similar options. OptionMetrics volatility surface was used to analyze the change in the implied volatilities of the options on the underlying stocks in the investigation samples on the days leading up to the announcements.

V. Event Study Results

A window of -1 to +1 days from the event date was used to calculate the cumulative abnormal returns for the informal and formal investigations. During the window around the announcement of informal investigations, the mean cumulative abnormal return is -6.18%, significant at 0.1%. The median abnormal return is -3.15%. During the window around the announcement of formal investigations, the mean cumulative abnormal return is -6.23%, significant at 0.1%, with a median abnormal return of -3.05%.

The abnormal return for the sample of 34 companies that had previous informal investigation announcements is -8.50%, significant at the 0.1% level. The additional decline in value results from the escalation to a formal order, which implies a longer investigation period resulting in higher legal expenses, and the SEC found sufficient reason to continue the investigation. The average number of days between the informal and formal investigation announcements in the sample is 138 days. Some companies in the formal investigation sample may have had previous informal investigations that occurred before the beginning of the sample period. Therefore, the analysis of returns for companies in the formal investigation sample that are not included in the informal investigation sample is not relevant.

VI. Events Prior to Announcement Date

The decline in market value as a result of the announcement of an informal or formal investigation is similar; for both events, there is an abnormal return of about -6%. However,

informal and formal investigations differ greatly with respect to the events that lead up to the announcement. Put and call option implied volatilities were used to analyze the market’s uncertainty of the stock’s value prior to the investigation announcements. Implied option volatility has been found to be a very good predictor of future volatility for stock indexes³ and individual stocks⁴.

Option volatility surfaces calculate the implied volatilities on virtual options with the same maturity and delta ratio at different points in time. The implied volatility is computed through interpolation using traded options with maturities and delta ratios that straddle the maturities and delta ratios of the options in the volatility surface. Therefore, the effects of time to maturity and movement of the underlying asset price are not reflected in the volatility surface. The change in implied volatilities across time is only a function of the markets perception of the future distribution of the underlying asset’s value.

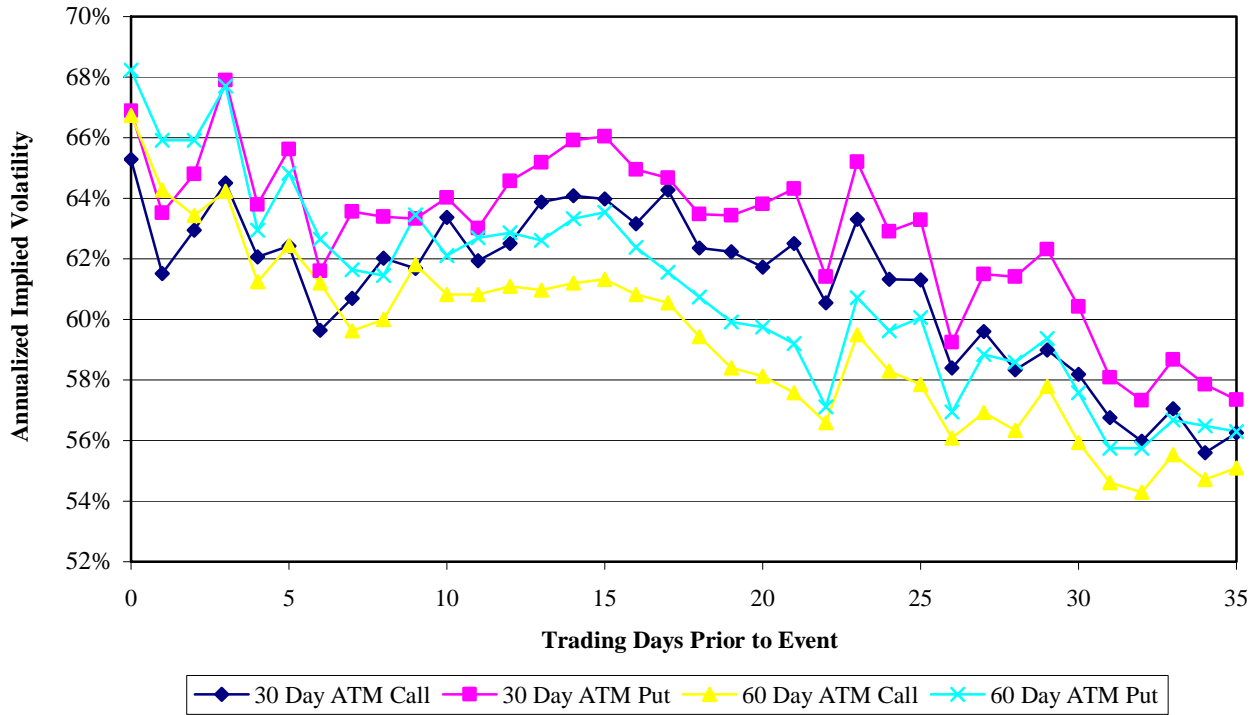
The implied volatilities of at the money puts and calls with 30 days and 60 days to maturity were compared for each day leading up to the event for informal and formal investigations. 30 and 60 day maturity options were chosen because of their high liquidity. For each trading day prior to the event, the average implied volatility across the sample for each option was computed. Option data is not available for all stocks within the investigation samples. The table below provides the range of the number of stocks with available option data that were included in the daily average implied volatilities, and the two graphs chart the results.

	Informal Investigations	Formal Investigations
	<u>Option Data</u>	<u>Option Data</u>
30 Day ATM Calls and Puts	36 to 42	79 to 86
60 Day ATM Calls and Puts	39 to 43	84 to 92

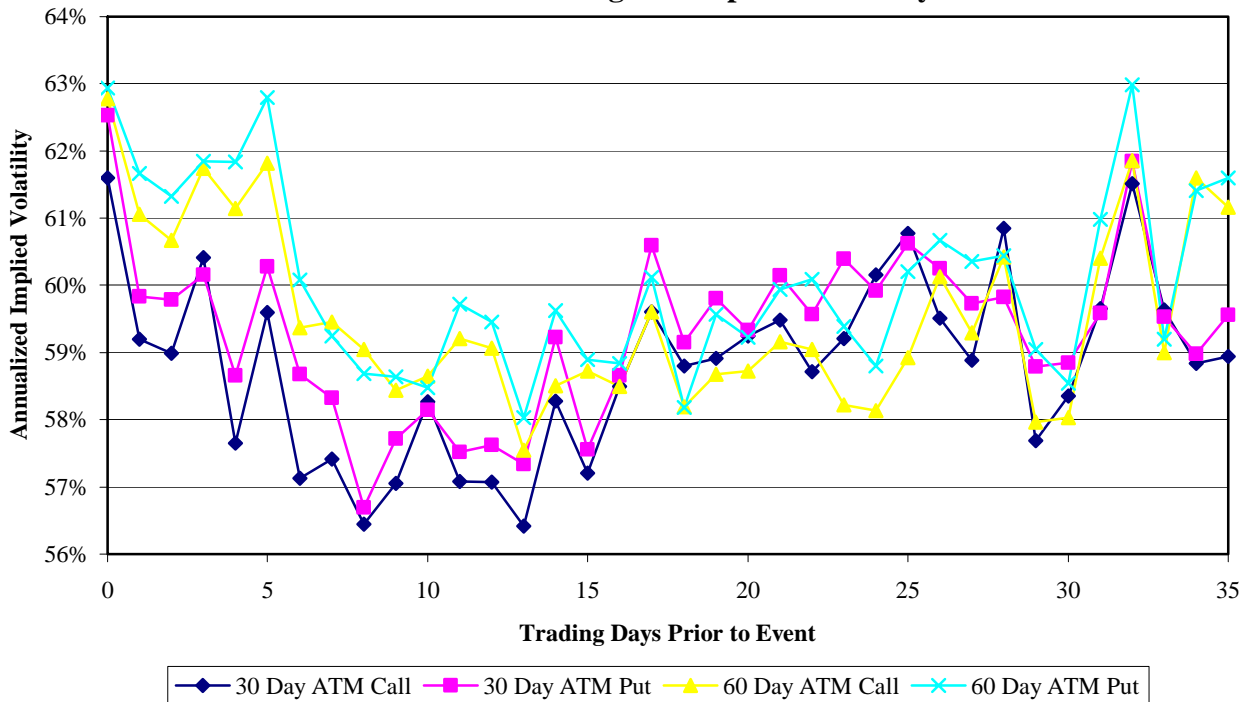
³ Christensen, B.J., N.R. Prabhala, “The Relation Between Implied and Realized Volatility,” Journal of Financial Economics 50 (1998) 125-150.

⁴ Lamoureux, Christopher G., William D. Lastrapes, “Forecasting Stock-Return Variance: Toward an Understanding of Stochastic Implied Volatilities,” The Review of Financial Studies (1993 Volume 6, number 2) 293-326.

Informal Investigation Option Volatility



Formal Investigation Option Volatility



The graph of the implied volatilities for options of informal investigation events shows a steady increase across the 35 day period; on the days leading up to the event, the value of at the money puts and calls is steadily increasing. The graph of the implied volatilities for options of formal investigation events shows a sudden rise at about 8 to 10 trading days prior to the event. There is a steady, slight decline in the implied volatilities of at the money options at days greater than 10, but at day 10, the 60 day options' implied volatilities begin to rise and at 8 days prior, the 30 day options' implied volatilities jump.

Informal investigations generally follow earnings restatements. Earnings restatements increase the uncertainty about the firms' value as the market attempts to assess the implications for future earnings and cash flows. There is also additional uncertainty due to the possibility of an SEC investigation and the most probable outcome if it were to occur. This uncertainty is reflected in the steady rise in implied volatilities prior to informal investigation announcements.

In contrast, the announcements of formal investigations are most likely unexpected. At days greater than 10 prior to formal investigation announcements, the market's uncertainty of future prices is declining. The sudden increase in implied volatility 8 to 10 days before the announcement suggests the existence of information events prior to the investigation announcement that increases investors' uncertainty.

For both types of investigations, the market's uncertainty of the stock's value prior to the actual announcement is relatively high. However, neither type of investigation announcement is completely anticipated, which is reflected in the large negative abnormal return and the jump in implied volatilities as a result of the announcements.

VII. Breakdown of Abnormal Returns

The following table shows the abnormal returns for informal and formal investigations, broken down by market capitalization one week prior to the event, the year of the event, and governance index rating.

	Informal Investigations			Formal Investigations		
	<u>N</u>	<u>Mean</u>	<u>Significance</u>	<u>N</u>	<u>Mean</u>	<u>Significance</u>
Overall	71	-6.18%	0.1%	174	-6.23%	0.1%
Market Cap						
Micro	21	-3.89%	0.1%	73	-7.23%	0.1%
Small	15	-12.14%	0.1%	27	-7.83%	0.1%
Medium	19	-6.34%	0.1%	25	-8.42%	0.1%
Large	16	-3.40%	1.0%	48	-2.78%	0.1%
Year						
1998	3	-3.24%		15	-8.28%	
1999	5	-13.86%		11	-6.09%	
2000	4	-20.59%		23	-7.65%	
2001	4	-2.16%		19	-5.62%	
2002	34	-3.86%		51	-5.71%	
2003	21	-6.54%		55	-5.78%	
Market						
Bull ('98, '99, '03)	29	-7.46%	0.1%	81	-6.29%	0.1%
Bear ('00, '01, '02)	42	-5.29%	0.1%	93	-6.17%	0.1%
G Index						
Gov >= 9	23	-4.17%	0.1%	46	-7.06%	0.1%
Gov < 9	20	-3.19%	5%	40	-5.48%	0.1%

Large market capitalization companies have a smaller decline in value than smaller capitalization companies. The market believes that the risk and expenses associated with a SEC investigation can be better absorbed by large capitalization companies. Large capitalization companies are more deeply covered by analysts. Investors may believe that they better

understand the risks associated with large capitalization stocks, so there is less of a reaction to the investigation announcements.

If 1998, 1999, and 2003 are defined to be bull markets and 2000, 2001, and 2002 to be a bear market, the data shows that the market reacts differently to informal investigation announcements during each type of market. There is a much smaller decline in value during bear markets.

To analyze the event results by governance index rating, the most recent governance rating prior to the date of the event was used. The average governance rating for all companies within the IRRC database for the rating periods 1998, 2000, and 2002 is 8.93. Therefore, the abnormal returns given the companies governance index rating relative to the index average is computed. Governance ratings are not available for all companies within the sample, so analysis by this index reduces the samples.

A high governance rating indicates weak shareholder rights and poor corporate governance. As may be expected, companies with better corporate governance have a smaller decline in value. For companies with strong governance, investors believe that the processes are in place to prevent fraud, and if it did occur, for it to be remedied with haste and minimal additional expense.

The data shows that companies with large market capitalization and companies with strong corporate governance will have the smallest decline in market value as a result of the announcement of an SEC investigation. However, it is not true that larger market capitalization companies have stronger corporate governance; rather, it is the opposite. Gompers, Ishii, and Metrick found a correlation of 0.15, significant at the 1% level, between market capitalization

and the governance index rating. 49% of the firms within the highest decile of the governance index (the companies with the weakest shareholder rights), are included in the S&P 500.⁵

The following table shows the correlation between the abnormal returns, a dummy variable representing large capitalization firms, and the governance index rating for the informal and formal investigation samples.

Informal Investigations			Formal Investigations		
	Return	Large Cap		Return	Large Cap
Large Cap	0.082		Large Cap	0.136	
P-value	0.499		P-value	0.075	
Gov Rating	-0.013	0.303	Gov Rating	-0.079	0.357
P-value	0.936	0.048	P-value	0.472	0.001

There is a significant positive correlation between the large capitalization dummy variable and the governance rating, and the abnormal returns have a greater correlation with the large capitalization dummy variable than the governance rating. This suggests that corporate governance is not the dominant factor affecting the market's reaction to the announcement of SEC investigations.

It is interesting to note that the number of investigation events increases significantly in 2002. There are several reasons that may explain this increase. The public unraveling of Enron began in October 2001. Enron was shortly followed by several corporate scandals, such as Tyco, WorldCom, Xerox, Adelphia, Merrill Lynch, and Arthur Anderson. This series of corporate fraud rattled investors and made them weary of company management; it created doubt about the integrity of the system.⁶ Therefore, the SEC would want to step up its enforcement actions to catch the fraud before investors are harmed and renew the public's trust in the system.

⁵ Gompers, Paul, Joy Ishii, and Andrew Metrick, "Corporate Governance and Equity Prices," Quarterly Journal of Economics (Feb 2003), 107-155.

⁶ Skousen, Fred K., Steven M. Glover, Douglas F. Prawitt, An Introduction to Corporate Governance and the SEC, (Thomson, 2005).

The beginning of 2000 marked the bursting of the technology bubble and the subsequent recession. During periods of low profitability, it is more difficult to disguise and sustain accounting fraud. Therefore, there will be more accounting restatements, followed by SEC investigations.

The following table shows the number of investigations that were opened by the SEC and formal orders issued during its fiscal years, which end September 30.⁷

	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
Investigations Opened	520	558	570	479	910
Formal Orders Issued	282	345	324	300	254

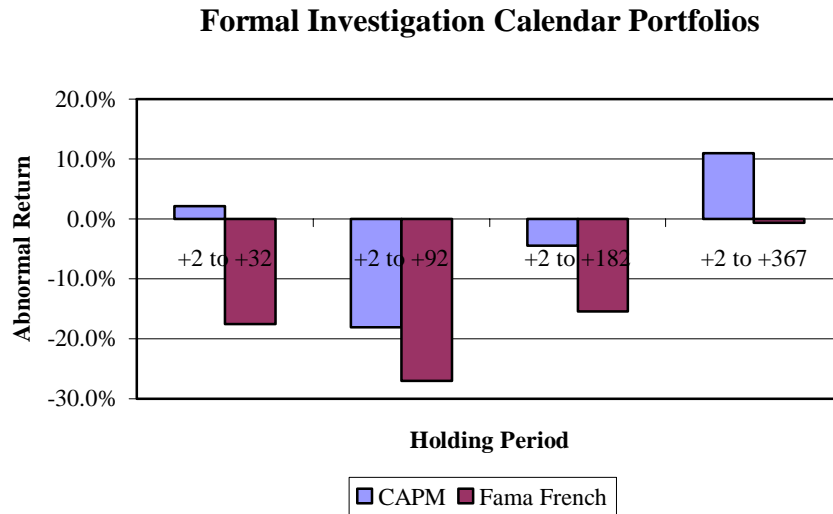
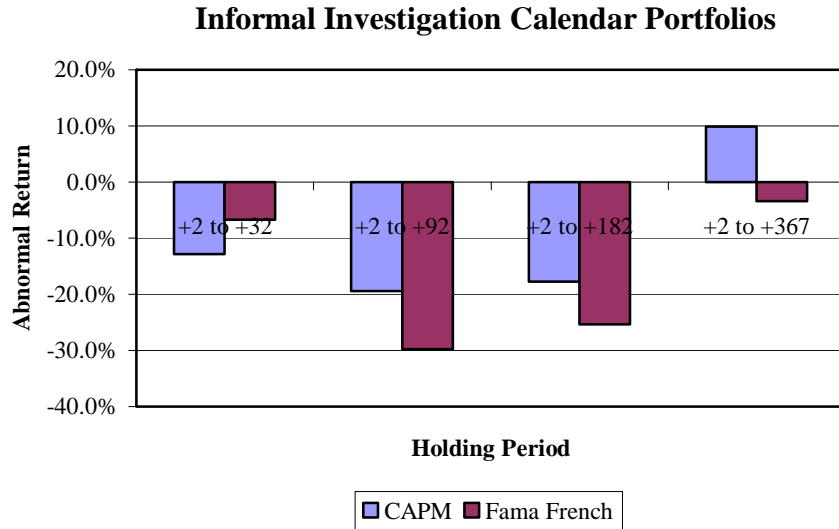
In the fiscal year 2003, the SEC almost doubles the number of investigations opened. The last three months of 2002 that coincide with the SEC's fiscal year 2003 could explain some of the increase in investigations in the sample that were made public in 2002. However, the events in the sample are defined to be the day that the investigation is made public by the company. The increase in the number of events for 2002 is more likely the result of an increase in the number of disclosures of SEC investigations, which may have been initiated in previous years.

VIII. Calendar Portfolios

To analyze how the stocks in the samples performed following each event, calendar portfolios were constructed. At two days following the announcement of the investigation, one share of the stock is added to the portfolio and is held in the portfolio for a defined period of time. If at any time during the holding period the stock is delisted, the stock is sold from the portfolio the following day. Therefore, the calendar portfolios include the delisting return. Abnormal returns for the portfolio were computed using the capital asset pricing model and

⁷ From SEC Annual Reports for 2003, 2002, 2001, 2000, 1999, <http://www.sec.gov/about/annrep.shtml>

Fama French three factor model. The charts below show the abnormal returns for the portfolios for different holding periods.



The change in abnormal returns for increasingly longer holding periods for the informal investigation portfolios and formal investigation portfolios are very similar. The graphs show that following the announcement of an SEC investigation, the stock will continue to underperform the market for the next three months. However, after three months, the returns improve and the stock returns to breakeven within one year.

IX. Conclusion

Informal SEC investigations generally follow earnings restatements. The implied volatilities on put and call options show that prior to the informal investigation announcements the market's uncertainty of future prices is increasing. Following the announcement, the stock has an abnormal return of -6.18%. The announcements of formal investigations, in comparison, are unexpected. Implied option volatilities do not steadily increase prior to the announcement event. Rather, the options show a jump in implied volatility at 8 to 10 days prior to the event. Following the formal investigation announcement, the stock has an abnormal return of -6.23%.

Due to the disclosure of an SEC investigation, the company loses six percent of its market value. The six percent in lost value is the market's assessment of the future legal fees and settlement fines, and loss due to a decline in the market's perception of the company's corporate governance standards. However, it is arguable how heavily the market weighs corporate governance, so the loss due to a decline in corporate governance may only be a small portion. In the case of the announcement of an SEC investigation, corporate governance is not the main factor that affects the amount of value lost. Whether or not the company has a large market capitalization has a greater correlation with the abnormal returns.

For the three months following the investigation announcement, the value of the stock continues to underperform the market, as new information regarding the extent of the investigation and possible fraud is released. However, after three months, the stocks reflect a regression towards the mean; the stocks in the investigation portfolios outperform the market. For a holding period of one year, the investigation portfolios have a return that is about equal to that of the market.

Appendix:

Top 10 Biggest Decliners

	<u>Announcement</u>	<u>Market</u>	<u>Governance</u>	<u>Abnormal</u>	
	<u>Date</u>	<u>Cap (-7</u>	<u>Rating</u>	<u>Return</u>	
		<u>Days)</u>			
<u>Informal Investigations</u>					
1.	DYNACQ HEALTHCARE INC	12/18/03	224	-80.11%	
2.	EBT INTERNATIONAL INC/INSO CORP	02/01/99	388	-77.14%	
3.	PINNACLE HOLDINGS INC	08/07/00	2,717	-39.03%	
4.	LUMENIS LTD	02/25/02	518	-38.61%	
5.	NASH FINCH CO	11/08/02	158	15	-34.11%
6.	COMPUTER ASSOCIATES INTERNATIONAL INC	02/22/02	15,586	9	-27.58%
7.	SYMBOL TECHNOLOGIES INC	02/15/02	3,058	8	-26.70%
8.	MAXIM GROUP INC	07/13/99	162		-22.95%
9.	CMS ENERGY CORP	05/10/02	2,703	9	-20.71%
10.	IMCLONE SYSTEMS INC	01/25/02	1,547	4	-19.75%
<u>Formal Investigations</u>					
1.	PENNCORP FINANCIAL GROUP INC	08/20/98	319	6	-79.37%
2.	ANIKA THERAPEUTICS INC	05/30/00	82		-77.93%
3.	INTERWORLD CORP	04/03/01	9		-77.71%
4.	ENTERASYS NETWORKS INC	02/01/02	1,986	10	-57.86%
5.	NASH FINCH CO	02/05/03	99	15	-54.12%
6.	L90 INC/MAXWORLDWIDE INC	02/04/02	51		-39.50%
7.	PINNACLE HOLDINGS INC	10/12/00	1,250		-33.90%
8.	CRYOLIFE INC	08/05/03	144		-32.88%
9.	CENDANT CORP	07/14/98	19,100	11	-32.05%
10.	CRITICAL PATH INC	04/05/01	116		-27.56%

Resolution of Non-Performing Loans in China

Min Xu

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April 1, 2005

I. Introduction¹

Despite its impressive economic growth, China also has one of the largest non-performing loan (NPL) portfolios in the world. According to the China Banking Regulatory Commission (CBRC), major commercial banks² carried NPLs of RMB 1.7 trillion on their balance sheets as of December 31, 2004, representing 13 percent of total loans. This NPL figure does not include the RMB 1.05 trillion³ of NPLs remaining on the balance sheet of four asset management corporations (AMCs), which were established in 1999 as decentralized vehicles to manage and dispose of NPLs they had purchased from the four state-owned commercial banks (SOCBs). These official figures reveal NPLs of about RMB 2.8 trillion or \$340 billion in the financial system. However, various sources estimate that the total amount of non-performing assets (NPAs) in the system, which includes not only NPLs, but also debt-equity swaps and repossessed collateral, is even higher. PricewaterhouseCooper's *China NPL Investor Survey 2004*, for example, estimates this figure to be about \$500 billion. Standard & Poor's is more pessimistic, estimating that it would cost \$656 billion to resolve bad loans at all of China's banks (Cheng and Miller 2004).

This paper is organized as follows. The first section provides an overview of China's financial sector and post-1998 measures initiated by the government to relieve the NPL burden. The second section examines the root causes of the NPL problem and alerts to the buildup of new NPLs in the system. The third section compares China's NPL resolution

¹ I would like to acknowledge my gratitude to David Bednar, former head of Morgan Stanley's bad loan business in China, and Kevin Young of Citigroup, who provided valuable information about their NPL investing experience in China.

² The major commercial banks include the four state-owned commercial banks (SOCBs) and the joint stock commercial banks (JSCBs).

³ Based on my calculation, the four AMCs purchased RMB 1.72 trillion of NPLs in total from the four SOCBs, China Development Bank, and Bank of Communications between 1999 and 2004. CBRC reports that the AMCs have disposed RMB 675.06 billion of the assets through December 31, 2004.

efforts against East Asian economies that faced the same problem, analyzes the reasons for China's shortfalls, and presents recent policy measures that are narrowing the gap. The fourth section studies each of the main NPL resolution methods that China undertakes, evaluates their effectiveness and challenges, and highlights measures that could increase the likelihood of their success.

II. Financial Sector Overview and Developments

With a thinly traded stock market and an almost non-existent corporate bond market, banks in China play a major role in intermediating private savings, which comprises approximately 40 percent of GDP (Rolnick 2003).

The major players in China's financial system include state-owned commercial banks, joint stock banks, as well as urban and rural cooperatives. The four SOCBs dominate the nation's banking sector, collectively accounting for 54 percent of total assets and liabilities⁴. The four SOCBs are the Industrial and Commercial Bank of China (ICBC), the Agricultural Bank of China (ABC), the Bank of China (BOC) and the China Construction Bank (CCB). All the SOCBs were spun off from internal divisions within the PBOC, China's central bank, in the late 1970's. Even after NPL transfers of RMB 1.6 trillion to the AMCs between 1999 and 2004, the SOCBs collectively still carry RMB 1.7 trillion of NPLs on their books, representing 15.6 percent of total loans. Table 1 summarizes the composition of China's financial sector and the reported distribution of NPLs across different types of institutions.

⁴ China Banking Regulatory Commission, December 31, 2004.

Table 1
Financial Institutions in China, December 31, 2004

	<u>% of Total Assets & Liabilities</u>	<u>NPLs</u>	<u>NPL % of Total Loans</u>
State-owned Commercial Banks	54%	RMB 1.58 trillion	15.6%
Joint Stock Banks	15%	RMB 143 billion	5.0%
City Commercial Banks	5%	N/A	N/A
Other Financial Institutions ^(a)	26%	N/A	N/A

(a) Other financial institutions include policy banks, rural commercial banks, foreign banks, urban credit cooperatives, rural credit cooperatives, finance companies, trust and investment companies, financial leasing companies and postal savings.

Source: China Banking Regulatory Commission Website, <http://www.cbrc.gov.cn>.

Since China's entry into the World Trade Organization in 2001, the Chinese government has stepped up the country's transition from a centrally planned economy to a market-oriented one. At the heart of this migration, China committed to open up its domestic banking sector to full-fledged competition from foreign banks by 2007. This planned transition heightened the need for a speedy resolution of the pervasive NPL problem in the financial sector.

Since 1998, the Chinese government has carried out a variety of measures to reduce the NPL burden. These included the direct recapitalization of the SOCBs as well as the transfer of NPLs from the banks to AMC's that focus exclusively on the collection and resolution of the NPLs. Table 2 summarizes these major actions.

Table 2
Recapitalization/NPL Transfer Measures Undertaken by the Chinese Government

<u>Year</u>	<u>Action</u>
1998	The government injected RMB 270 billion (\$33 billion) of capital into the four SOCBs.
1999	The government established four AMCs: Cinda, Huarong, Orient, and Great Wall. Each of the four AMCs was originally matched up against each of the four SOCBs: Cinda with CCB, Huarong with ICBC, Orient with BOC, and Great Wall with ABC. The AMCs purchased RMB 1.4 trillion (\$170 billion) of NPLs from the four SOCBs and the China Development Bank. Transferred loans were primarily “substandard” or “doubtful” loans (under the old four-tier classification mechanism) made prior to 1996 and overdue for more than one year by the end of 1998. The AMCs purchased the NPLs at book value.
2003	The government injected RMB 370 billion (\$45 billion) of capital into CCB and BOC, both slated for public offerings in 2005.
2004	Cinda AMC won the auction to purchase RMB 278.7 billion (\$34 billion) in NPLs from BOC and CCB, at 50% of book value. The ultimate recovery rate of 33 cents on the dollar for the loans is required by year-end 2005.
2004	Cinda AMC bought RMB 41.4 billion (\$5 billion) of NPLs from Bank of Communications at a 50% discount, funded entirely by a loan from PBOC. Cinda has promised ultimate recovery of 30% to 40% of face value.

Total bailout/transfer amount to date: RMB 2.36 trillion (\$287 billion).

Sources: Various News Releases.

Of note, for the 1999 NPL transfer, the recovery value of the NPLs will surely be below the full book value that the AMCs paid for the assets. As a result, the AMCs will be unable to repay the ten-year bonds they issued to the banks, which accounted for RMB 1.2 trillion, or approximately 84 percent of the AMC’s purchase price (Fung and Ma 2002)⁵. While China’s Ministry of Finance did not explicitly guarantee these bonds, it is widely anticipated that the government would not allow the AMCs to default on their bonds. Hence, any ultimate loss is likely to be absorbed by the government.

The speed of recovery at the AMCs, as indicated in Table 3 below, has been somewhat

⁵ The remaining RMB232 billion was provided by the PBOC and the Ministry of Finance (MoF) (RMB 40 billion of paid-in-capital from the MoF and RMB 192 billion of loans from the PBOC).

disappointing to date. Through year-end 2004, they collectively disposed of only RMB 675 billion, or about 39 percent of the total NPLs they acquired. This presents challenges for the government's original mandate that the AMCs complete their missions by 2009. Further, the AMCs' cash recovery rate of only 20.3 percent, or recovery of RMB 137 billion to date, was insufficient to service the interest on the bonds they had issued and the loans they had acquired from PBOC in 1999 to fund the initial transfer of NPLs. The AMC's total interest obligation is estimated to be about RMB 30 billion annually for five years, or a total of RMB 150 billion⁶. Should NPL resolution continue at the current speed, the AMC could face considerable cash flow pressure.

Table 3
Disposal of Non-Performing Assets at China's AMCs, December 31, 2004
(RMB in Billions)

	Total	Huarong	Great Wall	Orient	Cinda
Accumulated Disposal	675.06	209.54	209.91	104.55	151.06
Asset Recovery Ratio	25.5%	25.3%	14.4%	29.5%	38.3%
Cash Recovery	137.00	41.34	21.57	23.29	50.81
Cash Recovery Ratio	20.3%	19.7%	10.3%	22.3%	33.6%

Source: China Banking Regulatory Commission.

As evidenced in Table 3, Great Wall AMC's cash recovery ratio of 10.3 percent was among the lowest of the group. This was due to the low quality loans it took over from the ABC, which historically financed a large number of rural enterprises. On the other hand, Cinda AMC has the highest cash recovery ratio among the group. Cinda was originally matched up with the CCB in 1999, which historically provided financings for capital construction projects and urban housing development. These real estate assets are

⁶ Both the AMC bonds and the loan from PBOC carry an annual interest rate of 2.25%, which translates into RMB 30.6 billion of interest per annum.

substantially more liquid than other collaterals, thus maximizing the recovery value.

According to Cinda's website, more than 26 percent of the NPLs it purchased in 1999 were collateralized by real estate assets. For the four AMCs in aggregate, this ratio was only 7 percent.

III. Main Causes of China's NPL Problem

Unlike many other Eastern Asian countries, whose large NPL portfolios stemmed from the 1997 Asian financial crisis, China's closed capital market shielded it to a large extent from the crisis. Instead, China's huge NPL burden was largely a result of two functions: (a) sustained losses at state-owned enterprises (SOEs) and (b) the lack of a commercial credit culture at major financial institutions.

The first side of the story is the SOEs, which represent over 40 percent of China's manufacturing output, employing more than half of the industrial workforce (Norton and Chao 2003). Having long suffered from technological obsolescence and excess capacity, the SOEs were squeezed by intensified competition as China gradually opened its doors to foreign capital in most industries. In 1998, over two-thirds of all SOEs generated a loss for the year⁷. The SOEs obtained the majority of their funding from the banks, in particular the four large SOCBs. These bank lenders often continued to extend loans to the same debtor with little regard to the latter's ability to repay its loans, under the perception that the ultimate loss will be borne by the government. At the end of 2001, the total liabilities to equity ratio

⁷ *Financial Yearbook of China*, 2002.

for China's SOEs stood at 158 percent⁸. SOEs in the construction, real estate, food, and textiles industries were among the most highly leveraged, with total liabilities to equity ratio in excess of 350 percent. When adjusted for unhealthy assets, the total leverage ratio of locally-administered SOEs⁹ escalated even further, from 252 percent to 632 percent¹⁰. The continuous losses of the SOEs and the unremitting credit support that they received from banks resulted in mounting bad loans in China's banking system.

The other side of the coin is the lack of a commercially-oriented credit culture at major financial institutions, in particular the four SOCBs. This mentality originated from the pre-1994 period, when the Chinese government routinely mandated that the SOCBs lend to SOEs for key infrastructure projects and social welfare subsidies, regardless of profitability. Under the "policy lending" guidance, poor documentation for loan collateral was common, and credit risk management skills were far from meeting international standards.

In 1994, the Chinese government established three development banks that took over the policy lending tasks from the SOCBs, leaving the latter with more healthy capital to develop a commercial lending orientation. The administration also established a legal basis for commercial banking with the promulgation of the *Commercial Banking Law* in 1995. However, the intended market-oriented reform was hampered by a legacy loan classification system and the lack of a free-market interest rate regime.

Until 2002, loan performance had been classified mechanically based on the length of the past due period rather than based on the assessment of loan quality. Under the legacy

⁸ See supra note 7.

⁹ Locally-administered SOEs are owned, and often to some extent, managed by the local governments.

¹⁰ See supra note 7.

four-category classification system, only loans overdue by more than one year were considered non-performing, and only the overdue portion counted as an NPL¹¹. Thus, even if a company is deemed incapable of repaying its debt or has ceased operations completely, it may still be considered performing should the loan be overdue by less than one year. Furthermore, in certain instances, banks simply extended new loans to insolvent SOEs, so that they could use the new funds to fulfill existing debt obligations.

Secondly, instead of letting supply and demand determine interest rates, the central bank, People's Bank of China (PBOC) has traditionally set an arbitrary interest rate collar for both loans and deposits; this measure prevents the banks from effectively linking risks and returns. They are unable to charge a lending rate above the interest rate cap on loans to high-risk clients in order to compensate for the risks. Nor can they reward the low-risk clients with a lending rate below the interest rate floor. As a result, the least creditworthy companies routinely resorted to bribing bank officials or furnishing fraudulent information to lenders in order to obtain a loan.

On January 1, 2004, the PBOC announced its decision to expand the collar of lending rate charged by financial institutions. The lending ceiling charged by commercial banks and urban credit cooperatives was raised to 170 percent of the benchmark rate, although the floor remained at 90 percent of the benchmark rate¹². On October 28, 2004, along with its interest rate increase decision (see below), the PBOC removed the lending ceiling on RMB

¹¹ In 2004, the CBRC required that all SOCBs and joint-stock commercial banks to start adopting the five-tier loan classification system, which classifies loans as "Pass," "Special Mention," "Substandard," "Doubtful," or "Loss." The latter three loan categories – including loans overdue by more than 90 days and those likely to be impaired – are considered NPLs. The new classification system was fully adopted in 2004.

¹² Previously, the ceiling had been 130 percent of the benchmark rate.

loans completely for all financial institutions except for urban and rural credit cooperatives¹³. This action demonstrated the central bank's willingness to relax its control over interest rates and will allow banks to better price their loans by matching risks with returns.

While the government's main focus is on addressing the existing "stock" problem of NPLs in the financial system, the creation of new bad loans, i.e. the NPL "flow" problem, should not be neglected. The explosive loan growth in China over the last two years, especially to certain over-invested sectors – such as the iron and steel, aluminum, cement, and real estate development industries – has created piles of new NPLs in the system. According to the PBOC, fixed asset investment grew by 28% from 2002 to 2003 and 38% year-over-year in the first half of 2004, much of which was financed by banks. Total bank lending of RMB 18.5 trillion at the end of June 2004 was more than double the figure at the end of 2001 (Wilson 2004).

In order to prevent a hard landing for the economy, the PBOC has instated a series of measures since the second half of 2003 to reduce credit expansion. The central bank raised the deposit reserves requirement twice, initiated a tiered reserve requirement system tied to each bank's capital adequacy ratio, and imposed credit controls on certain overheated sectors¹⁴. On October 28, 2004, the PBOC raised the benchmark rate for one-year RMB loans by 0.27% from 5.31% to 5.58%, and the benchmark one-year RMB deposit rate by 0.27% from 1.98% to 2.25% - its first interest rate increase in nine years¹⁵. While these measures have managed to curb over-investment and slow year-over-year GDP growth from

¹³ "China's First Interest Rate Hikes in Nine Years," Hong Kong Trade Development Council, November 11, 2004.

¹⁴ See supra note 13.

¹⁵ See supra note 13.

a peak of 9.9% in the fourth quarter of 2003¹⁶ to an expected 8.8% in the first quarter of 2005¹⁷, the excessive credit expansion has resulted in an increase in NPLs at major banks during the second half of 2004, as evidenced in Table 4.

Table 4
NPLs at Major Financial Institutions^(a), 2003 – 2004

(RMB in Billions)

	<u>1st Half 2003</u>	<u>Full Year 2003</u>	<u>1st Quarter 2004</u>	<u>2nd Quarter 2004</u>	<u>3rd Quarter 2004</u>	<u>4th Quarter 2004</u>
NPLs	2,538	2,441	2,078	1,663	1,700	1,718
NPL % of Total Loans	19.6%	17.8%	16.6%	13.3%	13.4%	13.2%

(a) Major financial institutions include the four SOCBs and the twelve JSCBs.

IV. NPL Resolution: China versus other East Asian Economies

Many East Asian countries have been burdened with monstrous NPL portfolios since the 1997 Asian financial crisis. Among the countries that emerged with successful NPL recovery stories are Korea, Japan, and Thailand. Similar to China, all of these countries created public AMCs as a primary vehicle to acquire distressed assets and focus on NPL resolution. However, the asset recovery rate of these AMCs has generally outperformed that of China's AMCs. The Chinese authorities are aware that they have a lot to learn from other economies, and specifically retained Korea Asset Management Corporation as advisor to the four Chinese AMCs. In this section, I would like to first study three countries' NPL recovery experience, then move on to analyze the reasons for China's underperformance compared to these countries, and finally discuss measures that are narrowing the gap.

While public AMCs are not the only type of NPL resolution vehicle in the countries

¹⁶ "Table - China's economic indicators - March 16," *Reuters News*, March 15, 2005.

¹⁷ "China's GDP Forecast to Grow 8.8 Percent in First Quarter," *Asia Pulse*, March 29, 2005.

mentioned above, they play a leading role in NPL recovery efforts and the results of their actions are highly publicized. I have thus chosen to focus on studying the activities of the public AMCs. Another caveat to keep in mind is that, due to the differences in accounting rules and NPL definition, the NPL figures are not necessarily comparable across countries.

IV.a. Cross-Country Experience

IV.a.i. Korea

Korea's NPL problem originated from the excessive leverage at domestic companies and the ineffective credit risk management of domestic financial institutions. The contagion effect of the Asian Financial Crisis in October 1997 triggered a wave of corporate bankruptcies and accumulation of NPLs in the financial sector. The Korean government acted quickly, giving Korea Asset Management Corporation (KAMCO) the mandate of recovering NPLs in November 1997. Between November 1997 and December 2003, KAMCO purchased Won 110.5 trillion worth of NPLs from the financial sector, including Won 33.2 billion from the *chaebol* Daewoo Capital in 2002 (KAMCO 2003)¹⁸. KAMCO paid an aggregate amount of Won 39.7 trillion for the NPLs, or only 36 percent of face value. All of the NPLs were formed in the second half of the 1990's.

By the end of 2004, KAMCO had resolved Won 71.8 trillion (\$68.4 billion) of NPLs, representing 62.1 percent of the acquired loans. Both the rate of recovery and the ultimate recovery price are very impressive. The total sale price for the NPLs amounted to \$32.7 billion, equal to 117 percent of the original \$27.9 billion that KAMCO had paid for these

¹⁸ KAMCO 2003 Annual Report.

NPLs, for a profit of \$4.8 billion¹⁹. Strong legal and political backing, diverse recovery approaches, and KAMCO staff's prior involvement with restructuring were among the factors that accounted for KAMCO's success.

KAMCO's major NPL disposition methods include bulk/individual sales to domestic and international investors, Asset-Backed Securities (ABS) issuance, bankruptcy auctions, debt collection, and workouts. Additionally, KAMCO conducted massive debt-for-equity swaps, mergers and acquisitions, and spinoffs in order to rescue subsidiaries of Daewoo Capital. Recently, KAMCO has moved its focus from NPL sale to managed workouts, as approximately three-quarters of the remaining unresolved NPLs are related to Daewoo loans²⁰. Table 5 shows KAMCO's initial purchase price and sale price achieved through various NPL resolution methods. It is evident that KAMCO has managed to generate a profit using almost every resolution method.

Table 5
KAMCO NPL Resolution by Method^(a)
December 31, 2004 (Figures in U.S. Dollars)

Method	Face Value	Purchase Price	Sale Price	Purchase Price/FV	Sale Price/FV	FV % of Total
International Bidding	\$5.79	\$1.25	\$1.53	21.6%	26.4%	8.5%
ABS Issuance	8.31	4.42	4.60	53.2%	55.4%	12.2%
Sale to AMC	2.46	0.63	0.88	25.6%	35.8%	3.6%
Sale to CRC	2.08	0.38	0.75	18.3%	36.1%	3.0%
Individual Loan Sale	3.23	0.75	1.23	23.2%	38.1%	4.7%
Court Auction, Public Sales	8.15	2.69	3.32	33.0%	40.7%	11.9%
Collection	14.40	4.54	6.46	31.5%	44.9%	21.1%
Daewoo Loan Repayment	4.45	3.05	3.70	68.5%	83.1%	6.5%
Workout Loan Repayment	0.69	0.38	0.46	55.1%	66.7%	1.0%
Repurchase Cancellations ^(b)	18.79	9.81	9.81	52.2%	52.2%	28.7%
Total	\$68.35	\$27.90	\$32.74	40.8%	47.9%	100.0%

(a) Does not include debt-for-equity swap of \$9.95 billion.

(b) KAMCO negotiated put options that allowed it to put back certain portion of an NPL back to the original financial institution, should the returns not meet certain thresholds.

Source: KAMCO's website, www.kamco.or.kr/eng/.

¹⁹ KAMCO website, <http://www.kamco.or.kr/eng/>.

²⁰ See supra note 18.

Korea's relatively mature legal framework and further reforms to its bankruptcy legislations are major factors that contributed to KAMCO's accomplishments. Although corporate liquidation and reorganization procedures have been in place in Korea since 1962, both the *Bankruptcy Act* and the *Composition Act* were amended soon after the Asian financial crisis, in 1998 and 1999, respectively (Zafft and Vassiliou 2002). Finally, the *1998 Agreement for the Promotion of Corporate Workouts* and the *2001 Corporate Restructuring Promotion Law* provided a standardized framework for out-of-court workouts for creditors (Zafft and Vassiliou 2002). All of these measures improved the legal enforcement mechanism for creditors and helped KAMCO achieve a NPL recovery rate of almost 48 percent.

One of the most noteworthy methods that secured KAMCO's success was securitization. Securitization is the act of transferring assets to a special-purpose vehicle (SPV) and issuing securities to investors with the backing of the stream of cash flows generated by the assets. KAMCO's use of securitization was supported by the promulgation of the *Asset-Backed Securitization Act* in 1998, followed by the *Mortgage-Backed Securitization Company Act* in 1999. The regulations stipulated that (a) SPVs may purchase or issue securities using any receivables, real estate and other property rights, and (b) all rights to the securitized assets are directed to the transferee without retention by the transferor (EIU *Country Finance South Korea* 2004). This latter provision set the foundation for a true sale of the securitized asset – an important prerequisite for securitization. Foreign investors facilitated securitization efforts by contributing both their funds and expertise in securitization, which had been a relatively novel concept in Asia before 2000.

IV.a.ii. Japan

The major cause for Japan's NPL problem was the banking system's concentrated lending to the property sector through the 1980's. The subsequent explosion of the real estate bubble lowered the value of loan collaterals dramatically, affecting virtually all types of financial institutions. Bank failures, occurring sporadically since 1991, escalated between 1994 and 1998.

After an initial delay in responding to the NPL problem, the Japanese government created the Resolution and Collection Corp. (RCC) in 1998 to take over NPLs from 90 failed financial institutions at only 7.1 cents on the dollar (Fung et.al. 2004) – a substantial discount from book value. This price approximated the true value of the real estate backing the acquired NPLs, given the distressed state of the property market in the late 1990's. RCC's cash recovery rate is reported to be between 20 and 30 percent²¹, far exceeding its purchase price for the NPLs.

The RCC has historically resorted to straight loan collection, while turning only recently to restructuring. Although securitization has so far represented only 1 percent of RCC's total NPL recovery (Fung et.al. 2004), Japan has successfully completed two NPL securitizations, facilitated by important amendments to its legal framework. The *MITI Law of 1993* allowed SPVs to issue Asset Backed Securities using leases, credit card, auto, and installment sales contract receivables (Chen 2004). The *SPC Law of 1998* lowered the capital requirement for SPVs and reduced taxes by 50 percent (Chen 2004). Finally, an

²¹ "China Suffers Losses from Undervalued Bad Loans," *SinoCast China Financial Watch*, October 28, 2004.

amendment to the *SPC Law* in 2000 expanded the range of assets that could be securitized and allowed the usage of a trust structure (EIU *Country Finance Japan* 2004).

Reorganization of companies has been a recent initiative facilitated by the *Corporate Reorganization Law*, effective as of April 2003. This legislation was accompanied by the establishment of the Industrial Revitalization Corporation of Japan (IRCJ), a joint-stock company with government-guaranteed loans to focus on reorganizations. The IRCJ reviews reorganization plans and purchases loans from “non-main banks” – secondary or tertiary creditors – at the request of debtor corporations with excessive debts and their “main banks” (primary creditors). Ten trillion yen of funds have been made available to the IRCJ to purchase NPLs, which has received requests from six companies as of September 2003 (Takagi 2003).

IV.a.iii. Thailand

Thailand’s NPL problem was triggered by the 1997 Asian Financial Crisis, which affected many banks that issued foreign currency loans to debtors with local currency income streams. Thailand accepted a rescue package from the International Monetary Fund valued at \$3.9 billion, in exchange for agreeing to certain economic reforms. The country’s NPL ratio, in excess of 45 percent of total loans in 1998, was successfully reduced to just about 12 percent by March 2004 (Vongvipanond 2004).

The first reaction of the Thai government to the NPL problem was to create the Financial Sector Restructuring Authority (FRA), an agency that rapidly divested the assets of 58 suspended finance companies through a series of bulk sales, 56 of which were subsequently shut down (Zafft and Vassiliou 2002). These NPL sales stimulated activities in

the real estate sector and resulted in new legal procedures for the disposal of foreclosed assets.

Following FRA's bulk NPL sales, Thailand focused on using restructuring as the main approach in resolving NPLs. Two state agencies were founded to restructure NPLs: the Thai Asset Management Corp. (TAMC) and the Corporate Debt Restructuring Advisory Committee (CDRAC). Each organization adopted a different approach in pursuing the restructuring, generating substantially different results.

The TAMC, established in 2001 under the sanction of *TAMC Decree*, was given extraordinary legal powers to unilaterally amend loan terms, conduct debt-for-equity swap, and foreclose on debtors' assets – all without the debtor's consent or court approval (EIU *Country Finance Thailand* 2004). The TAMC was also given superpowers for reorganization and its workout officers were granted immunity from prosecution. The TAMC acquired primarily substandard NPLs from state-owned institutions, in addition to secured NPLs from private financial institutions (Kosolkitiwang 2001).

By the end of November 2004, the TAMC had resolved Baht 767 billion of NPLs, over 98% of the total amount of loans it had acquired from state-owned and private financial institutions over the past three years²². The expected recovery rate of 49 percent of the restructured loans far exceeds the 34 percent of book value that the TAMC had paid to financial institutions on average in exchange for the assets²³. A profit-sharing scheme²⁴

²² "TAMC Reports on Debt Restructuring Progress," *Thai News Service*, December 23, 2004.

²³ See supra note 22.

²⁴ If the ultimate recovery yields a profit, the first 20% of the profit is shared equally by the TAMC and the financial institution; additional profit not exceeding the difference between the recovery value and the transfer price is absorbed by the financial institution; whereas any profits remaining is absorbed by the TAMC. If the ultimate recovery yields a loss, the first 20% of the loss is absorbed by the financial institution; the second 20% is shared by the TAMC and the financial institution; whereas any loss remaining is absorbed by the TAMC (Pornavalai 2002).

between the TAMC and the financial institution further increased the incentive for the TAMC to maximize the realization value of the NPLs.

In contrast, the CDRAC was established as a committee to focus on out-of-court workouts. It adopted the more traditional approach of encouraging private negotiations between creditors and debtors, with the objective of allowing enterprises to survive whenever possible. The CDRAC took over Baht 2.84 trillion of NPLs between mid-1998 and September 2003, and has moved much more slowly than the TAMC. By the end of 2004, the CDRAC has successfully restructured cases worth Baht 1.40 trillion, yet failed restructuring in cases worth Baht 413 billion (EIU *Country Finance Thailand* 2004).

The contrasting results of the TAMC and the CDRAC indicate a likely link between the success rate of recovery and the resolution approach undertaken. Drawing from the TAMC's success, China should benefit from awarding special legal powers to its AMCs, giving them the latitude to exercise more aggressive collection methods against the debtors.

On the legal front, Thailand introduced major reforms to its insolvency laws following the Asian financial crisis. In 1998, the government amended its *Bankruptcy Act* to include a new reorganization procedure in addition to the existing liquidation provisions. In 1999, the *Bankruptcy Act* was amended again to eliminate the immunity of debt guarantors from bankruptcy cases, to establish a formal mechanism in determining classes of creditors, and to extend the definition of applications where "avoidance power" can be exercised²⁵ (Dasri 2003). During the same year, a specialized bankruptcy court was formed to expedite

²⁵ The court can void payments that debtors made up to three months before the bankruptcy application, and for "advantaged creditors," up to one year before the application.

the legal hearing process, followed by the creation of new foreclosure laws that allowed most foreclosure cases to be completed within 12 to 18 months (Dasri 2003).

Thailand also adopted securitization methods in its NPL disposal, facilitated by, notably, the *1997 Securitization Act*, which permitted the creation of SPVs and the transfer of assets from issuers to investors without giving notice to debtors (EIU *Country Finance Thailand* 2004). The investors of the securitized assets are further insulated from future problems of the issuer.

IV.b. Challenges to China's NPL Resolution

Both Korea and Thailand have worked through NPA resolution in a speedy and efficient manner, although the approaches they emphasized have varied. Korea focused on securitization, direct asset sales, and debt collection, in order to maximize upfront cash recovery in a short period of time. Thailand, on the other hand, chose to carry out debt restructuring and workouts almost exclusively, recovering little cash upfront yet expecting to maximize asset value in the future. Compared to Korea, Thailand faces a higher residual risk of restructured loans, i.e., the restructured loans might not ultimately be repaid, especially if macroeconomic conditions suffer a downturn. Disadvantaged by its huge NPL portfolio, low quality of assets, and limited expertise in restructuring, China should preferably adopt primarily Korea's approach of emphasizing speedy resolution.

To date, China has largely followed KAMCO' model, utilizing a variety of NPL resolution methods, including debt-for-equity swap, restructuring, liquidation, direct sales to investors, and securitization, to be discussed in detail in section V. However, the speed of recovery in China has trailed the performance of both Korea's KAMCO and Thailand's

TAMC. Through the end of 2004, the four AMCs collectively recovered only RMB 675 billion of NPLs, or less than 40 percent of the NPLs transferred to them since 1999. The banks have been even slower in their resolution, given regulations that prohibit them from selling NPLs at below book value (with the exception of settled assets). In contrast, as of December 2004, Korea's KAMCO resolved over 62 percent of loans it acquired since November 1997. The cash recovery rate of the Chinese AMCs approximated 20 percent as of December 2004. This performance was also substantially behind KAMCO's actual cash recovery rate of 48 percent and TAMC's expected recovery rate of 49%²⁶, although closer to RCC's estimated cash recovery of 20 percent to 30 percent. Both the resolution speed and cash recovery rate of Chinese AMCs have lagged those of their counterparts, primarily as a result of (a) lower asset quality, (b) weak legal framework, (c) book value NPL transfer to AMCs, and (d) poor corporate governance and transparency at the AMCs.

IV.b.i. Low Asset Quality

Except for the healthiest bad loans, the quality of most NPLs declines in proportion to the amount of time they stay in the system. Out of the 1.7 trillion of NPLs transferred to the Chinese AMCs to date, 1.4 trillion were policy loans from the pre-1995 years. This implies that the AMCs face the arduous task of recovering value from operations that had been suspended for as long as ten years. Furthermore, investments into "redundant projects" – those that were halted due to the violation of land, environmental and other regulations – amounted to about RMB 800 billion, some RMB 300 billion of which originated from bank lending (Kynge 2004). There is arguably little value to be extracted from such projects,

²⁶ Thailand has focused on debt restructuring instead of disposal, hence the realized cash recovery rate is very low.

where plants and equipment have stayed idle at length. In comparison, KAMCO purchased most of its NPLs between the years 1998 and 2002. All of these NPLs were formed during the second half of the 1990's, suggesting a higher quality of the loans and thereby increasing the recovery potential.

Another problem with China's NPL portfolio is the lack of physical collateral backing many of the NPLs, which automatically decreases the potential sale price of the loans. In 2001, the AMCs estimated that only about 22 percent of the RMB 1.4 trillion NPL portfolio they had taken over were secured by real estate, intellectual property rights, or other tangible securities (Pierce and Yee 2001). Furthermore, the true value of the security backing the loans accounted for only about 42 percent of the amount of the total amount of secured debt. The substantial valuation differential between secured and unsecured loans can be demonstrated through KAMCO's acquisition price of NPLs. KAMCO offered only three cents on the dollar for unsecured NPLs, whereas secured NPLs were purchased at 45 percent of the senior lien on the appraised value of the collateral²⁷ (Mulye et.al. 2002).

Among the types of collateral backing the NPLs, investors have an overwhelming preference for real estate due to its liquidity. This was substantiated by my interviews with David Bednar, former executive at Morgan Stanley and Kevin Young, Citigroup executive, as well as PwC's *China NPL Investor Survey 2004*. According to Bednar, Morgan Stanley focused on being a real estate play in its NPL purchase from Huarong AMC, and exercised far more caution with loans backed by machinery, accounts receivable, and inventories. The

²⁷ Except for initial purchases which were adjusted for the present value of projected cash flows multiplied by the discount rate.

valuation of the latter is more difficult to determine due to the deterioration of these assets over time and the insufficiency of loan documentation. Unfortunately, real estate collateralized loans accounted for only seven percent of the NPL portfolio transferred to the Chinese AMCs in 1999, much lower in comparison to Thailand's TAMC as shown in Table 6.

Table 6
Sectoral Distribution of Assets Transferred to AMCs (Book Value)

	<u>Real Estate</u>	<u>Manufacturing</u>	<u>Commerce</u>	<u>Import/Export</u>	<u>Others</u>
China	7%	42%	18%	8%	22%
Thailand	24%	28%	11%	10%	27%

(a) Represents only the non-performing loans transferred to the AMCs in 1999.

Source: *Fung, et.al. 2004; based on central banks, AMC publications, official estimates, and authors' own estimates.*

IV.b.ii. Weak Legal Framework

Korea, Thailand, and Japan's experiences demonstrate that a key factor to succeeding in NPL recovery is a transparent and user-friendly insolvency law framework that gives creditors adequate protection. All of these countries have made significant improvements and/or additions to their bankruptcy and securitization legislations over the last six years. In contrast, the main governing bankruptcy law in China, remains the *Enterprise Bankruptcy Law of the PRC (Trial Implementation)*, a legislation enacted almost 20 years ago and exclusively tailored to SOEs. Although a series of legislations containing articles regulating non-SOEs' bankruptcies had been issued since then, including the 1991 *Civil Procedure Law*, the 1993 *Company Law*, and the 1996 *Measures on Liquidation Procedures for Foreign Invested Enterprises*, none of the legislations went into much details about the subject (PwC December 2004). Until now, there have not yet been unified bankruptcy legislations applicable to both private and state-owned enterprises.

My interviews with Bednar and Young revealed that legal impediments are among the

top obstacles for NPL investors. In reality, bankruptcy procedures are carried out on an ad hoc basis, and are heavily influenced by local political powers. Many of the bankruptcies are “policy-directed,” or directly enforced by the government with little consultation of the 1986 *Enterprise Bankruptcy Law*. There are also restrictions by region on the number of entities eligible for bankruptcy (Jones and Culler 2005). Even when a company goes through the bankruptcy process, the court-appointed liquidation committee typically consists of governmental staff with limited expertise in the bankruptcy process and little regard for creditor rights (see the GITIC case study in Section V.b.iii.).

Unlike the other aforementioned East Asian economies, China does not have provisions regulating the reorganization process in the current bankruptcy legislations. Nor are there real repossession or foreclosure laws, so that investors have generally been hesitant in acquiring NPLs when the foreclosure of assets is required in order to realize the value of the investment.

IV.b.iii. Book Value NPL Transfers to AMCs

In 1999, the Chinese government mandated that the four AMCs complete their first NPL purchase at the full book value of RMB 1.4 trillion. The transfer price of the NPLs was far from their true value, widely anticipated to be below 20 percent of book value. This requirement prevented the four SOCBs from having to take immediate, large write-downs of their loan portfolios. However, it also created an inevitable loss for the AMCs, hence providing disincentives for them to maximize the recovery price. In comparison, Korea’s KAMCO, Japan’s RCC, and Thailand’s TAMC have, on average, acquired their NPL portfolios at 36 percent, 7 percent, and 35 percent of face value, respectively – all based on

formalized valuation methods. The actual or expected recovery price exceeds the transfer price in each of these countries, thus establishing the public AMCs as profit-making entities and incentivizing them to maximize resolution potential. Moreover, KAMCO's put provision to financial institutions and the TAMC's profit/loss-sharing arrangement with financial institutions (see footnote 24) allowed them to transfer some of the loss burden back to the banks, should the NPLs be lower in quality than envisioned. Such mechanisms are unprecedented in China.

IV.b.iv. Poor Corporate Governance and Transparency at the AMCs

As state-owned non-banking financial institutions, China's AMCs answer to a multitude of political agencies whilst attempting simultaneously to act as commercial entities. Members from the CBRC, the Ministry of Finance, and the China Securities Regulatory Commission sit on the Supervisory Board of the AMCs, all with separate agendas. Perhaps the most controversial matter regarding corporate governance at the AMCs is the fact that the President of the four SOCBs also serve as the Party Secretary – a key position – at each of the four corresponding AMCs (Fung and Ma 2002). This intertwining relationship between the banks and the AMCs points to the lack of independence of the AMCs, and may have attributed to the slow pace of NPL recovery.

The degree of information transparency among the AMCs is also deficient, especially compared to the Korean and Thai AMCs. While two of the larger AMCs, Cinda and Huarong, regularly publish press releases and disclose some information on NPLs available for sale on their websites, the other two AMCs' English websites are loaded with missing or outdated information. In contrast, KAMCO and TAMC publish annual reports in addition to

providing regular updates on their websites (Fung et.al. 2004).

Unlike KAMCO and TAMC, the Chinese AMCs are exempt from external audits by independent parties. Thus, corruption and inadequate controls are a widespread problem at the AMCs, similar to their banking counterparts. According to a recent press release by IFR Asia (2005), the Chinese National Audit Office has uncovered 38 cases of illegal practices at each of the four AMCs – involving assets totaling approximately RMB 6.7 billion. Industry insiders believe that such practices included “collusion, insider trading, connected transactions, improper appraisal processes, fraudulent bidding and auction processes, lack of internal controls, embezzlement and mismanagement of assets.”²⁸ The AMCs are currently under investigation from the National Audit Office, the CBRC, and the PBOC.

IV.c. Measures to Narrow the Gap

While there is little that can be done to upgrade the quality of its NPLs, the government has realized that it could undertake other proactive measures to improve the recovery speed and rate of its NPLs. Over the last two years, China has started making progress towards reforming its legal framework, rationalizing NPL transfer pricing to AMCs, and revamping the cultures at its AMC.

IV.c.i. Legislative Reform

A redraft of the *Enterprise Bankruptcy Law* has been in the works, on and off for the last ten years. In October 2004, a second version of the law was submitted to the Standing Committee of the National People’s Congress, and is expected to be passed in 2005 after a third reading. The new law represents the Chinese authorities’ willingness to move towards

²⁸ “China’s AMCs at the Crossroads,” *IFR Asia*, February 16, 2005.

international standards and cast some transparency on the worst-case scenario for NPL investors. In fact, many of the provisions are similar to those found in the United States' Bankruptcy Code (Jones and Culler 2005). PwC's report *China's Proposed New Bankruptcy Law: The Practical Implications* (2004) outlined the following categories where the proposed bankruptcy law breaks new grounds:

- *Scope of Application:* The law applies to all types of legal enterprises, including private, state-owned, and foreign investment enterprises. This was a significant improvement from the 1986 *Enterprise Bankruptcy Law*, which applied exclusively to SOEs.
- *Nature of Bankruptcy Test:* While the new law recommends both the cash flow insolvency test and balance sheet insolvency test to support a bankruptcy petition, it also proposes that a creditor could file for involuntary bankruptcy on behalf of the debtor if the debtor fails to repay its debt obligations. This implies that a cash flow test – typically more indicative of the debtor's true solvency – could suffice for the creditor to file a petition.
- *Determination of Administrator:* The law tightened the qualifications for the administrator, a trustee assigned to manage the debtor's assets and oversee the liquidation/reorganization process. Although the People's Court makes the initial appointment, the administrator will report to a creditors' commission, which has the power to remove the trustee or withhold fees from the administrator, if unsatisfied with the trustee's actions (Jones and Culler 2005). This contrasts with the current process, whereby bankruptcy procedures are administered strictly by government

officials. The creditors' rights to oversee and if necessary, to replace the administrator will clearly give them more confidence in the bankruptcy process.

- *Penalties for Foul Play:* The law provides for the application of “avoidance powers,” i.e. the administrator can revoke payments made by the debtor within six months prior to the commencement of the bankruptcy case, if the debtor entered into the transactions with the knowledge that it might damage other creditors' rights. Debtors, administrators, or members of the creditors' committees can also be subject to fines and criminal prosecution for negligence or deliberate offense.
- *Priority of Payments:* The new law clarified the priority of payments in the following order: bankruptcy estate expense, secured property claims (up to the value of the collateral, with the remainder being treated as a common claim), labor claims (including salaries, social insurance and other fees), taxes, and common claims (Jones and Culler 2005).
- *Provisions on Reorganization:* The new law established a new chapter on reorganization procedures, covering the application process, examination and approval of the application, business operations during the interim period, and reorganization plans. The administrator has the exclusive right to propose a reorganization plan within six months after the commencement of the bankruptcy case. All creditors who declare a claim are entitled to vote on a proposed plan, the approval of which requires the vote of at least two-thirds of the dollar claims in each class, and more than half of the creditors in each class – similar to the U.S. bankruptcy code stipulations.

While the proposed bankruptcy law has taken huge strides on a variety of issues including reorganization and administrator designation, it is not without its problems. First, given the untested nature of many provisions, it is yet to be seen whether the law could be successfully implemented in a society where local political forces have overwhelmingly impacted the bankruptcy process in the past. Second, as PwC's December 2004 report pointed out, the People's Court is burdened with too many roles that will test its technical expertise and human resource capacity, especially when numerous clauses are still subject to interpretation. Third, the new *Enterprise Bankruptcy Law* does not apply to all companies. It excludes about 1,800 of the nation's largest SOEs in select sectors, which will continue to undergo "policy-oriented bankruptcy" within the next three to five years, according to PwC's report *China's New Bankruptcy Law: The Start of Something Big?* (2004).

IV.c.ii.Fair-Value NPL Transfer to AMCs

The requirement for AMCs to purchase NPLs at book value underwent alteration for the first time in 2004. In July 2004, Cinda AMC beat out the other AMCs in winning an auction to purchase RMB 278.7 billion of NPLs from CCB and BOC, paying 50 cents on the dollar and promising to recover 33 to 34 cents on the dollar by the end of 2005, according to PwC's *NPL Asia* report (2004). Cinda also won an auction to buy RMB 41.4 billion of NPLs from Bank of Communications, the fifth largest bank in China, at 50 percent of book value²⁹. The promised recovery value for that deal was 30 percent to 40 percent. While the transfer pricing remains high and will likely exceed the ultimate recovery value – as indicated by Cinda's promised recovery prices – this migration away from mechanical book

²⁹ "Cinda to Buy Bank of Communications' Bad Loans at 50% Discount," *Business Daily Update*, July 12, 2004.

value pricing implies the government's willingness to draw the line between pure recapitalization and NPL carve-out, and is a right step towards providing the proper incentives to AMCs. The Chinese government is also providing cash incentives to AMCs for maximizing returns and accelerating recovery rate, which should further help increase the commercial orientation of these entities.

IV.c.iii. Revamping of AMC Cultures

The Chinese government encourages AMCs to partner with foreign investors and advisors with substantial expertise in management of distressed assets. Through its first large-scale NPL auction, Huarong AMC formed two separate joint ventures with Morgan Stanley and Goldman Sachs, respectively, to collect, manage and dispose of NPLs. The investors paid an initial price of about 10 percent of book value for the assets, and the joint ventures agreed to share the remaining proceeds from the sale of loans. The joint ventures gave Huarong the valuable opportunity to learn from distressed asset specialists, while enabling the AMC to ultimately recover over 20 percent of book value on the NPLs. Cinda AMC formed similar joint ventures with Deutsche Bank and Lone Star, a U.S.-based distressed asset fund. The two AMCs also engaged international advisors Ernst & Young and Deloitte & Touche to assist in its activities, while all four AMCs retained KAMCO to explore asset-backed securitization opportunities.

The TAMC's ability to restructure over Baht 700 billion of NPLs in just two years was largely attributable to its superior legal power in amending debt terms, foreclosing on assets, and reorganizing. Since it will take some time for the new bankruptcy law to be in place and fully functional, the Chinese government should create a special decree for the four

AMCs to override the current legislations. The new decree should award the AMCs with special legal powers, similar to those given to the TAMC, to enforce their creditor rights in a speedy manner.

V. NPL Resolution Methods

The Chinese AMCs have primarily adopted the following recovery methods: debt-for-equity swap, restructuring of debt terms, debt collection, sale or lease of real property, direct sales of packaged or individual NPLs, and securitizations. The banks themselves have also applied some of these measures in resolving their NPL portfolios, although they face much tougher regulatory restrictions, such as prohibition from selling loans at below book value.

V.a. Debt-for-Equity Swap

V.a.i. Background

In 1999, the Chinese government decided to implement a debt-for-equity swap program for large and medium-sized SOEs where it deemed that growth opportunities existed. This action wiped out the debt obligation of a SOE to its bank and substituted it with the equity ownership of the AMC(s) that took over the NPL in question from the bank. AMCs would then be entitled to dividends and subsequent share repurchase from the SOEs at agreed-upon prices within ten years (Fung and Ma 2002), should the latter ever become profitable. Furthermore, local governments were often required to guarantee that the AMCs get first priority in exiting their equity stake through public listings or a change of control event. In addition to the AMCs, the banks themselves have also converted some of the

NPLs into equity, although the exact amount is unclear.

To date, around 580 SOEs converted more than RMB 400 billion of debt into equity rights held by the AMCs. The short-term result of the program appears impressive. The SOEs' average indebtedness decreased from 73 percent in 1999 to 50 percent of total capital in 2000, and 80 percent of the companies turned a profit during the year (Ye and Zhai 2001). However, these figures were largely a result of the pure conversion of debt to equity and the termination of interest payments. The new equity stakes that the AMC inherited could remain worthless under a new capital structure, if it is not accompanied by an improvement in the fundamentals of the SOEs.

V.a.ii. Effectiveness

One major debate with the debt-for-equity swap scheme is whether it would ultimately improve the financial health of the SOEs over the long term. The 580 SOEs that underwent the financial restructuring were handpicked by the State Economic & Trade Commission and subsequently approved by the State Council, the Ministry of Finance, and the central bank (Pierce and Yee 2001). Given the lack of transparency in the qualification process, many question whether political influences may have outweighed commercial judgments in certain instances.

One of the measuring sticks of the debt-for-equity swap program is the level of improvement to corporate governance standards at the SOEs. Historically, high-level decisions at such companies have typically been handed down by an individual or a bureaucratic entity. Some SOEs established a Board of Directors to govern the decision-making process after undergoing the debt-for-equity swap. As members of the

Board, AMCs were then able to exert real influence over the company's operations and potentially manage to turn the company around over the long term. One of the SOEs that made such progress was Xingang Steel, a subsidiary of the Capital Iron and Steel Company, which reincorporated as a limited liability company after the debt-for-equity swap. Three AMCs, Huarong, Cinda, and Orient received nearly RMB 3.6 billion of debt-equity stock rights, controlling approximately 47 percent of the company together. Xingang earned a profit of RMB 10.1 million in 2000, and Huarong, a 39 percent shareholder, was able to retrieve equity of RMB 44.5 million and receive a dividend totaling RMB 1.5 million during the year³⁰.

While corporate governance standards have improved at some of the SOEs, most experienced limited changes of substance following the debt-for-equity-swap, especially when the AMC became the minority instead of the controlling shareholder at the restructured SOEs. An example was Fu Shun Special Iron (Group) LLC which, despite its reincorporation and a 26.2 percent equity transfer to three AMCs, continued to operate without a Board of Directors and under the sole discretion of the Company's President (Ye and Zhai 2001). Fu Shun's restructuring appears to be a mere formality, and the debt-for-equity swap did not improve the chance of ultimate cash realization for the AMCs through dividends and/or equity repurchase. Thus, unless the debt-for-equity swap program fundamentally improves the operation of a SOE, this measure is merely a mechanical fix to the capital structure, and will have little impact on cash recovery over the long-term.

³⁰ "Debt-to-equity Swap Brings Economic Results to Steel Firm," *People's Daily*, June 7, 2001.

V.a.iii. Exit Options

For the Chinese AMCs and banks, there are three exit options for debt-for-equity shares: direct sale to investors, IPO listing, and equity buyback by SOEs. The timing and likelihood of the latter two options are highly uncertain, while a direct sale to investors is the fastest way for the AMCs and banks to convert their equity rights into cash. Based on public news releases and my discussions with various parties, however, there have been relatively few transactions of direct sales of debt-for-equity shares to investors³¹. Conceivably, this is because investors typically aim to realize their investments within a short period of time, an unlikely scenario for completely uncollateralized equity shares. Purchasing equity rights will also require the investor to take on the active day-to-day management of the company, given the limited protection for passive investors (Lawrence and Yee 2001). Lastly, the dearth of equity rights transaction to date may point to the likelihood that investors have little conviction in the quality of the companies approved to undergo the debt-for-equity swap. According to PwC's *NPL Asia* report (2004), China Construction Bank is planning to hold an auction of debt-for-equity interests, with an estimated book value of RMB 46 billion (\$5.6 billion). The success of this auction may provide further insight into the likely value that investors place on debt-for-equity shares.

³¹ One of the exceptions was Cinda AMC, which sold a majority debt-for-equity stake in a power plant in Anhui province to American Alliant Energy International Ltd. in 2001 ("Alliant Energy Takes Over Debt-Ridden China Power Plant," *Dow Jones International News*, April 20, 2001). In 2002, China Development Bank, one of China's three policy banks, worked with UBS Warburg to manage and dispose of RMB 40 billion of debt-for-equity shares ("Banks Cooperate to Swap Debt Into Equity," *China Daily*, April 6, 2002). However, an inside source revealed that only 30 percent of the equity was transformed from NPLs, while the remainder consisted of secured and profit-making assets.

V.b. Other Restructuring/Liquidation Methods

V.b.i. Background

Aside from direct sales and securitizations – to be analyzed next – the main NPL disposition methods adopted by the AMCs include debt collection, sale or lease of real property, restructuring of debt terms, and bankruptcy settlement.

Despite antiquated bankruptcy legislations dating back to the 1980s, approximately 70,000 enterprises have gone bankrupt by the end of 2004 (PwC December 2004). So far in China, bankruptcy usually means liquidation, and was mostly “policy-directed.” Through April 2004, the Chinese government has closed approximately 3,500 insolvent SOEs, allocating about \$6 billion to SOE bankruptcy subsidiaries, financing the settlement of laid-off liability relating to 6.2 million workers, and writing off about \$27 billion of bad loans (PwC December 2004). Small and medium-sized enterprises (SMEs) have taken the full brunt of these ownership transformations, in accordance with China’s 1999 4th Plenum Decision to “let go” small SOEs and “grasp” large SOEs (Mako and Zhang 2003).

V.b.ii. Major Issues

One of the main obstacles that AMCs encountered in their debt collection efforts is created by their own status as SOEs. A manager at Orient AMC was quoted as saying: “We go to a SOE and they say: ‘I am state owned, you are state owned. I don’t have to pay you back because we are brothers.’ They always try their best to dodge the affair. With foreign investors, although it will still be difficult, it will be different.” (Cockerill 2002) Another impediment is the AMCs’ inability to seek remedy when companies reneged on the debt restructuring contracts they entered into – a recurrent phenomenon. According to Zhang

(2004), as many as thirty percent of total contracts were breached for Huarong, and about 50 percent of total contracts were breached for Orient and Great Wall. This problem can be alleviated if the Chinese government awards the AMCs special legal powers to foreclose on assets immediately, as soon as a SOE reneges on a restructuring contract.

When it comes to bankruptcy, the proceedings in China have often been subject to political manipulation. In order to evade their debt obligations, solvent companies were able to set up new entities, transfer all of their assets into the new company, and then declare bankruptcy on the original shell, which has been stripped free of any assets. Companies have also misappropriated assets in other types of fraudulent insider transactions prior to declaring bankruptcy. Orient AMC, for example, reported in April 2001 that SOEs had evaded about RMB 12 billion worth of debts through such methods (Lawrence and Yee 2001). Frequently, local governments were in collusion with such firms, and creditor rights have too often been set aside in the bankruptcy process, manipulated by liquidation committees usually consisting solely of governmental officials. This was evidenced in the largest bankruptcy in China since 1949 – that of Guangdong International Trust and Investment Corp. (GITIC) in 1999.

V.b.iii. Case Study – GITIC

Until its bankruptcy, GITIC was the second largest investment trust corporation in China, with assets exceeding RMB 20 billion at the end of 1996 (Shih 2003). It was also one of the first major financial institutions to issue bonds overseas. The company's loans and investments were extremely diverse, ranging from MacDonald's restaurants in Guangdong to stock brokerages to the Guangdong Exhibition Center, with projects extending

to other countries including the U.S. and Australia. GITIC was headquartered in the tallest building in China at the time – the 63-story Guangzhou International Building, a five-star hotel, office and residential complex also owned and operated by the company.

Due to overextended real estate investments and misappropriation of funds, GITIC became insolvent. When the company filed for bankruptcy in January 1999, it owed RMB 46.7 billion (\$5.6 billion) of debt to 494 domestic and international creditors. Eighty percent of this amount was owed to international creditors (Shih 2003). However, the bankruptcy court recognized only about \$2.4 billion of the claims against the company (Mitchell 2003). As of 2003 – following four years of bankruptcy proceedings – the creditors received only about \$300 million, or 12.5 percent of the \$2.4 billion.

Bottini's 2003 article revealed a few controversial issues emerging from the bankruptcy process that undermined creditors' – in particular foreign creditors' – confidence in the Chinese bankruptcy system. First, creditors, even the largest ones, were unable to obtain a list of the parties with claims against the bankrupt estate. Many of these creditors on the list were other SOEs. GITIC's liquidation committee argued that such SOEs would experience difficulties in borrowing from state banks, should the list be made public. Ironically, this argument was directly opposed to the commercial orientation that the banks are supposed to adopt. Ultimately, the creditor list was released, yet only after the bankruptcy court had already confirmed the list of claimants. At that time, none of the creditors had the opportunity to challenge any of the claims. To date, the identity of Guangzhou International Building's buyer still remains a secret to many overseas creditors.

Second, GITIC's liquidation committee refused to disclose the details of specific

assets, including assets that other companies owed to GITIC. Many of these debtors were also other SOEs. The confidential arrangement effectively prevented creditors from challenging any special status for specific assets.

Lastly, even though many of GITIC's loans and investments were guaranteed by local governments, the Bankruptcy Court voided all of these guarantees on the basis of illegality. The court did order the governmental entities to pay 50 percent of total liability based on a "reliance type theory." (Mitchell 2003) However, most of these organizations declared inability to fulfill these obligations, which remain unpaid to date. The total unpaid government compensation fees amounted to \$360 million, which if paid, could have brought the recovery rate to 30 percent for creditors (Mitchell 2003).

The lack of transparency in the GITIC bankruptcy case revealed the urgency for the enactment of the new bankruptcy law and the involvement of qualified trustees untainted by political agendas to oversee the liquidation process. Hopefully, under the new law, creditors' rights could be strengthened by their ability to oversee and if necessary, reappoint the administrator.

V.c. Direct Sales to Investors

V.c.i. Background

The direct sales of NPLs to investors generally take two forms: sales of individual assets and bulk sales, including negotiated sales and auctions. Assets available for sale include debt, equity (converted from debt), and real property, i.e. assets that banks seized from debtors as settlement. Sales of debt rights are the most frequent type of transaction, followed by settled assets and to a lesser extent, equity rights. Investors profit from the

difference between the purchase price and their ultimate recovery price, typically through either negotiated settlements with the debtor or sales/transfers to a third party. Some investors manage to foreclose on assets backing the loans, although this is much more difficult due to legal and bureaucratic restrictions.

The primary benefit of the direct sales method is immediate liquidity to the bank or the AMC, somewhat at the expense of lower recovery value – a phenomenon demonstrated in other countries such as Korea. Investors, in particular international ones, are showing strong interest in China’s distressed assets, as other Asian NPL markets (such as Korea and Japan) have matured and the Chinese government opened up its huge NPL market. However, to date only about US\$6.6 billion of NPLs were sold to foreign investors, representing a tiny fraction of the US\$500 - US\$650 billion in total NPAs. Table 7 provides a summary of direct NPL sales to foreign investors. Sales to domestic investors, in comparison, are not well publicized. Upfront recovery value typically ranged between 7 and 15 percent, or about 10 percent on average for reported transactions, although the AMCs may be able to recover additional value through JV arrangements. The two transactions with the highest recovery rates (around 34%) are both collateralized by real estate assets.

Table 7
Direct NPL Sales to Foreign Investors

AMC/ Bank	Year	Asset Nature	Geography	Book Value	Sale Value	Recovery/BV for the Seller	Sale Type	Investor(s)
Cinda	2001			\$145MM (RMB 1.2 Bn)			Negotiated	Chenery Associates
Orient	2001		Harbin	\$217MM (RMB 1.8 Bn)	\$21MM upfront	10% upfront (50% JV after)	Negotiated	Chenery Associates
Orient	2002		Yanjiang	\$210MM (RMB 1.7 Bn)			Negotiated	Chenery Associates
Huarong	2002	Debt rights, 60% secured /guaranteed		\$1.3 Bn (RMB 10.8 Bn)	RMB 877.5 MM upfront	8.125% upfront (exp. 21% recovery)	Open Auction	Consortium led by Morgan Stanley
Huarong	2002	Debt rights, 60% secured /guaranteed		\$240MM (RMB 1.97Bn)	RMB 197 MM upfront	10% upfront (exp. 21% recovery)	Open Auction	Goldman Sachs
BOC (Cayman)	2003			\$1.8 Bn (RMB 14.9 Bn)			Open Auction	Citigroup
Huarong	2004	Debt rights, 40% secured /guaranteed		\$2.2Bn (RMB 18.4 Bn)		7 – 15% upfront (Huarong retained some interest through JVs)	Open Auction	Morgan Stanley, Citigroup, UBS, Goldman Sachs, JP Morgan, Lehman, Ao Yi Er (domestic)
CCB	2004	Settled Assets (Real Estate)	160 assets over 18 provinces	\$513MM (RMB 4.2 Bn)	\$178MM (RMB 1.5 Bn)	34.75%	Open Auction	Morgan Stanley, Deutsche Bank
Total Closed				\$6.6 Bn				
CCB	Signed 2003	Debt Rights		\$524MM (RMB 4.3 Bn)		70% sold to MS, 30% JV	Closed Auction	Morgan Stanley
Huarong	Signed 2004		Wuhan	\$215MM (RMB 1.8 Bn)			Closed Auction	Morgan Stanley, GE
Great Wall	Signed 2004		Guangdong	\$281MM (RMB 2.3 Bn)			Negotiated	Citigroup
Great Wall	Signed 2004			\$1 Bn (RMB 8.3 Bn)				Goldman Sachs
Great Wall	Signed 2004	Unsecured Debt Rights	Guangdong	About \$140MM	About \$14 – 15MM	10 – 11% (unofficial)	Auction	1 Domestic, 1+ Intl. Buyer(s)
Orient	Signed 2004		180 firms in Harbin	\$290MM (RMB 2.4 Bn)			Open Auction	CSFB
Cinda	Signed 2004	Debt rights Backed by Real Estate	Tianjin	\$29.7MM (RMB 246MM)	\$10.2MM (RMB 85.1MM)	34.6%	Open Auction	1 Domestic, 1 Intl. Buyer
Total Closed/Signed				\$9.1 Bn				

Sources: PwC China NPL Investor Survey 2004, PwC NPL Asia Report 2004, EIU Country Finance China (2004), and AMC website releases.

A spur of NPL transactions were closed or signed in 2004, pointing to an acceleration in activity on the supply side. During the year, Cinda AMC acquired RMB 278.7 billion (\$34 billion) of Category IV or “doubtful” NPLs from BOC and CCB, as well as RMB 41.4 billion (\$5 billion) of NPLs from Bank of Communications. These NPLs, unlike the policy-oriented bad loans transferred to the four AMCs in 1999, are from the post-1995 years and are likely to be more attractive to investors in terms of quality. Cinda has already announced plans to market RMB 21.5 billion (\$2.6 billion) of NPLs from its newly acquired portfolio. As many as 46 per cent of the tranche carries guarantees, and another 40 per cent is secured³². This total proportion of guaranteed or secured loans is much higher than that the proportion in either of the Huarong auctions (40 to 60 percent of total loans).

The demand for NPL transactions from foreign investors also held its ground. The early movers, Morgan Stanley and Goldman Sachs, closed or signed several NPL transactions in 2004 following their participation in the two Huarong auctions. Deutsche Bank management announced that the bank expects to spend about US\$1 billion on NPL purchases over the next three to five years³³. In addition to direct loan purchases, foreign investors adopted other creative measures to penetrate the Chinese NPL market. Citigroup, for example, paid HK\$845 million in 2004 to take a 16.4 percent equity stake in Silver Grant International Industries – an active, Hong-Kong based buyer of China’s distressed debt with close connections to Cinda AMC³⁴ (Cheng and Miller 2004). The U.S. bank became the

³² “Cinda Pondering Massive NPL Sales,” *Business Daily Update*, February 1, 2005.

³³ “Deutsche Bank Plans NPL Outlay,” *South China Morning Post*, September 1, 2004.

³⁴ In September 2004, Silver Grant set the record of purchasing RMB 56.9 billion of “Category V” (lowest quality) NPLs from Cinda at only 1.5 cents on the dollar, with more than half of the purchase funded through a convertible note and the remainder in cash (Elliot Wilson, “Silver Grant Sees Gold in Bad Loans,” *The Standard*, November 9, 2004). Silver Grant acts as a NPL middleman, purchasing NPLs from banks and AMCs, packaging them and reselling them to third-party investors.

second largest stakeholder in Silver Grant, behind Cinda which still owns 18.8 percent of the company. According to a managing director at Citigroup, this joint venture with Silver Grant will provide Citigroup with “a platform to better understand underwriting, modeling and acquiring nonperforming loans in China.” (Cheng and Miller 2004)

V.c.ii. Attractiveness to Investors

China’s NPLs can be extremely attractive to investors, despite their lower quality compared to assets in Korea and Thailand. First, given the newness of the market, analyses of the true value of NPLs are scarce. Investors willing to spend the effort and funds on due diligence have the prospect of purchasing the loans cheaply, sometimes at even pennies on the dollar, while gaining valuable understandings of China’s NPL market. The first landmark NPL transaction in China was an auction held by Huarong AMC in 2001. Huarong sold RMB 10.8 billion of NPLs to a consortium led by Morgan Stanley at only 8.125 percent of face value. This transaction is expected to yield a cash recovery rate of above 20 percent³⁵, which would imply a gross return in excess of 100 percent for Morgan Stanley (Li 2005). Even taking into account the considerable due diligence, asset appraisal, legal, loan monitoring, office rental, and other fees, investors are still able to yield healthy post-tax returns. Additionally, Morgan Stanley was able to obtain lending of about 30 percent from International Finance Corporation (Li 2005), thereby defraying its upfront cost and further maximizing the returns on its own capital. According to a banker at Goldman Sachs, Goldman also generated a venerable profit of \$50 million on a \$16 million investment

³⁵ As of year-end 2004, about 75 percent of the NPLs in the portfolio have been resolved, yielding a cash recovery rate of 19%.

over a two-year period from the same Huarong auction (Slater 2005).

The purchase of NPLs creates special attraction to foreign investors, who still face substantial regulatory limitations in direct lending to Chinese companies. Both analyst reports and my conversation with Bednar confirm that foreign investors see an important first-mover advantage in entering China's NPL market ahead of competitors, both in terms of understanding the financial and legal aspects of a distressed asset purchase and gaining favorable access to future transactions. This is a replay of Goldman Sachs' story in Korea. Goldman made substantial returns on its investments by entering the Korean NPL market early – at a time when other investors hesitated due to the untested nature of corporate guarantees. When its competitors finally decided to test the market themselves, Goldman relied on its advantage of a steeper learning curve to win four auctions in a row (Cockerill 2002). There are further investors that hope to capitalize on a potential revaluation of the RMB to higher levels, which may lead to an appreciation in the NPLs.

Second, certain non-performing loans originated from suspended projects after they ran out of funding. When these projects are secured by real estate collateral, NPL investors may benefit from property price increases, especially in coastal areas such as Shanghai, where real estate prices have escalated in recent years. For example, through the Huarong auction in 2001, Goldman Sachs acquired a loan collateralized by a piece of land in Pudong, Shanghai – a project that had been suspended since 1995. The value of the land soared in 2002, enabling Goldman Sachs to recoup its entire investment in the Huarong transaction through the sale of the land (Li 2005).

Third, certain NPLs are guaranteed by related corporate entities and local

governments, providing the potential for investors to negotiate a settlement price with the borrower and their guarantor that is below their acquisition price. Both Bednar and Young noted that their firms had considered guaranteed loans on a case-by-case basis, requesting in each transaction a thorough understanding of the relationship of the parties involved as well as the strength of the guarantee. According to Bednar, Morgan Stanley valued cases where important corporate relationships existed and preferred to invest in subsidiaries whose existence is of vital importance to their parent companies. Danny Bao, a partner of a small NPL fund, Shanghai Global Partners Fund, also expressed great interest in a loan 70 percent guaranteed by a local government. However, thorough due diligence of such relationships is crucial, since guarantees by local government are not always honored, as demonstrated in the case of GITIC.

Fourth, profit sharing arrangements and JV structures between the foreign investors and the AMCs create a “win-win” situation for both parties. On the one hand, the AMCs are able to learn from foreign investors with distressed asset management expertise in the Asian region, while retaining some economic interest in the NPL transaction. On the other, foreign investors gain assurance that their JV partners would help them with the debt collection process in a market where legal enforcement of creditor rights remains largely undefined.

V.c.iii. Main Obstacles to Foreign Investors

Both Bednar and Young noted that the lengthy regulatory approval process, the nebulous legal protection for investors, and the poor transparency of loans are among the biggest challenges to NPL investors. Various press releases and papers confirmed these

claims.

V.c.iii.1.Protracted Regulatory Approval Process

At the very beginning, the cumbersome, multi-tiered government approval process has hindered transactions from closing quickly. As a result, the first landmark NPL auction held by Huarong AMC in 2001 did not close until 16 months after its signing. However, NPL investors are hopeful that the approval process is accelerating as the government remains committed to opening up the market. For instance, Huarong's second auction of an even larger scale was approved within 11 months to slightly over a year after signing for various parties. CCB's JV transaction with Morgan Stanley³⁶, on the other hand, was signed in July 2003, yet still has not been approved. A potential reason is that current regulations expressly prohibit state banks from selling NPLs directly to investors below their book values. As regulatory policies are silent on settled assets, CCB was able to complete a sale of RMB 4.2 billion of settled assets to Morgan Stanley and Deutsche Bank in 2004.

V.c.iii.2.Legal Barriers

Due to the lack of foreclosure and repossession laws, foreign investors typically choose to bid on deals whereby they are able to negotiate with the borrower to settle the NPLs at a reasonable price. According to Bednar and Young, both Morgan Stanley and Citigroup have also accomplished exits by transferring assets backing the NPLs to interested third parties. Foreign investors usually avoid the need to foreclose on assets due to the untested nature of the legal system. Similarly due to weak bankruptcy legislations, foreign

³⁶ In July 2003, CCB agreed to sell RMB 4.3 billion of debt rights to Morgan Stanley. Seventy percent of the book value was an outright sale, whereas both parties will resolve the remaining 30 percent of assets together in a joint venture (Sun 2004).

investors have rarely been involved in any restructuring of debtor companies, although Young noted that restructuring might be the “next step” as the legal environment improves and the AMCs start to auction off NPLs from higher quality companies. Foreclosure and restructuring efforts should be aided by the promulgation of the new bankruptcy law expected in 2005, although enforcement of the law in practice will be the real key to stimulating new interest in the NPL portfolios.

V.c.iii.4.Asset Transparency

According to Bednar, information on NPL obligors’ loan documents and payment history are obtainable from the AMCs. However, the information is more limited compared to those seen in developed economies, and even though they might be from official sources, extensive due diligence is necessary to gauge the true value of the loans. The collateral nature and location of the debtors are crucial to getting the investors comfortable with a transaction. For example, compared to small towns in inland areas, the information provided for debtors in coastal, economically developed cities such as Shanghai and Guangzhou tend to be significantly more transparent. Court systems are also substantially more advanced in coastal areas and creditor rights are easier to enforce.

China’s current bankruptcy law places employee liability as top priority, ahead of creditor rights. Hence, NPL investors are liable for laid-off employee liability for up to three years. Bednar and Young both confirmed that they always factored the calculation of expected laid-off employee liability into their NPL valuation. Another factor that could lower the NPL values is the conversion of allocated land-use rights. Historically, the Chinese government has awarded certain SOEs with land-use rights to carry out specific

infrastructure projects. An NPL investor wishing to convert the land for other commercial purposes would have to pay a fee of 20 to 40 percent of leasehold value to the government (Peiser and Wang 2002). This fee will again be incorporated into the NPL valuation, further lowering the pricing that an investor could offer.

V.c.iii.5.Hefty Fees

Li (2005) illustrated the hefty fees in NPL transactions through an example of Goldman Sachs' purchase of approximately \$240 million in NPLs from Huarong's second auction in 2003. The purchase price of the assets is estimated at roughly 10 cents on the dollar, or about \$24 million. The expected recovery price for the NPLs of 20% implies a gross return of about 100%, or \$24 million for Goldman. However, miscellaneous fees, expenses and taxes (Table 8) reduced the value of the net profits to about \$13 million, implying a 56% return. This rate of return is no doubt still an admirable accomplishment for Goldman Sachs. However, this example is sufficient to illustrate that the hefty pre- and at-purchase expenses for NPL auctions are sufficient to scare away any investors without deep financial pockets.

Table 8**Breakdown of Fees and Expenses for Goldman's Huarong II NPL Purchase**

	<u>Estimate</u>
Gross Profits	\$24,000,000
Legal Fees for Loan Document Inspection (on 50% of Huarong II's NPL Portfolios) ^(a)	500,000
Asset Appraisal Fees (on Secured and Guaranteed NPLs)	250,000
Travel Expenses for Due Diligence	250,000
Total Pre-purchase Expenses	1,000,000
Legal Expenses for Drafting of Documents	400,000
Office Rental Expenses	120,000
Loan Monitoring Expenses	200,000
Total Expenses During Purchase	720,000
Servicing Fees to Huarong (5% of NPL Book Value)	120,000
Total Fees and Expenses	1,840,000
Profits Net of Fees and Expenses	22,160,000
Distribution of Huarong's Share of Profits Net of Fees and Expenses (Est. 10%)	2,216,000
Goldman's Profits Net of Fees and Expenses	19,944,000
Taxes (33%)	6,581,520
Net Profits for Goldman	\$13,362,480
Implied Net Returns	56%

(a) Legal fees for document inspection amounted to about \$1,000 for each company. Goldman inspected about 50% of the 1,000 companies in the Huarong II portfolio.

Source: Zhenhua Li. "Are the AMCs Underselling China's Assets?" 21 Century Business Herald, January 10, 2005.

V.c.iv. Importance of Attracting Foreign Investors

PwC's *China NPL Investor Survey 2004* estimates that foreign investors have roughly \$10 to \$15 billion earmarked for investment in the Chinese NPL market over the next three years. While this figure is significant, I believe that in terms of the pure dollar amount, the contribution from overseas investors is not imperative to China's NPL recovery effort. In fact, the domestic investor base is more familiar with the Chinese market and often does not demand a risk premium for investing in China. As a result, while few press releases cover domestic deals, it is conceivable that such investors are likely to bid a higher price for the

assets, especially when they are confident that they could restructure instead of selling/foreclosing on assets to realize value (Slater 2005).

However, foreign financial institutions are the dominant players in auctions, given their deep financial resources and strong expertise in distressed asset management. They tend to be more efficient in the collection process than the AMCs and domestic investors, who are likely to be state-owned and more politically motivated. More importantly, foreign investors' involvement increases the transparency of the NPL sale process and stimulates liquidity in the market. Korea's story testifies to this latter hypothesis. In late 1998, KAMCO first started marketing NPLs to investors. Domestic demand was non-existent then, and only American distressed debt investors participated in the sales (KAMCO 2003). Between 1999 and 2001, KAMCO and the domestic banks created bulk sales transactions targeting foreign investors, and domestic investors finally followed suit in 2002 (KAMCO 2003). Korea's case demonstrates that the early involvement of foreign investors is essential in attracting domestic interest throughout the NPL resolution process. Thus, the Chinese government should continue to reform regulatory processes to facilitate the participation of foreign investments.

V.d. Securitization

V.d.i. Background

Securitization is the creation of securities that are “primarily serviced by the cash flows of a discrete pool of receivables or other financial assets, either fixed or revolving, that by their terms convert into cash within a finite time period plus any rights or other assets designed to assure the servicing or timely distribution of proceeds to the security holders.”

(U.S. Securities and Exchange Commission) In the case of NPL securitization, the securitized receivables are the expected stream of cash flows to be generated from the NPLs. Disparate recovery methods – such as debt collection, liquidation of property, corporate restructuring, and negotiated settlements – still have to be utilized to produce the cash flows in order to service the interest and principal owed to security holders. However, the originators of the NPLs – in this case the banks or the AMCs – are able to recover a portion of the cash recovery value upfront, and may outsource the NPL recovery task to third party servicers.

Since the first securitization of NPLs by Resolution Trust Corporation (RTC) in the United States, this disposition method has played a growing importance in many countries' NPL disposal programs. KAMCO experienced the greatest success among Asian economies, securitizing one-third of its cumulative NPL disposal through the end of 2000³⁷. China is increasingly looking to securitization as the next innovative solution to bulk NPL resolution, with various CBRC and AMC executives voicing strong support for the development of this financial instrument.

In the absence of a specific securitization law, securitization projects in China to date have been facilitated by the *2001 Trust Law*, which allows securitization to be completed via a trust structure and enables sellers to retain upside residual benefits. Table 8 summarizes securitization and “quasi-securitization” projects to date.

³⁷ “Asset Securitization: What did Cinda’s Experience Tell Us?” *Finance Daily*, April 20, 2004, from Huarong AMC’s website, <http://www.chamc.com.cn>.

Table 9
Primary Securitization / Quasi-Securitization Projects Overview

Year	AMC/Bank	Securitized Assets	Details
2003	Huarong	RMB 13.3 Bn (\$1.6 Bn)	<ul style="list-style-type: none"> • Repackaged 256 NPLs • Sold only to domestic investors • Two classes of trust certificates: RMB 1.0 trillion of senior trust certificates were issued to investors → recovery rate of about 10%; the subordinated tranche was retained by Huarong • Interest rate on the senior trust certificates: 4.17% • 80% of senior trust certificates have changed hands • Used the Trust Law • Three-year maturity
2004	Cinda	RMB 2 Bn (\$240 MM)	<ul style="list-style-type: none"> • Assets dispersed in ten regions • Engaged Deutsche Bank as servicer • Established offshore SPV to bypass Chinese legal restrictions • Sold to international investors (U.S. and Southeast Asia) • Promised term: three to five years
2004	ICBC	RMB 2.6 Bn (\$314 MM)	<ul style="list-style-type: none"> • Assets in Ningbo • Securitized portfolio included non-performing and sub-performing loans • First securitization project by a commercial bank • Partnered with CSFB • Three classes of trust certificates: Class A Senior, Class B Junior, and residual equity position retained by ICBC • Class A and Class B, both rated AAA per 2 domestic rating agencies and guaranteed by ICBC • 820MM RMB (\$99MM) in certificates issued to investors → recovery rate of 31.5% • Marketed only to domestic investors • Used the Trust Law

Sources: Various news releases.

In addition to these completed projects, Cinda is planning to launch a securitized product for its RMB 20 billion worth of bad assets in Guangdong, targeting domestic investors, although its planned first-quarter launch has been delayed due to legal obstacles (LeeMaster 2005). PwC's *NPL Asia* report (2004) also reported that one of the four SOCBs will conduct one to two securitizations totaling RMB 5 to 9 billion (\$600 million to \$1.1

billion) in the next few months. These transaction(s) are likely to carry a similar trust structure and target domestic investors.

V.d.ii. Advantages

Asset securitization repackages cash flows generated by a diversified loan pool into tradable securities and can target a broader investor base with different risk characteristics. In the early 1990's, the RTC packaged roughly 500,000 loans for securitization, including home mortgages, commercial mortgages, manufactured housing loans, leases and installment contracts on personal property; 71 out of 74 transactions performed well (Peiser and Wang 2002). Given the large size of China's NPL pool and the slow recovery rate to date, securitization could be a great solution, as it allows the pooling of a large number of assets and results in immediate cash recovery for the seller.

Securitization also enables the creation of security classes with different yields and maturity dates. Each tranche has different levels of loss protection and could attract investors with varying risk appetite. Usually, the issued securities are substantially overcollateralized. For example, in the ICBC securitization (Table 9), only RMB 820 million of AAA-rated securities were issued to investors, with the backing of RMB 2.6 billion of assets. The originating AMC or bank typically retains a residual equity position – in ICBC's case over 68% of the securitized assets. Furthermore, the low rate of 3.24% for three-year RMB deposits and the choppy performance of the stock market in China are likely to make this financial instrument extremely attractive to domestic investors. Lastly, as PwC's *NPL Asia* report (2004) points out, securitization allows the seller to retain the residual upside, which may help the AMCs or the banks defend themselves against accusations that

they are selling the state's assets too cheaply, a recurring theme during NPL direct sales.

V.d.iii. Challenges

V.d.iii.1. Legal Constraints

The most significant challenge to securitization is the lack of a specialized legal framework in China for the financial instrument. Normally, a securitization has to satisfy all of the following requirements: (a) legal true sale of assets to a SPV with narrowly defined purposes and activities; (b) reliance on the performance of the securitized assets instead of the seller's credit for repayment; and (c) insulation of the SPV's assets from the obligor's potential bankruptcy (Henderson 1997).

Notably, current Chinese laws prohibit the use of a SPV as the securitization vehicle, a restriction that has already delayed Cinda's planned RMB 20 billion securitization project. The *1993 Company Law* requires that net assets of a bond issuer must exceed RMB 30 million (\$3.6 million), while the total bond issuance must be limited to 40 per cent of the issuer's net assets. The latter restriction makes the establishment of a SPV virtually impossible, as the only purpose of the SPV is to receive assets and facilitate their securitization.

Instead of using a SPV, two of the three securitization/quasi-securitization projects completed to date (Table 9) used a trust structure facilitated by China's *2001 Trust Law*, which allows the creation of a grantor trust instead of a SPV to hold assets. For example, in the Huarong quasi-securitization (Table 9), Huarong transferred RMB 13.2 billion of NPLs into a grantor trust governed by CITIC; and the trust assigned the entire senior and

subordinated beneficiary interests in the assets to Huarong³⁸. Huarong then requested the CITIC trust to transfer the senior beneficiary interests in the assets (RMB 1.0 billion) to investors in exchange for cash. Huarong and the CITIC trust issued joint notices to debtors that all the debt rights originally held by Huarong have been transferred to the trust³⁹. On an ongoing basis in the future, Huarong will service the NPLs and transfer recovered cash into the trust, which will then pay interest and principals to investors. By retaining the subordinated beneficiary interest, Huarong will keep any cash remaining after the investors are paid in full. The trust structure effectively isolated the securitized NPLs from Huarong's other assets.

A major shortcoming of the trust structure is that the transfer of senior beneficiary interests to investors constitutes a transfer of rights to receivables. It does not guarantee a legal "true sale" of the assets, whereby the investors in the trust are the only ones that hold legal ownership in the securitized receivables, unlike secured lenders to a company that could be challenged in a bankruptcy proceeding. This provision is particularly important because unless the trust holds a perfected debt claim to the assets, a bankruptcy court could decide to prevent the obligor – the original SOE that owned the assets – from paying the trust. The uncertainty of tax and accounting treatment for trusts further complicates asset transfers to securitization vehicles.

V.d.iii.2. Capital Markets and Investor Characteristics

China's debt market is underdeveloped and largely dominated by government bonds

³⁸ "Huarong Net – Huarong's Bold Experimentation in NPL securitization," Huarong website, September 12, 2003.

³⁹ See supra note 38.

that account for 95 percent of all traded debt (Bottelier 2003). The corporate bond market is extremely small and has historically been reserved for large SOEs. Coupon rates have ranged between 150 and 250 basis points above the 1-year RMB deposit rate (Bottelier 2003). This state of the bond market can be favorable for NPL securitization, as the securities can pay yields comparable to corporate bonds while carrying lower credit risks, if they are properly collateralized by diversified assets and overcollateralized. However, domestic investors are still relatively unfamiliar with the concept of securitization, and further education is important to stimulate sufficient demand for the securitized products.

To complicate matters, Chinese financial institutions and insurance companies require special approval from the government to invest in securitized products, often constituting a *de facto* prohibition from their participation. For example, in the 2004 ICBC transaction (see Table 9), only corporate buyers and high net-worth individuals were able to purchase trust certificates from the bank (Davies 2005).

V.d.iii.3. Credit Enhancement

If the cash flows generated from the NPLs fail to meet the interest or principal obligations on the securities, investors could face a loss. In order to protect investors against such risks, external credit enhancement is necessary in addition to internal collateralization. While third-party bond insurers such as MBIA and Ambac are active in the U.S. and other countries with mature securitization laws, they have not yet gained enough comfort with China's legal system to provide credit enhancement for securitizations of Chinese NPLs. A possible solution for China is to have the government use its huge foreign exchange reserves

– in excess of \$600 billion at the end of 2004⁴⁰ – as credit enhancement for the senior tranche(s) of the securities issued by AMC(s) or banks (Chen 2004).

V.d.iii.4.Lack of Asset Transparency

The value of traditional securitized products, such as credit card and auto loans, can be estimated by statistically extrapolating the historical loss data to forecast the expected probability of default and severity of loss for each loan pool. The cash flows of the NPLs can be extremely difficult to estimate, due to a lack of transparency on historical loss data and the short credit history for consumer loans still in their infancy in China, such as mortgage and auto loans. This substantially increases the difficulty of valuation for investors. Encouragingly, AMC(s) and banks are gaining proficiency in identifying and collating the historical cash flow data, which will become a vital part of the disclosure in securitization documents. The establishment of consumer credit information services in China will also ease the securitization of non-performing consumer loans.

In his 2004 paper, Chen suggested using the “Changchun approach,” the separation of low quality assets from profitable assets, as a precursor to securitization. The Changchun approach originated from a field study by Wang (2000). After negotiations with its major creditor(s), a financially distressed SOE transfers its healthy assets to a new legal entity, also a SOE. The main creditor(s) secure a claim on the assets transferred to the new enterprise, which then utilizes the cash flow stream generated by these assets to repay the original debts owed by the old SOE. When applied prior to securitization, this method has the benefit of isolating the most profitable assets from the distressed assets, which substantially increases

⁴⁰ “FDI, Foreign Reserves See Huge Balance in China,” *Sinocast China Financial Watch*, March 18, 2005.

the transparency of the securitization to investors.

VI. Summary

In this paper I explored China's NPL resolution effort, both from a macro-level in comparison to other East Asian economies and from a micro-level in terms of specific resolution methods. I found that while the resolution progress has been somewhat disappointing to date, the government's commitment to maximizing and accelerating NPL recovery is strong, and bulk disposal activities, which require regulatory approval, have picked up considerably since 2004. In order to overcome the inherent weaknesses of its lower-quality NPLs, China should continue to strengthen its regulatory and legal framework. If the government enacts the following actions, the likelihood of success in NPL resolution would increase significantly:

1. Accelerate the NPL transfer process from banks to AMCs and continue the competitive bidding process among AMCs
2. Allow state banks to sell NPLs below book value to third-party investors
3. Award AMCs with immediate, special legal power for collection, foreclosure, and restructuring
4. Improve the legal framework for foreclosure, liquidation, and reorganization
5. Streamline the regulatory approval process for bulk sales/securitizations and limit the approving party to no more than one or two organizations
6. Create a securitization law to enable the creation of SPVs and true sale of assets; clarify tax and accounting treatment for SPVs/trusts

Among the various disposition methods, debt-for-equity swap appears to have only temporarily solved a capital structure problem for the restructured SOEs. As few market purchases of debt-for equity shares have occurred, it is hard to gauge the ultimate value of the converted equity shares. In order to maximize the speed of asset recovery, China has followed KAMCO's model of adopting a wide variety of resolution methods, with a focus on structuring bulk sales and securitization transactions. Such deals have yielded reported upfront recovery rates ranging from 7% to 35%, largely dependent on the asset nature (real estate vs. less liquid assets) and quality (geographic location, aging, etc.). Various banks and AMCs have successfully accomplished direct NPL sales to domestic and foreign investors, although many transactions were slowed by the protracted regulatory approval process and legal impediments, among other obstacles. Securitization, on the other hand, is being heavily researched and has already experienced successful experimentations despite the lack of a perfected legal structure. Foreign investors have played an irreplaceable role in China's NPL resolution program, both by providing the financial resources and, even more importantly, by contributing their intellectual capital and stimulating liquidity in the domestic market. Given the large NPL portfolio remaining in China's financial system and the inevitable creation of new NPLs from the recent surge in bank loans, it is essential for the government to continue improving the regulatory and legal process to retain foreign participation in the market.

A recurring theme in the resolution process is the difficult situation of the Chinese AMCs, who act as the intermediary between the government, ultimate owners of the NPLs, and investors. Their status as state-owned enterprises obliges them to answer to a multitude

of political authorities and promise not to sell the country's assets too cheaply, especially to foreign investors. On the other hand, negotiating prices incessantly with investors slows down the disposition process and gives the AMCs the reputation of holding unrealistic expectations, with the consequence of eventually discouraging investor interest in the NPLs. This problem can be alleviated by the following actions: (a) increase transparency in the NPL sales process to defend against criticisms that the AMCs are under-selling assets; (b) introduce private sector involvement on the Board of the AMCs; and (c) clearly prioritize the objective of maximizing asset recovery value over maximizing the speed of asset resolution, or vice versa.

To the credit of the Chinese government, China is dealing with its NPL problem before a financial crisis hits, unlike the other Asian economies mentioned in this paper. I believe that the country's colossal NPL portfolio is largely a result of historical reasons, and that the governmental authorities are moving in the right directions to conform its financial system to international standards. While the recent buildup of new NPLs due to rapid credit expansion is concerning, the government has again proven its determination to avoid a hard landing. The country's sustainable economic growth, its immense foreign exchange reserves, a closed capital market, and the healthy margin between lending and deposit rates at banks all point to the likelihood that China will be able to circumvent a financial crisis.

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Does Gender Matter?
A Comparative Study of Performance of American CEOs

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INTRODUCTION

Female senior managers are becoming an increasingly widespread phenomenon, attracting a significant amount of media attention. For example, according to USA Today (2003), the average stock price performance of eight Fortune 500 companies run by female Chief Executive Officers (CEOs) significantly exceeded that of the S&P 500 index in 2003.

The primary question addressed by this paper is whether the performance of female CEOs is different from the performance of their male counterparts. This question is motivated by prior research discussed below suggesting that there are substantial “glass ceilings” for the promotion of women in corporate America. If so, it is arguable that those women who are eventually promoted to the CEO level possess superior skill sets compared to an average male CEO, which may translate into a superior performance. In addition to the main research question, the current paper also investigates whether female CEOs and male CEOs differ in their attitude towards financial risk. This second question follows from the findings of prior research documenting differences in risk tolerance between males and females (e.g. Jianakoplos and Bernasek (1996)).

Studying a sample of 58 companies run by female CEOs over the 20-year period between January, 1985 and December 2004, I find that the stock price returns of the companies run by newly appointed female CEOs, are significantly lower than the stock price returns of comparable companies run by male CEOs during the year following the female CEO appointment. Moreover, this paper doesn't find evidence of leverage differences between the female CEO and male CEO run companies.

The paper proceeds as follows. Section II reviews prior research. Section III discusses research design, sample selection procedure, variable definitions and sample descriptive statistics. Section IV outlines the tests, discusses the results and highlights the limitations underlying the study. Section V summarizes research questions and major findings.

I PRIOR RESEARCH

In developing the first research question, I build on the strand of research investigating female status and performance in corporate America. For example, Zelechowski and Belemoria (2004), who study the characteristics of female and male corporate inside directors in the US, find that women insiders differ significantly from a random set of men insiders on several characteristics relevant to their dual positions as directors and officers of the corporation. While they do not differ on the experience-based qualifications of board tenure or corporate tenure, women insiders hold fewer directorships of other corporations, hold less powerful corporate titles, occupy disproportionately more staff functions, are less likely to be top earners of the corporation, and earn considerably less than men inside directors.

Another example, Cobb-Clark (2001) documents that women are less likely to be promoted than men, and that had men and women faced the same promotion standards, promotion rates would have been higher for women than for men. One way to interpret these findings is that there are substantial glass ceilings for female promotion to the highest levels of companies. Further, Bertrand and Hallock (2001) study the five highest paid executives in a sample of large US firms, and find that women represent only 2.5% of the sample and earn 45% less than their male counterparts. As much as 75% of the gap

could be explained by under-representation of women in larger companies and in the positions of CEO, Chairperson of the board, or President. The authors point out that the results of the research don't rule out the possibility of discrimination via gender segregation and unequal promotion.

This research leads me to my first research question: does the performance of female CEOs differ from the performance of male CEOs?

Related research has also studied financial risk taking by women. Several studies such as Bajtelsmit and VanDerhei (1996), and Hinz, McCarthy, and Turner (1996) have found that women invest their pensions more conservatively than men. In addition, Jianakoplos and Bernasek (1996) studied the relationship between the percentage of risky assets to total assets and several explanatory variables including gender and wealth. Their study showed that single women are relatively more risk averse than men or married couples. The study also compared the self-reported risk tolerance among different groups and revealed that women also perceive themselves as being risk averse. Zinkhan and Karande (1991) surveyed MBA students using the Kogan and Wallach (1964) Choice Dilemmas Questionnaire as risk-taking behavior measurement tool. They found that female MBA students were significantly less likely to take business risks than males.

This literature leads me to my second research question: do female CEOs have different attitude towards financial risk than male CEOs?

II METHODOLOGY

II.1 Research Design

The main research question is whether the performance of companies run by female CEOs differs from the performance of companies run by male CEOs. There are

several different metrics that can be used to evaluate performance, such as return on equity, return on assets, stock performance, etc. I choose to measure company performance as abnormal buy-and-hold stock returns around the appointment of a new female CEO. To calculate abnormal return, I subtract the raw return from the expected return. Finance literature offers numerous ways to compute expected return such as the market model, CAPM, three-factor model, four-factor model, etc. However, given my research question and my unique sample, I adjust for the expected return by computing the stock returns on a matched pair sample as in Bartov and Mohanran (2004).

Specifically, each company from the female CEO sample is paired with a male CEO led company from the same 2-digit SIC code group. The pairings are then refined by sales and market capitalization to form a three-dimensional match based on data at the end of the calendar year preceding the respective female CEO nomination. I chose to match by both variables simultaneously in order to control for company size and potential under or over valuation, measured by the relationship between sales and market capitalization. To measure the proximity of two companies based on the above described variables I introduced the following variable:

$$Z^* = (Z_{SALES}(\text{female}) - Z_{SALES}(\text{male}))^2 + (Z_{CAP}(\text{female}) - Z_{CAP}(\text{male}))^2,$$

where Z_{SALES} and Z_{CAP} are calculated as number of standard deviations from the sample average sales and average market capitalization for the respective 2-digit SIC code group in the given year.

The above described matching procedure has an obvious limitation of not controlling for the CEO change. Prior academic research suggests that CEO transition might have a significant influence on stock price performance around the CEO

appointment date. For example, Berman and Lin (2000) demonstrate a negative market reaction to the announcements of top executive departures, especially when the CEO is dismissed or leaves to take up another job. In addition, a study of listed French companies by Dherment-Ferere and Renneboog (2002) finds that the nomination of an external manager following a performance related forced resignation of a CEO is rewarded by the market by a 2% increase in abnormal return, while promotion of an internal CEO in a poorly performing firm is followed by a 1% drop in abnormal return on the date of announcement. This research implies that, ideally, the match sample would have to consist of male CEO run companies that have experienced a CEO transition on the same date as the respective companies in the female CEO sample, in addition to being comparable on sales and market capitalization dimensions. Constructing such a matched sample, however, would be quite challenging due to data collection and matching difficulties, and thus is left for future research.

The second research question is whether the attitude towards financial risk differs between female and male CEOs. I chose financial leverage as a measure of company risk since this variable can be promptly changed by the CEO. Financial leverage can be defined in several ways using either market value of debt, book value of debt or book value of long-term debt in the nominator and either market capitalization, book value of equity or book value of assets in the denominator. Since my sample period spans twenty years, I use the book value of debt because it is readily available in a machine readable form. Since Compustat does not provide a consistent measure of short-term debt, I use long-term debt in the nominator of the leverage ratio. I chose book value of assets for the

denominator of the leverage ratio since this measure is stable and does not fluctuate significantly with stock performance.

II.2 Sample Selection

Studying the companies listed on the AMEX, NYSE and Nasdaq exchanges allowed the gathering of a sample of 84 female CEOs. The sample data was collected from three sources. First, I retrieve the biographies of company officers, which in most cases determined a CEO's gender, from the Hoover's database. However, Hoover's only provides the biographies of current CEOs. To retrieve the gender of CEOs who no longer held their position at the time of the study, I use the Compustat Execucomp database. Finally, I study the proxy statements of all sample companies to verify the CEO gender, as well as to collect the data on outsider/insider status of newly elected female CEOs. While the initial sample consisted of 84 companies, the final sample size is 58 companies. I lost 26 sample companies due to data limitations.

Monthly stock returns data were retrieved from CRSP. Accounting and stock price data were retrieved from the Compustat. The sample period spans from January, 1985, to December, 2004.

II.3 Descriptive Statistics

The results in Table 1 demonstrate that the matching procedure described above has proved efficient. Specifically, the findings indicate that there is little evidence of statistically significant differences between the female and male samples on either of the matching variables.

Matching Variable	Female Sample		Male Sample		Differentials	
	Mean		Mean		Mean	P-value
Sales	2276		2474		-197	0.876
Market Capitalization	2226		2048		177	0.899

Table 1. Sample Statistics

III Results

III.1 Tests of the First Hypothesis

To test the first hypothesis of whether the stock returns of female CEO led companies are significantly different from the returns of comparable companies led by male CEOs, I perform a two-sided Student's t-test for mean of return differentials as well as Wilcoxon test for the median of return differentials between the stock prices of companies in female and male samples. To separate the long-run effects of female CEO performance from the market reaction on the appointment of a new female CEO I study annual as well as monthly return differentials around the CEO appointment date. To examine the long-run effect of female CEOs on stock price performance, I study annual returns during a six-year period around the female CEO appointment. The results are presented in Table 2.

Year Relative to the Female CEO Appointment Date (t)	Female Sample		Male Sample		Differentials			
	Mean	Median	Mean	Median	Mean	P-value	Median	P-value
t-3	20.67%	7.80%	14.71%	10.00%	5.96%	0.703	-1.80%	0.799
t-2	19.36%	1.10%	14.42%	5.70%	4.94%	0.811	-6.50%	0.512
t-1	17.73%	4.70%	29.81%	18.80%	-12.07%	0.312	-12.00%	0.247
t	1.15%	1.10%	26.70%	21.60%	-25.55%	0.010	-21.00%	0.013
t+1	32.22%	16.60%	15.82%	9.10%	16.40%	0.259	6.90%	0.398
t+2	26.20%	20.20%	8.92%	9.00%	17.28%	0.100	11.00%	0.148

Table 2. The Test of Annual Return Differentials

The results of both Student's T-test and Wilcoxon test of annual return differentials indicate that the stocks of companies run by newly appointed female CEOs

under-perform the stocks of comparable companies run by male CEOs by more than 20% over a one year period following the appointment of a female CEO. This result is statistically significant at 1% significance level. No statistically significant return differentials were observed in either second or third year after the female CEO appointment. This finding is inconsistent with the implications of prior research suggesting that female CEOs might have a more positive influence on company performance.

To study the immediate effect of the announcement of a female CEO appointment on the stock price performance, I examine monthly returns in a six-month period around the announcement date. The results are presented in Table 3.

Month Relative to the Female CEO Appointment Date (t)	Female Sample		Male Sample		Differentials			
	Mean	Median	Mean	Median	Mean	P-value	Median	P-value
t-3	8.18%	6.02%	5.91%	5.91%	2.27%	0.462	1.50%	0.554
t-2	8.15%	3.34%	2.85%	1.07%	5.30%	0.169	3.00%	0.280
t-1	-0.48%	-1.95%	-1.18%	-1.74%	0.70%	0.846	-0.25%	0.932
t	3.10%	3.49%	5.12%	3.79%	-2.01%	0.553	-1.05%	0.651
t+1	3.74%	1.08%	0.19%	0.34%	3.55%	0.240	2.00%	0.384
t+2	2.53%	1.79%	3.08%	0.46%	-0.55%	0.848	-0.55%	0.818

Table 3. The Test of Monthly Return Differentials.

Interestingly, the monthly return differentials during the three months following the announcement and the three months before the announcement are not statistically significant.

One potential explanation for this observed pattern in the stock price returns may be that newly appointed CEOs engage in earnings manipulations as documented by Wells (2002). Using a sample of Australian firms, Wells demonstrated that incoming CEOs undertake earnings management using abnormal and extraordinary items to reduce the income in the year of CEO change. These activities aim at establishing a low earnings base against which the performance of a new CEO will be measured. Downward earnings

management in turn can depress company stock price. Therefore, if the newly appointed female CEOs as well as their male counterparts engage in earnings manipulations, and the write-offs are announced over the course of the year that could potentially result in underperformance of the stocks of the respective companies during the year after the new CEO appointment.

III.2 Tests of the Second Hypothesis

To test the second hypothesis of whether the leverage of companies led by female CEOs is equal to the leverage level of comparable male CEO led companies I run a two-sided Student's T test as well as Wilcoxon test for the differences in leverage ratios between the female and male samples during a six-year period around the female CEO appointment. As Table 4 demonstrates, neither test shows statistically significant discrepancy between the two samples. Thus the null hypothesis of leverage equality cannot be rejected.

Year Relative to the Female CEO Appointment Date (t)	Female Sample		Male Sample		Differentials			
	Mean	Median	Mean	Median	Mean	P-value	Median	P-value
t-3	25.70%	15.00%	17.81%	13.10%	7.89%	0.463	-0.50%	0.788
t-2	18.17%	16.40%	18.05%	13.00%	0.12%	0.969	-0.96%	0.576
t-1	15.95%	13.40%	17.06%	12.50%	-1.11%	0.681	-0.92%	0.543
t	15.72%	12.10%	16.58%	12.69%	-0.86%	0.805	1.07%	0.633
t+1	15.95%	15.80%	17.13%	13.80%	-1.18%	0.711	-0.46%	0.851
t+2	14.29%	12.40%	16.88%	14.50%	-2.60%	0.341	-1.29%	0.546

Table 4. The Test of Leverage Differentials

One way to interpret this result is that the attitude towards risk among female CEOs is not different from that of male CEOs. The results of the leverage test also have implications for the stock performance test. Since leverage after the female CEO appointment does not change comparative to male run companies, changes in leverage cannot explain the differentials in stock returns in the year following the female CEO appointment.

III.3 Limitations of the Study and Future Research

One limitation of this study is its small sample size. A second limitation concerns the matching procedure, which does not control for the effect of a leadership change in the female CEO sample. This limitation may be serious since the prior research suggests that such factors as voluntary versus forced resignation and insider versus outsider succession are significant explanatory factors of stock price performance.

Recognizing the limitations of this research, I suggest several directions for future research. To separate the pure effect of CEO gender, the control sample could be constructed of companies that experienced a CEO transition during the same time period. Another approach could be to introduce additional explanatory variables suggested by prior research, such as the reason for the incumbent CEO departure and the successor CEO origin. However, given the relatively small sample size, explanatory power of those variables is not expected to be significant.

Still, to assess the possibility of incorporating additional variables into my current research design I run a regression of stock price return differentials on the successor CEO origin. I chose successor CEO origin as the explanatory variable since this variable is the most directly observable. The origin of a new female CEO was measured by a dummy variable Outsider, which is given a value of 1 if the successor CEO is an outsider and a value of 0 if the successor CEO is an insider. Out of 58 companies in the sample only 13 incoming CEOs were outsiders. I use the annual returns one year after the female CEO appointment since only during this period the return differentials are statistically significant. The regression produced the following equation: $\text{Return Differential} = -0.243 - 0.057 \text{ Outsider}$. This result is not statistically significant since the p-value of the Outsider variable is 0.808 with R^2 of 0%.

Another approach to separate the effect of CEO gender is to add a random sample of companies run by newly appointed male CEOs matched with comparable companies run by continuing male CEOs to the current sample. After that the differentials between the stock price returns of sample companies run by newly appointed CEOs and sample companies run by continuing CEOs can be regressed on the successor CEO gender along with new CEO origin and the reason for the departure of the previous CEO.

IV Summary

This paper investigates whether there are gender related differences with respect to the CEO's contribution to company performance and the choice of leverage. Based on prior research showing that women are discriminated when it comes to promotion to higher management positions, I hypothesize that women who ultimately reach the position of CEO possess superior skills relative to their male counterparts. Therefore, I predict superior performance from female CEO led companies. Another strand of research shows that women are more risk averse when financial decisions are concerned. To test the relevance of this phenomenon for women in CEO position this paper studies the differences in leverage between female CEO and male CEO led companies.

This study demonstrates that female CEO run companies significantly underperform male CEO run companies in the year following the female CEO appointment. Starting from the second year after the female CEO appointment no statistically significant differences in stock price performance between female CEO and male CEO run companies was observed. However, this result is inconclusive since the underperformance can also result from other factors, such as the mere CEO succession itself or earnings management, which were not controlled for. This study also does not

find any statistically significant difference between the leverage levels of female CEO and male CEO run companies.

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Appendix

Study Samples

Female CEO Sample				Male CEO Sample			
Company Name	SIC Code	Sales	Market Cap	Company Name	SIC Code	Sales	Market Cap
E.piphany Inc	7372	96.13	538.75	Interwoven Inc	7372	111.51	516.90
Allied Healthcare International	8082	294.38	139.03	Radiologix Inc	8093	257.01	73.72
Sonesta International Hotels	7011	90.13	17.00	Arlington Hospitality Inc	7011	76.53	17.17
The Boyds Collection	3942	131.34	393.09	Wms Industries Inc	3990	174.69	478.97
Alaska Communications Systems Group	4813	343.50	56.57	Talk America Holdings Inc	4813	317.51	153.83
Bitstream Inc	7372	8.47	14.03	P1m Equip Growth Fd V -Lp	7359	9.28	11.87
Tower Automotive	3460	2,754.46	252.23	Palin Holdings Inc	3411	1,988.28	449.94
Global Epoint	3571	0.18	5.34	Silicom Limited	3576	2.73	1.23
Rite Aid Corporation	5912	15,800.92	1,262.03	Toys R Us Inc	5945	11,305.00	2,125.00
Advent Software	7372	159.44	447.79	Open Text Corp	7372	152.48	456.15
Russ Berrie & Co Inc	3942	321.36	693.33	Yankee Candle Inc	3990	444.84	869.74
Cyberoptics Corp	3827	24.63	39.00	Mocon Inc	3829	19.93	38.78
The Phoenix Companies	6311	2,452.90	714.74	Landamerica Financial Gp	6361	2,586.55	650.47
Claire's Stores	5600	918.74	734.92	Pacific Sunwear Calif Inc	5651	684.84	669.18
Banta Corporation	2750	1,457.94	730.03	Standard Register Co	2761	1,187.64	514.26
Pathmark Stores	5411	3,963.30	741.13	Pao De Acucar Brasil -Gdr	5411	3,515.39	1,090.98
Rubio's Restaurants	5812	112.94	29.09	Elxsi Corp	5812	105.40	30.69
Zale Corp	5944	2,068.24	1,458.05	Insight Enterprises Inc	5961	2,082.34	1,031.31
Salix Pharmaceuticals	2834	22.35	338.36	Novavax Inc	2836	24.07	328.46
Ihop Corp	6794	324.44	606.83	Colonial Properties Trust	6798	318.68	653.43
Axcelis Technologies	3559	365.26	1,255.16	Cirrus Logic Inc	3576	417.53	1,096.98
Edgewater Technology	7370	26.57	45.80	Mitcham Industries Inc	7359	27.18	39.82
Lucent Technologies	7370	21,294.00	21,509.25	Electronic Data Systems Corp	7370	21,543.00	32,719.94
Qrs Corp	7372	143.49	187.87	Pegasus Solutions Inc	7370	161.53	170.86
Argonaut Technologies	2835	17.45	155.30	Columbia Laboratories Inc	2834	13.17	131.51
Xerox Corporation	3577	18,701.00	3,092.16	Sanyo Electric Co Ltd -Adr	3579	18,072.56	15,672.14
Cns Inc	3842	68.89	50.29	Candela Corp	3845	75.39	58.91
Immunomedics	2835	4.78	1,060.57	Cerus Corp	2836	1.85	1,057.41
Visx Incorporated	3845	200.25	634.14	Cooper Companies Inc	3851	197.32	576.59
Gymboree Corp	2300	448.61	389.06	Oshkosh B'Gosh Inc -Cl A	2300	453.06	225.18
Lee Enterprises Inc	2711	422.14	1,306.09	Journal Register Co	2711	463.97	720.47
Carver Bancorp	6035	30.86	20.25	Independence Fed Svgs Bk	6035	25.99	16.97
Chester Valley Bancorp	6020	34.58	61.30	Sterling Bancorp/Ny	6020	97.73	133.84
Ag1 Resources	4924	1,068.60	970.70	Equitable Resources Inc	4923	1,062.74	1,092.36
Hot Topic Inc	5600	168.95	224.62	Christopher & Banks Corp	5621	143.40	141.73
Coachmen Industries Inc	3716	606.47	487.68	Orbital Sciences Corp	3760	461.44	554.78
Aspect Communications Corp	3661	489.11	1,935.20	Adtran Inc	3661	367.21	1,976.18
Alpharma Inc -CL A	2834	732.44	910.60	Church & Dwight Inc	2840	730.04	1,036.97
Columbia Banking System	6020	94.50	139.16	Sterling Bancorp/Ny	6020	97.73	133.84
Ventas Inc	6798	149.93	826.91	Choice Hotels Intl Inc	6794	165.38	776.45
Avon Products	2844	5,212.70	11,616.55	Air Products & Chemicals Inc	2810	4,919.00	8,458.80
Zale Corp	5944	1,427.01	1,173.90	Systemax Inc	5961	1,435.65	844.49
Hewlett-Packard Co	3570	47,061.00	69,364.72	Nec Corp -Adr	3571	40,334.00	14,724.44
Tennant Company	3580	389.39	366.50	Kulicke & Soffa Industries	3559	411.04	414.76
Johnson Outdoors	3690	328.53	74.87	Lamson & Sessions Co	3640	270.91	68.91
Cascade Bancorp	6020	23.15	116.82	Riverview Bancorp Inc	6035	22.78	103.11
Syms Corp	5651	352.96	211.96	Amern Eagle Outfitters Inc	5651	405.71	349.01
Vermont Teddy Bear	3942	17.04	12.26	Womens Golf Unlimited Inc	3949	8.56	2.07
Firstfed Financial Corp	6035	308.09	231.64	Webster Financial Corp	6035	291.06	291.28
Department 56 Inc	3260	252.05	826.83	Waterford Wedgwood Plc -Adr	3260	551.20	667.84
Siebert Financial Corp	6211	21.04	8.02	Crown Financial Group Inc	6211	24.95	9.97
Avant Immunotherapeutics	2835	3.96	62.13	Interferon Sciences	2836	3.31	46.84
Charming Shoppes	5621	1,272.69	681.67	Burlington Coat Factory Wrhs	5651	1,468.44	483.25
Theragenics Corp	2834	4.38	58.21	Interferon Sciences	2836	3.31	46.84
Autodesk Inc	7372	237.85	1,238.91	Cadence Design Systems Inc	7372	392.26	1,060.17
Playboy Enterprises	4841	161.77	118.75	Clear Channel Communications	4832	32.46	39.78
Pinnacle Systems	3577	331.08	540.70	Ionics Inc	3559	347.41	570.05
Books-a-Million	5940	460.16	106.30	Chronimed Inc	5912	435.71	106.35

**An Examination of Distress
in the Electric Power Industry**

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I. Introduction

Electric power markets worldwide began to deregulate in the mid 1990s. Regulatory acts of the 1980s, such as PURPA in the U.S., had set the stage for independent power producers (“IPPs”) to construct power plants and contract directly with utilities and industrials. As markets deregulated and the main industry players established themselves, energy trading became part of the industry. Many of the independent firms began their own “merchant” power business, selling electricity at fluctuating market prices rather than through long term contracts.

Throughout the late 1990s and early 2000s, the power industry demonstrated enormous growth. The enthusiasm that the IPPs showed for power plant construction was only bettered by Wall Street’s enthusiasm for financing them. A downturn in the industry in late 2001 resulted in numerous defaults and financial distress¹. Figure 1 shows the growth in liabilities of the distressed and bankrupt IPPs (all of which were ‘distressed’ in 2002).

Six firms in the industry defaulted with total liabilities at the time of default of \$42B² (listed in Appendix B). However, an examination of the other public firms in the industry showed that virtually every other independent power producer was distressed (Appendix B). Figure 2 shows the yield-to-maturity for a selection of bonds of the distressed companies, none of whom defaulted.

¹ “Distress” – defined as having a yield to maturity at least 1000 basis points over High Yield Average for the year defined by Altman High Yield Bond Default and Return Report

² PG&E and Enron have been excluded from the sample because it is believed they are anomalies caused by poor government and fraud, respectively.

Figure 1: Liabilities of distressed and bankrupt IPPs³

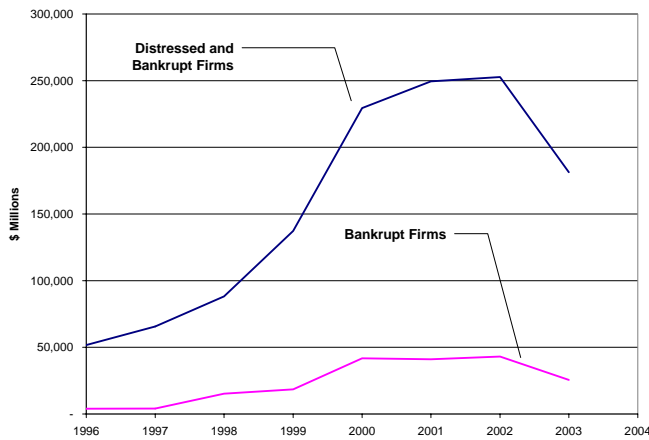
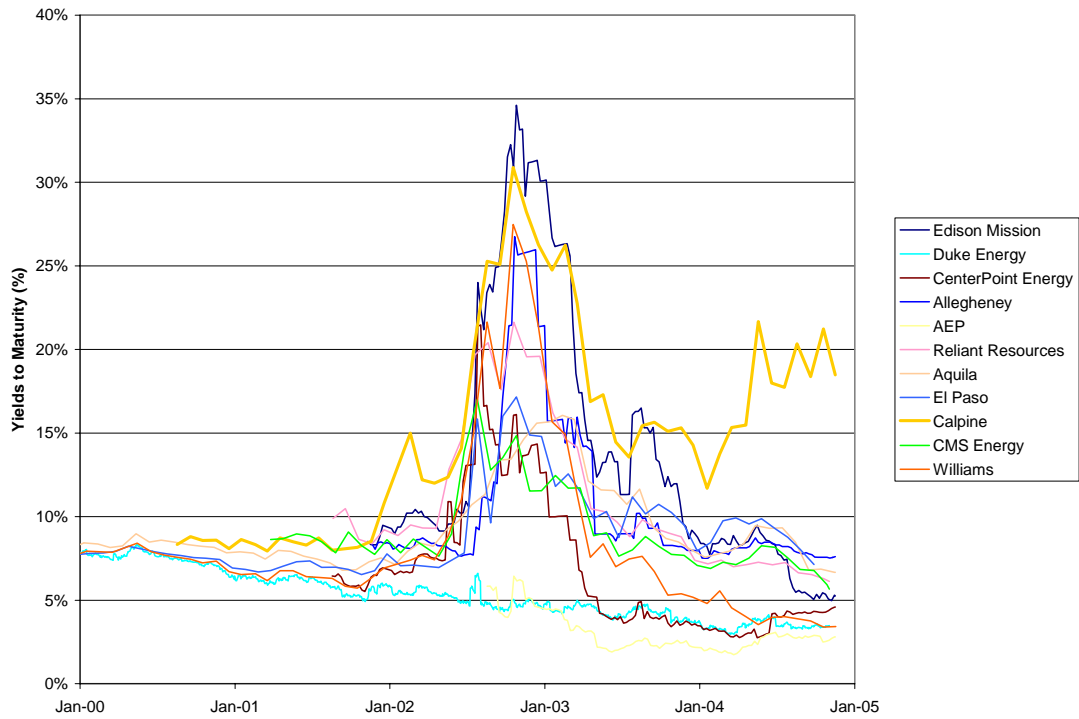


Figure 2: Yields to Maturity for senior unsecured bonds of varying maturities⁴



The goal of this study is to try to determine whether the bankruptcies and financial distress experienced in the power industry could have been predicted using

³ Source: Compustat

⁴ Source: Reuters (www.ejv.com)

known models. Three firms are then examined in detail in an attempt to identify factors not captured by the model to illustrate why some firms declared bankruptcy while others did not. The three firms are found to be similar in terms of common financial ratios. However, the main causes of bankruptcy are found to be relaxed ratings criteria that did not take increased risks into account as the industry changed and failure of management to act when faced with insolvency.

II. Bankruptcy Prediction Models

Beaver (1967) was the first to use ratio analysis as a predictive tool for bankruptcy. His univariate analysis set the stage for other methodologies developed including that by Altman in 1968. Altman improved the technique of Beaver through the use of multi-discriminate analysis. Altman determined five variables that reflected liquidity, profitability, leverage, solvency, and activity. These variables were chosen based on their contribution as univariate predictors, popularity amongst practitioners and correlation with other variables. A later version of the Z-score was developed called the Z'' ("Z double prime"). It was developed specifically for firms in emerging markets, with unique financing structures or where asset turnover is potentially misleading.⁵ The final form of the Z-Score and the Z''-score are in Appendix A.

⁵ Altman (2000)

Although it was developed in 1968, the Z-score continues to be relevant and accurate as a bankruptcy prediction tool. In one study, it was found that the Type I⁶ accuracy over three periods ranging from 1968 to 1997 ranged from 82%-94%.⁷

Another study compared the accuracy of four bankruptcy prediction models: the Z-score, a cash flow “logit” model, a returns analysis model and a variance analysis model, on a sample of firms taken from the years 1980 to 1991.⁸ The Z-score performed better than any of the other models resulting in a Type I accuracy of 80% and a Type II accuracy of 71% one period prior to default.

Most bankruptcy prediction studies have focused on firms from a variety of industries, while few have focused on one particular industry. Foreman set out to develop a new model based on bankruptcies of telecommunications firms (CLECS).⁹ It is unclear, however, how generic the model is and whether it can be applied to any other firm, or at any other time. Ricci¹⁰ tested the Z-score and a cash flow model¹¹ as predictors of bankruptcies. The result was that the Z-score correctly classified 87% of bankrupt firms one period prior to bankruptcy however the model only correctly classified 30% of non-bankrupt firms, implying that the Z-scores for the entire telecom industry were very low and practically all firms were predicted to be bankrupt.

⁶ “Type I” accuracy refers to the correct classification of bankrupt firms as bankrupt; “Type II” accuracy refers to the correct classification of non-bankrupt firms.

⁷ Altman (2000)

⁸ Mossman et al (1998)

⁹ Foreman (2003)

¹⁰ Ricci (2003)

¹¹ Foster and Ward (1997)

III. Application of Bankruptcy Models to the Power Industry

Following the lead of Ricci, the Z'-score was used to try to determine whether the bankruptcies in the power industry could have been predicted. Figure 3 shows the Z'-Score for a sample of bankrupt firms in the power industry. It appears that the Z'-score, in general, declines for the year prior to bankruptcy for this sample. However, the Z'-Score for distressed firms shows the historical range for this industry is low and the bankrupt firms are not significantly different than the distressed firms.

Firms in the industry have continually operated in the "bankrupt" zone of the Z-score. There are two views that could be taken of this:

1) The Z-score is inappropriate as a bankruptcy predictor for this industry. The natures of the firms are sufficiently unique that a model derived from other industries is meaningless.

2) The Z-score is correct, and most firms are, and always have been, likely candidates for bankruptcy. The markets of 2003 and 2004 were simply incredibly permissive and allowed bail-outs of those firms that made it through 2002.

The Z-Score has not proven to be a conclusive indicator of bankruptcy for the power industry. Three firms will be examined in detail in order to illustrate causes of bankruptcy that cannot be captured by a quantitative model. Two of the firms to be examined, AES and Calpine, were distressed but did not default on their loans or become bankrupt. The third firm, NRG Energy, defaulted on loans and subsequently underwent a Chapter 11 reorganization. All three firms' primary business is power generation.

Figure 3: Z''-Score for Bankrupt Firms

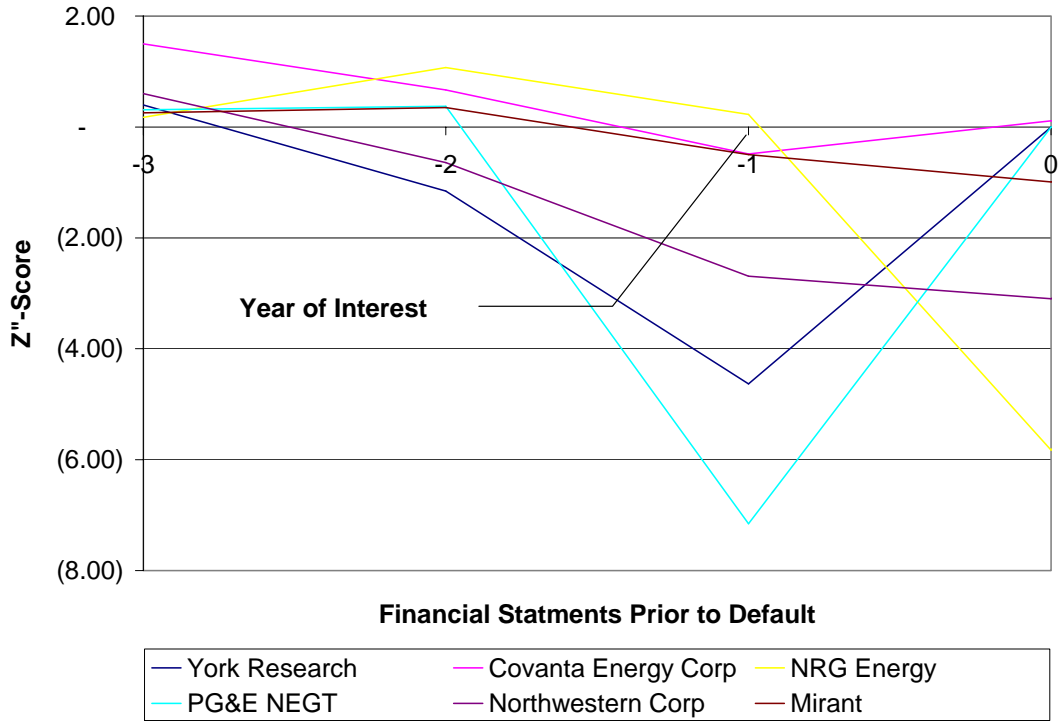
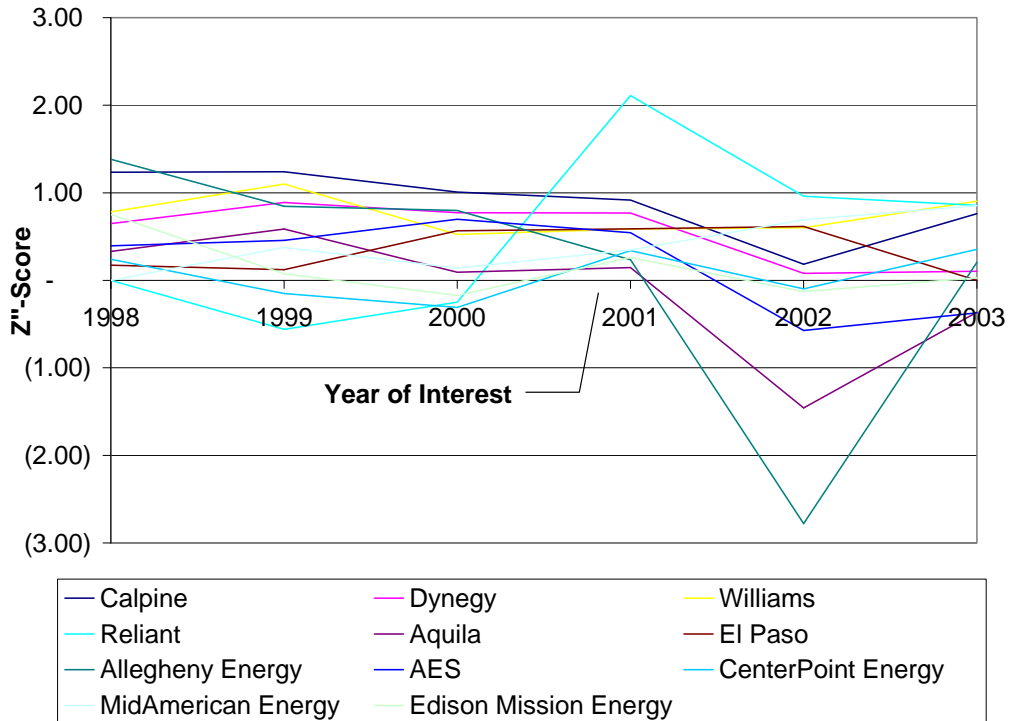


Figure 4: Z''-Score for Distressed Firms



IV. Significant Events in the Industry

Prior to delving into the details of the specific firms, a description is provided of some events that led to the downturn and distress in the power industry. These events are relevant to all three of the firms that are discussed.

California and PG&E

Insufficient electric capacity in California caused power prices there to skyrocket during late 2000 and early 2001. To appease consumers, PG&E was forced to sell power at low fixed prices regardless of the purchase price. PG&E lost \$9 billion in a matter of months and filed for bankruptcy in April 2001. California embarked on a ‘witch hunt’ for the next two years bringing lawsuits against any and all merchant generators accusing them of trading improprieties.

Weather

The winter of 2001/2002 was particularly warm and then was followed by a cool summer in 2002, both of which are bad for energy trading. Cold winters produce high gas prices and high electricity demand resulting in increased volatility. Hot weather produces high electricity prices

Oversupply

During the expansion of the late 1990s, electricity demand grew at an increased rate and merchant generators constructed plants to meet the demand, often with the expectation that aging and polluting coal plants would be shut down. The result of this enthusiasm was an over-supply of capacity and lower margins. In addition, as the natural gas price increased, utilities became hesitant to shut down their coal plants due to lower prices for coal and therefore higher margins on sales.

Enron Bankruptcy

When Enron declared bankruptcy in late 2001, not only did trading counterparties incur losses, but the result was increased scrutiny of all firms in the power industry and especially those with complicated financial structures. Moody's and S&P downgraded or put on credit-watch many of the merchant generating firms. Bond prices declined immediately for all merchant generating firms.

Worldcom

On July 22, 2002, Worldcom filed for Chapter 11. Although Worldcom had nothing to do with the power industry, it affected the credit markets and made it even more difficult to refinance debt. The ratings agencies reacted, again increasing their scrutiny of firms with a lot of debt and complicated structures.

V. Applied Energy Services Corp (AES)

History

AES was founded in 1981 and originally built power and steam plants for industrial customers. By the mid 1980's, AES was also providing electric utilities with power under long-term contracts that was below the utility's "avoided cost". At this time, the company established its trademark project structure with significant reliance on "non-recourse" project financing.¹²

In the late 1980s, AES began its global expansion into the UK. Early in the 1990s, AES also entered Argentina, Pakistan, China, Australia and Kazakhstan, and later

¹² Non-recourse financing is debt that is held at the subsidiary level and is non-recourse to the parent, meaning that if the subsidiary defaults, the parent is not liable for the debt.

acquired distribution companies and electric generating companies in countries such as Hungary and Brazil. AES was added to the S&P 500 in 1998, and in 2000 the stock price exceeded \$70 per share (market cap ~\$28B).

AES 1998-2001

AES was in the middle of a period of extreme growth in 1998 operating plants generating 14,500 MW worldwide, with 5,254 MW under construction for a total of approximately 20,000 MW. Most (or all) of this capacity was contracted. AES had become one of the largest of the world’s independent power producers.

By year-end 2001, AES had ownership of over 50,000 MW of capacity, an annual compounded growth of 60% since 1998. Assets had grown to \$36B, with total debt of \$22B.

Table 1: Breakdown of AES Net Income

	% of Pre-tax Income	
	2001	2000
Contract Generation	31%	31%
Competitive Supply	9 %	21%
Large Utilites	51%	46%
Growth Distribution	9%	2%

AES, in 2001, had diversified into four business units Growth Distribution, Large Utilities, Contracted Generation and Competitive Supply. Growth Distribution represents generation and transmission assets in growing (emerging) economies. Large Utilities represents five integrated utilities located in the US, Brazil and Venezuela. Contracted Generation is their traditional business where power is sold forward through long-term

contracts and comprised 42% of capacity in 2001. Competitive supply includes all plants with less than 75% of its capacity contracted or with power contracts less than 5 years and comprised 38% of capacity in 2001. Competitive supply is used here as a proxy for merchant power, since it is hedged incompletely or only short-term. The collapse of UK and US electricity prices resulted in competitive supply making up a smaller portion of AES revenues in 2001 compared with 2000.

Table 2: Overview for AES (Consolidated), 1998 vs 2001

	YE 1998	YE 2001
Number of Projects	96	179
Total MW	145,00	50,764
MW in construction or pending acquisitions	5,254	7,500
EBITDA (millions)	929	2,827
LTD/Assets	54%	62%
EBITDA to Int Exp	1.7x	2.0x
Total Debt to EBITDA	6.0x	8.0x
Recourse Debt to EBITDA	1.8	1.9
Corporate Unsecured Rating	BB	BB

Capital Structure

AES is organized as a holding company that is parent to over 100 international subsidiaries. AES has always maintained a “project finance” structure whereby each subsidiary is financed by project level debt that is non-recourse to the parent company. The project level debt is secured by the assets of the subsidiary which typically consists of a single power plant. These subsidiaries are financed with anywhere from 60%-85% debt and the remainder equity. At the parent level, AES supplies the “equity” to the projects through traditional equity and unsecured, recourse debt. Although the end result

is a firm that is highly levered, it is rationalized that the parent level debt is secured by the residual cash flows from numerous diversified projects.

Some argue against a project finance structure because it is intrinsically expensive. As a firm grows, new projects do not take advantage of the lower cost of borrowing that a large firm with corporate level debt enjoys. The result is higher interest costs and more frequent transacting costs. However, a benefit to this structure is its inherent optionality. Should the project not perform as planned, the parent firm has the option to “put” the project back to the lenders without direct recourse (besides reputational damage).

On a consolidated basis, AES has maintained a ratio of liabilities to assets of approximately 85%. Non-recourse debt increased from 33% to 40% of assets from 1998 to 2001, perhaps as a result of lower interest rates and thus a higher capacity for projects to take on debt or alternatively, due to the lending markets newfound comfort in the power industry.

AES is one of few firms that provides both a consolidated and an unconsolidated balance sheet, which allows some insight into just the parent corporation without the subsidiaries. On an unconsolidated basis, the amount of recourse debt on AES's Balance Sheet increased from 40% to 49% of assets, or from 50% to 67% of Investments in Projects from 1998 to 2001. AES (parent) has let its current assets grow in the form of notes receivable from subsidiaries indicating that non-performing subsidiaries are being funded by AES. The net result is that AES has increased its leverage as it has expanded.

Table 3: AES Corp - Balance Sheet (Consolidated) - 1998/2001

Consolidated Balance Sheet (AES)	Common Size			
	1998	2001	1998	2001
Current Assets	1,254	4,653	12%	13%
Net PP&E	5,545	23,434	51%	64%
Investments in Projects	1,933	3,100	18%	8%
Other Non-Current Assets	2,049	5,549	19%	15%
Total Assets	10,781	36,736	100%	100%
Current Liabilities	1,976	5,041	18%	14%
Minority Interest	-	1,530	0%	4%
Non-Recourse Debt	3,597	14,673	33%	40%
Recourse Debt	1,644	5,891	15%	16%
Other Non-Current Liabilities	1,770	4,062	16%	11%
Total Liabilities	8,987	31,197	83%	85%
Retained Earnings	1,120	2,809	10%	8%
Total Equity	1,794	5,539	17%	15%
Total Liabilities and Equity	10,781	36,736	100%	100%

Table 4: AES Corp - Balance Sheet (Unconsolidated) - 1998/2001

Unconsolidated Balance Sheet (AES)	Common Size			
	1998	2001	1998	2001
Current Assets	446	3,172	11%	26%
Net PP&E	-	-	0%	0%
Investments in Projects	3,390	8,697	83%	72%
Other Non-Current Assets	244	172	6%	1%
Total Assets	4,080	12,041	100%	100%
Current Liabilities	65	611	2%	5%
Minority Interest	-	-	0%	0%
Non-Recourse Debt	-	-	0%	0%
Recourse Debt	1,644	5,891	40%	49%
Other Non-Current Liabilities	577	-	14%	0%

Unconsolidated Balance Sheet (AES)	Common Size			
	1998	2001	1998	2001
Total Liabilities	2,286	6,502	56%	54%
Retained Earnings	1,892	2,551	46%	21%
Total Equity	1,794	5,539	44%	46%
Total Liabilities and Equity	4,080	12,041	100%	100%

Table 5: Debt coverage ratios for AES (recourse debt)

	1998	1999	2000	2001
Parent-EBITDA	285 (est.)		871	1038
Int Expense Net	48		133	240
Interest Coverage	5.9x		6.5x	4.3x
Recourse Debt	1,644		4,694	5,891
Debt/EBITDA	5.8x		5.4x	5.7x

AES reports its Operating Cash Flow to Parent (also called parent-EBITDA).¹³ This is a measure that is relevant to the recourse debt, whereas Cash Flow from Operations (CFO) or other 10-K data will generally be consolidated and relevant only to total recourse and non-recourse debt.

Table 5 shows that Debt/EBITDA has remained relatively constant but the interest coverage ratio declined in 2001.

¹³ Parent-EBITDA was not stated in 1998 or 1999 and has been estimated for 1998 as Dividends from Subsidiaries and Affiliates.

Timeline

The following contains a timeline summarizing AES path into financial distress, and the actions that were taken to restructure.

- Dec 2001 AES bond prices decreased with the rest of the industry over fears of another Enron (see Figure 5 for stock and bond prices).
- Jan-Jul 2002 Political turmoil in South America had caused considerable depreciation in the Brazilian, Venezuelan and Argentinian currencies. AES had approximately 30% of its consolidated revenues and 30% of its gross margin generated in South America.
- In Argentina, the government had rescinded its energy policy such that all payments would be made in Argentine pesos rather than USD and removal of pesos from the country would be limited.
- In the US, the spark spread (the spread between power prices and natural gas cost) had declined substantially from its highs in 2000.
- In the UK, the power markets had collapsed, and cash flows from the AES Drax plant would be significantly reduced.
- AES announced that it expected a decrease in distributions to the parent corporation of approximately \$100 million (10% of parent level EBITDA).
- May 2002 Downgrades of Calpine, Mirant, and Dynegy caused bond prices to decrease further. There are speculations of liquidity concerns due to debt maturing in December 2002. AES announces that it is in negotiations to sell subsidiary CILCORP generating \$540MM of cash.
- July 2002 Worldcom filed for Chapter 11. AES bonds decreased to the low levels that would remain until October (~\$0.40).
- Jul-Oct 2002 AES has \$300 million in Senior notes coming due December 15, 2002.

In addition, it has an \$850 million revolver coming due March 2003, and \$200 million in notes in Jun 2003.

Following Enron, and Worldcom, the credit markets are particularly tight. Most firms in the industry are trying to refinance current debt. After a number of years of expansion, there had been little contemplation of credit drying up.

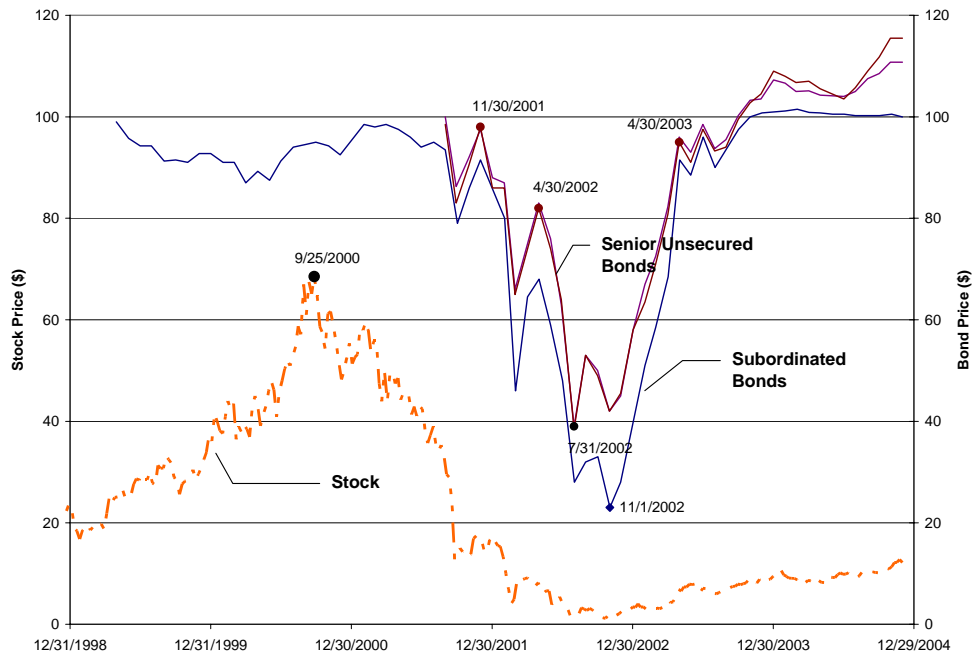
There is speculation whether AES has the liquidity to repay the maturing debt particularly with cash flows declining. AES bonds steadily decline in price to lows of \$0.30.

- Jul 2002 Announces sale of subsidiary for \$240 million (New Energy). This is well received but liquidity is still an issue and bond prices remain low.
- Oct 24, 2002 AES proposes a refinancing plan. All debt coming due in 2002, and early 2003 will be refinanced with new 10% senior notes due in 2005 and a \$1.6 million credit facility.
- It is proposed that holders of the \$300 million notes due in December 2002 will receive 50% of the face value in cash, and another 50% in new notes. Receiving \$0.50 immediately is a good deal for the bond holders since the bonds are currently trading around \$0.30. Bond prices increase substantially.
- Holders of the \$200 million notes coming due in June 2003 will exchange at face value for the new notes, which are more senior and have a higher coupon. It is not clear how much more these holders gain from this exchange.
- The \$1.6 million credit facility will repay the revolver and several loans of AES subs. Half of it comes due in Nov 2004, and half in 2005.
- Further details are given in Appendix C
- Nov 2002 Announces sale of CILCORP for \$1.4B, generating \$540 million cash.

- Dec 13, 2002 The refinancing plan is accepted. The only change is that the \$300 million noteholders will receive 65% cash and 35% new notes, further improving their deal.
- May 2003 AES secures a \$1.8 billion private placement to pay off part of credit facility from December and extend maturity of some notes coming due 2008-2011. The new debt matures 2013 and 2015.
- 2003 Announced \$1.0 billion of asset sales. Refinancing of more debt, which included extended maturities and consolidating all short term loans into a \$700 million term loan due 2008. Also completed an equity offering of \$337 million.
- 2004 AES continues to sell assets.
Refinances high interest rate debt with longer term, lower coupon notes. Repays December credit facility. Extends term of revolver to 2007.
- 2005 Stock is trading at above \$16, up from lows of \$2 in 2002. Bonds are trading at or above par.

Figure 5 shows the stock and bond prices for AES from 1998 to 2004. The events described were clearly reflected in the market prices of these securities. Bond prices reacted abruptly as AES refinanced and threats of insolvency were removed. Stock prices did not change as drastically, but began increasing when the bonds returned to par.

Figure 5: Comparison of AES Stock and Senior Unsecured Bond¹⁴ prices



Further details of AES' restructuring are included in Appendix C.

VI. Calpine Corporation

Overview

Calpine was founded in 1984 by Peter Cartwright to participate in the independent power industry. By 1992, Calpine had total assets of \$55 million. Their business strategy was to build the most efficient plants and become the low-cost producer in any given market. Peter Cartwright is a solid believer in electricity deregulation and believes that the consumer will ultimately receive lower prices. His goal, as of 2001, was to build 70,000 MW of capacity entirely of highly efficient gas fired power plants¹⁵.

¹⁴ AES bond prices refer to (1) Senior Unsecured Bond Due 2011, 8.875% Coupon and (2) Senior Unsecured Bond Due 2008, 8.5% Coupon and (3) Senior Subordinated 8.375% Coupon, due 2007

¹⁵ Wall St. Transcript, 2001.

Calpine vertically integrated by purchasing natural gas resources, turbine parts manufacturers, and a trading organization. In addition, significant economies of scale and expertise have been developed in construction and plant operations.

CPN: 1998-2001

Between 1998 and 2001, Calpine had grown at a compounded annual rate of 130% (assets) and 80% (capacity in operation and construction). Calpine grew their installed MW base from 2,200MW to 12,000MW between 1998 and 2001 through an aggressive construction and acquisition strategy. As of 2001, Calpine had an additional 14,000MW under construction or pending acquisitions. Their goal was to reach 70,000 MW by 2005.

In 1998, virtually all of its capacity was contracted. By 2001, Calpine had 65% of its capacity sold forward, or otherwise contracted, with the remaining amount unhedged, merchant capacity.

Table 6: Overview for Calpine 1998 and 2001

(\$millions)	YE 1998	YE 2001
Number of Projects	22	54
Total MW	2,065	12,089
MW in construction or pending acquisition	2,206	14,142
EBITDA	\$255	\$1,595
LTD/Assets	68%	60%
EBITDA to Int Exp	2.9x	9.7x
Total Debt to EBITDA	4.3x	8.0x
Total Recourse Debt to EBITDA	3.7x	8.0x
Corporate Unsecured Rating	BB+	BB+

Capital Structure

Calpine, unlike AES, holds most of its debt at the corporate level. Although Calpine has some debt that is titled non-recourse or project level, it has provided a corporate guaranty, meaning that the debt will be covered by Calpine on default. In addition Calpine has “cross-default” provisions on its non-recourse debt, meaning that default at the project level will result in default of the parent, or, default of the parent will result in default at the project level. Calpine plainly states these cross-default provisions in both its 2000 and 2001 10-K and therefore analysts treat all of Calpine’s debt as being recourse debt.

Table 7: Calpine Corp. - Cash Flows and Debt Service

	1998	1999	2000	2001
EBITDA	282	433	1,016	1,600
Int Expense	96	103	75	165
Total Debt	1,216	2,262	4,757	12,728
Interest Coverage	2.9x	4.2x	13.5x	9.7x
Total Debt/EBITDA	4.3x	5.2x	4.7x	8.0x

Much of Calpine’s recent construction has been financed by two loans called CCFC I and CCFC II (Calpine Construction Finance Corporation) that are secured by the assets under construction until completion at which time corporate debt will be used to take out the construction revolver.

Calpine has maintained a capital structure with approximately 85% liabilities to assets from 1998 through 2001. This leverage ratio has not changed as the firm moved from contracted assets to a blend of contracted and merchant plants.

Table 8: Calpine Corp- Balance Sheet - 1998/2001

Balance Sheet (CPN)	Common Size			
	1998	2001	1998	2001
Current Assets	209	4,007	12%	19%
Net PP&E	1,094	15,385	63%	72%
Investments in Projects	221	378	13%	2%
Other Non-Current Assets	205	1,539	12%	7%
Total Assets	1,729	21,309	100%	100%
Current Liabilities	122	3,228	7%	15%
Minority Interest	-	47	0%	0%
Non-Recourse Debt	114	3,393	7%	16%
Recourse Debt	951	9,553	55%	45%
Other Non-Current Liabilities	255	2,078	15%	10%
Total Liabilities	1,442	18,299	83%	86%
Retained Earnings	118	1,196	7%	6%
Total Equity	287	3,010	17%	14%
Total Liabilities and Equity	1,729	21,309	100%	100%

Calpine provides, as part of its financial statements EBITDA as a proxy for cash flow for debt and fixed charge coverage (Table 7). Calpine's total debt to EBITDA ratio has increased substantially from 2000 to 2001 and is now at a high of 8.0x EBITDA. This may be due to the massive construction program it is undertaking which requires it to take on debt for assets that are not yet generating revenues. Interest coverage as of 2001 remains substantial at 9.7x.

Timeline

The following timeline summarizes the events that lead to Calpine's distress and the actions taken to maintain solvency.

- Dec 2001 Fitch downgrades Calpine from BBB- (lowest investment grade) to BB+ (highest non-investment grade), bond prices decline, and stock price is declining from ~\$20 (see Figure 6).
Calpine issues \$1.2B in convertible senior notes. And repurchases \$315 million of zero coupon bonds.
- Jan 2002 Calpine secures a \$1B credit facility. In addition to their \$400M facility that comes due May 2003, there is little risk of bankruptcy for the near term although bond prices decline to \$0.80.
They announce that only the 14,000MW that are currently under construction will be completed and other development will be put on hold, resulting in reduced capital expenditures of \$2.0B for 2002. To put this to scale, Calpine had plans to have a total of 70,000 MW in operation by 2005, up from the current 11,000 MW.
Calpine renegotiates gas turbine purchases reducing capital expenditures by \$1.2B in 2002 and \$1.8B in 2003.
- Feb-Mar 2002 In mid-February there were concerns that January's \$1B credit facility was not going to close (stock price drops to \$6.80). In March it was announced that they had secured a \$1.6B credit facility, \$1B of which would come due in May 2003 along with their existing \$400M credit facility and the remainder in 2005 (stock price rebounds to \$12.83).
Bond prices drop to \$0.73 in mid Feb and rebound to \$0.80 but remain below the \$1 from late 2001.
- Apr 2002 Sells power and plants to Wisconsin Public Service (WPS) and renegotiates existing contracts with California DWR. Issues equity for a total of \$800MM. Bond prices rise to \$0.80 and the stock hovers around \$12.
- Jul-Aug Expectations of a cool summer lead to revised EPS estimates, and renewed

2002 liquidity concerns. Calpine is downgraded along with Dynegy and Mirant late June 2002 with NRG in July. The summer ultimately is quite cool and earnings are low. Bond prices in August drop to \$0.43 with implied yields to maturity of above 25%. Stock prices drop to \$3.40.

Sept-Dec 2002 Stock prices continue to plummet to below \$2 and are valued merely at the option value of the plants. Bond prices fall to the low \$0.30's with yields above 30%.

In response Calpine manages to sell several assets including a number of natural gas assets, complete a number of project financings, and monetize some of its Canadian assets through an income fund.

Jan-March 2003 The main obligations coming due are \$400MM of a \$1B revolver in May 2003 and \$1B in October 2003 for its CCFCI construction facility. CCFCI is secured by approximately \$3.0B in assets, and it is likely that the banks will roll this over.

Calpine has not been as successful as planned in selling assets, or raising money through contract securitizations, sales leasebacks, and project financings. There are \$3.5B in obligations coming due in 2004.

Despite the dire news, bond prices have increased to approximately \$0.50 perhaps due to other industry participants' refinancings giving some glimmer of hope.

May-Jul 2003 June 24 Calpine announced that they had signed a termsheet for refinancing a \$1.0B revolver with another \$1.0B revolver.

June 27 Calpine announced that instead they were looking for a \$1.8B private placement. July 11 they announced \$3.3B of refinancing (summarized in Appendix D).

Simultaneously with the \$3.3B refinancing, Calpine secured a new \$500MM working capital revolver. \$200MM of which is a four year term loan and \$300MM is a line of credit which was undrawn as of year end

2003.

Following this event, bond prices moved up to high \$0.70s and low \$0.80s with yield of ~13-15%.

Aug-Dec
2003

Throughout the rest of the year, Calpine continued to sell projects and monetize assets, albeit at a slow pace.

In Nov 2003, Calpine issued another \$1.3B of debt to repay debt coming due. Part of the new debt includes \$660MM of new convertibles (with a lower conversion price and a longer maturity than prior issues). The remainder of the offering consisted of \$900MM of 2011 notes.

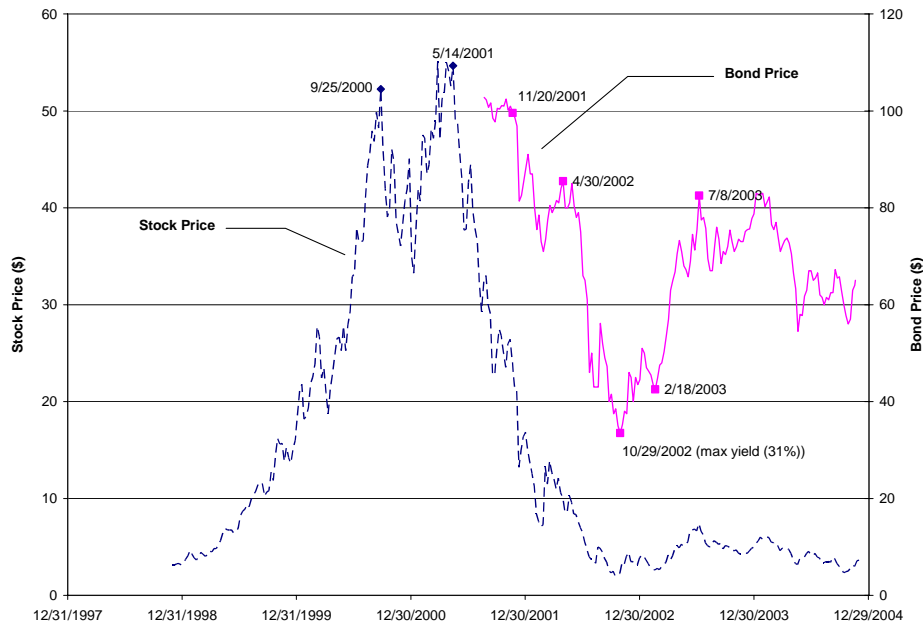
At this point, the end of 2003, Calpine has removed all impediments to insolvency for the short term. In 2004, the largest item coming due is the CCFCII construction loan which is secured against 14 plants under construction with a value substantially higher than the face value of the loan. Their bonds are trading at around \$0.80 implying a yield of approximately 13%.

2004-2005

Calpine has continued to issue debt, monetize and sell assets. There is speculation that they are nearing their debt capacity and the power markets fail to improve. Senior Unsecured bonds are currently (Mar 30, 2005) trading at approximately \$0.70, implying a yield of 16% (Sr. Unsecured, 8.75% due 2011), and the stock is trading at an option value of \$2.60 down from its highs of \$55.

Figure 6 shows the stock and bond prices for Calpine from 1998 to 2004. The events described are reflected in the market prices of these securities.

Figure 6: Comparison of Stock and Unsecured Bond Prices for Calpine¹⁶



Calpine has shown considerable skill in accessing the capital markets and has used the flexibility that it had maintained in its capital structure as of 2001 to generate cash and maintain solvency. It has still not recovered because of the overcapacity that remains in the US power industry. AES on the other hand had a considerable amount of international exposure of both contracted and uncontracted assets that were uncorrelated with the US markets and to that extent were able to recover. It is questionable what the next few years will bring for Calpine.

¹⁶ Calpine Senior Unsecured Bond, 8.5% Coupon, due 2011

VII. NRG Energy Inc.

History

NRG Energy Inc. began business in 1989 as a wholly owned subsidiary of Northern States Power (NSP). On June 5, 2000, NRG completed its initial public offering. In August 2000, NSP merged with New Century Energies to become Xcel Energy. Xcel owns interests in a number of non-regulated businesses, the largest of which is NRG. In March 2001, Xcel owned 74% of the common stock of NRG which represented 96.7% of the voting shares. On June 3, 2002, Xcel completed its exchange offer for the 26% of NRG's shares that had previously been publicly held. Xcel purchased the remainder of the shares due to their low price and with the intent of injecting more equity into NRG to maintain its investment grade credit rating.

NRG 1998-2001

In the 1990's NRG pursued a strategy of growth through acquisitions. Starting in 2000, NRG added the development of new construction projects to this strategy. The strategy required significant capital much of which was satisfied with third party debt. As of Dec. 31, 2001, NRG had 9.4B\$ of debt on its consolidated balance sheet including \$4.0B of corporate debt and \$5.4B of consolidated project debt. This is an increase from Dec 31, 1998 where NRG had just over \$500MM of both non-recourse and recourse debt on its balance sheet. During that time, the generating capacity owned by NRG had increased from 3,300MW to over 20,300 MW.

In the 1998 Annual Report, NRG first announced that several of their new projects would operate on a "merchant" basis, including projects in Australia and the US.

The announced merchant projects would amount to approximately 50% of NRG's capacity in 1998. By 2001, NRG had over 20,000 MW in operation and over 3,000 in development. Of this, approximately 45% was merchant. In 2000, NRG also added new construction to their business activities.

Table 9: Corporate Statistics for NRG, 1998 vs 2001

	YE 1998	YE 2001
Number of Projects	40	75
Total MW	3,300	20,733
MW in construction or pending acquisitions	-	3,460
EBITDA (millions)	\$83	\$954
LTD/Assets	48%	65%
EBITDA to Int Exp	1.63x	2.15x
Total Debt to EBITDA	7.6	8.8
Recourse Debt to EBITDA	6.2	3.1
Corporate Unsecured Rating (S&P)	BBB-	BBB-

NRG 2001-2002

In November 2001, NRG was negotiating the purchase of four coal plants for \$1.5B. Industry analysts were in favor of the transaction:

“We believe NRG can achieve solid long-term compounded annual EPS growth of 15%..... We are confident that NRG can achieve our conservative growth targets given the quality of its assets, hedging strategy, fuel diversification, risk management skills and current pipeline of projects.”¹⁷

In December 2001, following the bankruptcy of Enron, Moody's placed NRG's Senior Unsecured notes on review for a potential downgrade citing the effect of the

¹⁷ UBS Warburg Equity Research, Nov. 30, 2001

aforementioned acquisition as the reason. In an effort to maintain an investment grade credit rating, Xcel purchased the 26% outstanding shares of NRG and provided a \$500MM cash infusion.

During July and August 2002, NRG's credit rating was lowered from BBB-, to BB and then B by Standard and Poor's and to Baa3 to B1 by Moody's.

NRG had provided corporate guarantees for the debt of some of its projects with the stipulation that cash collateral or letters of credit would be provided if its credit rating were to be reduced by Standard and Poor's or Moody's to below investment grade. The credit downgrade caused a requirement for \$1.85B of collateral to be posted immediately. Collateral was needed to cover project level debt service reserve accounts, trading/marketing activities, and a Contingent Equity Guarantee on a construction revolver.

In November 2002, NRG Energy and its subsidiary NRG NorthEast filed petitions for Chapter 11. NRG defaulted on the payment of \$127.6MM of interest on recourse debt issues and \$138.2MM in interest and principle payments on non-recourse debt in 2002 and early 2003.

Capital Structure

The assets of NRG grew at a compounded rate of 120% during the period 1998-2001. In 1998, NRG's Balance Sheet looked more like that of a passive investor having 62% of its assets as non-controlling (<50%) investments in projects accounted for using the equity method. Liabilities made up 55% of assets and equity the remainder.

In 2001, liabilities had increased to 83% of assets, which was typical of other firms in the industry. Projects were more often being financed by non-recourse debt. NRG had begun to construct its own projects, and generally owned a majority stake in the projects.

Table 10: NRG Energy - Balance Sheet 1998/2001

Balance Sheet (NRG)			Common Size	
	1998	2001	1998	2001
Current Assets	92	1,187	7%	9%
Net PP&E	205	9,432	16%	73%
Investments in Projects	801	1,051	62%	8%
Other Non-Current Assets	196	1,224	15%	9%
Total Assets	1,293	12,895	100%	100%
Current Liabilities	51	1,951	4%	15%
Minority Interest	14	68	1%	1%
Non-Recourse Debt	113	4,871	9%	38%
Recourse Debt	381	2,972	29%	23%
Other Non-Current Liabilities	156	795	12%	6%
Total Liabilities	714	10,657	55%	83%
Retained Earnings	130	635	10%	5%
Total Equity	579	2,237	45%	17%
Total Liabilities and Equity	1,293	12,895	100%	100%

Some might argue¹⁸ for the inclusion of a pro-rata share of assets and liabilities rather than the equity method of accounting, however, doing so does not change the ratios substantially. For example, the total liabilities on the balance sheet for 2001 would increase by \$2.2B and the assets by \$3.6B.

¹⁸ Singleton (2000)

An “adjusted CFO” measure was used as a proxy for cash available to service interest payments. It can be seen that the results for 1998 and 1999, while NRG was a wholly owned subsidiary of NSP (now Xcel), are nonsensical. Moreover, NRG’s interest coverage ratio had decreased and the debt/CFO had increased from 2000-2001. NRG had a number of assets that did not perform and as such were restricted from distributing cash to their parent. Also, this is a reflection of the exposure to the declining merchant markets.

Table 11: NRG Energy - Interest Coverage Ratio

(\$millions)	1998	1999	2000	2001
adjusted CFO	\$47	\$56	\$748	\$752
Int Exp	\$50	\$93	\$294	\$443
Total Debt	\$520	\$2,346	\$3,803	\$9,173
Int Coverage	1.0x	0.60x	2.54x	1.7x
Debt/ adjusted CFO	11x	42x	5.1x	12.2x

Timeline

The following timeline provides a summary of events from late 2001 through NRG’s default and bankruptcy filing.

- Oct 2001 Morgan Stanley has a buy rating with a 12 month price target of \$42 from the current \$17. Buy reduced to Hold in December as it lowers rating on entire industry.
- Nov 2001 NRG announces that it will purchase 2500MW from First Energy for \$1.5B. UBS reiterates a Strong Buy.
- Dec 2001 Moody’s placed NRG credit rating on review (currently at Baa3 – the lowest investment grade). Incidentally, S&P ‘confirmed’ a BBB- rating

at this time.

A downgrade to below investment grade would result in NRG having to post approximately \$960MM of collateral within 30 days due to guarantees posted by NRG parent to its subsidiaries. The guarantees are required for: \$200MM for debt service coverage, \$400MM required for power marketing activities, and \$360MM for the Contingent Equity Guarantee that goes with its corporate revolver which could increase by the end of 2002 as NRG draws down the revolver bringing the total potential collateral required to \$1.85B.

- Dec 2001 Xcel as primary shareholder sought to preserve NRG's investment grade rating and contributed \$500MM to NRG.
- Feb 2001 A plan is announced to maintain NRG's credit rating that includes primarily a cash influx from Xcel but also non-aggressive plans to begin selling assets
- June 2002 Xcel buys remaining 26% of NRG shares. On June 25, 2002, S&P downgraded Xcel to from BBB+ to BBB-, NRG unsecured bonds begin downward decline.
- July 2002 July 1 S&P affirmed the senior unsecured debt of the NRG Energy unit at BBB-, S&P's lowest investment grade, but took it off CreditWatch-Positive where the company was put Feb. 11, 2002, after Xcel announced plans to reacquire it. S&P's outlook on NRG is now negative. There are also other downgrades including Dynegy Mirant and Calpine¹⁹
- July 2002 Worldcom files Bankruptcy July 21, 2002.
- S&P and Moody's downgraded NRG to below investment grade on July 26 and July 29 respectively, thus resulting in immediate collateral call of

¹⁹ Power Market Week, July 2002

approximately \$1.0B (never actually posted).

Xcel actually has cross-default provisions with NRG and one of the reasons they offer to eventually offer to contribute cash to settle creditor's bankruptcy suitspony up money. Xcel manages to renegotiate this term in Aug 2002.

- Aug 7, 2002 NRG downgraded again to B by S&P
- Sept 2002 Sept, 16, 2002 NRG didn't make interest payments due resulting in the immediate acceleration of approximately \$1.85B.
- Nov 22, 2002 NRG files Chapter 11
- Feb 2003 An additional \$1.0B of payments accelerated under corporate revolver.
- Mar 2003 It is agreed that Xcel will pay NRG creditors \$640MM for release of any and all claims against it.

Figure 7: Stock and Unsecured Bond Prices for NRG Energy (prior to Bankruptcy)²⁰

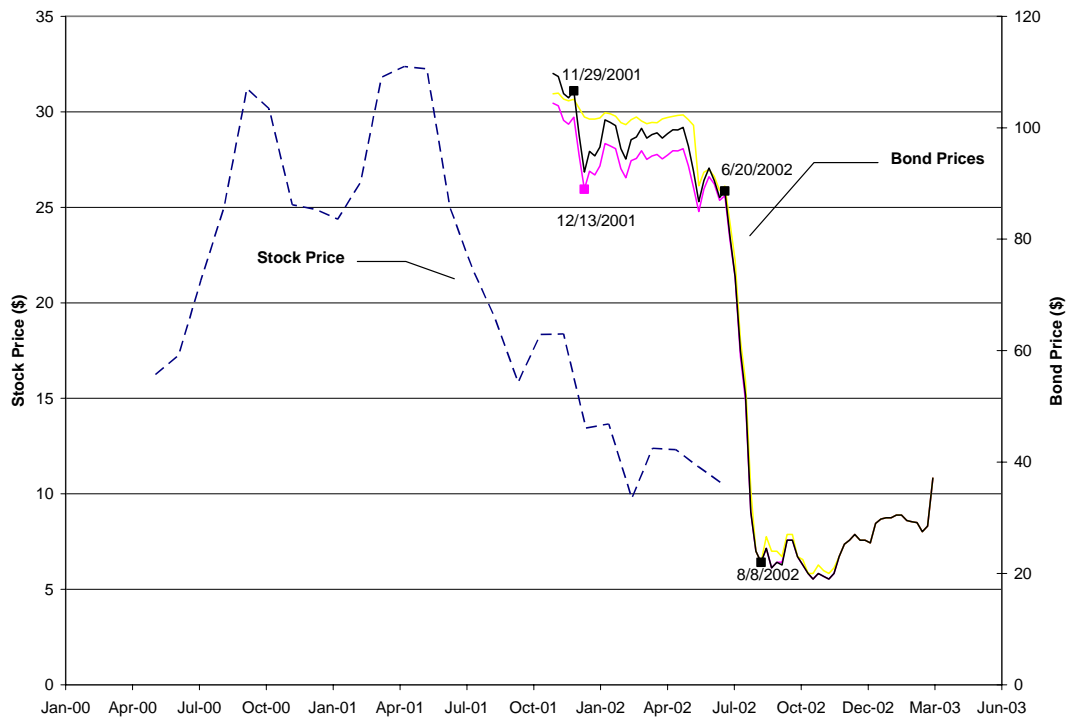


Figure 7 shows the stock and bond prices for NRG from 1998 to 2004. As the events unfolded their effects were reflected in the market prices of these securities.

On Re-Emergence from Bankruptcy

The Plan of Reorganization for NRG Energy Inc. resulted in recovery of 50% of Unsecured Claims (Class 5) and 43.9% of PMI Unsecured Claims (Class 6) for total relief of \$3.3B. In addition, Xcel Energy was accused of numerous misdeeds and settled all suits with the contribution of \$640MM to the reorganized NRG Energy.

NRG re-emerged from bankruptcy Dec 3, 2003. The share price increased from \$24 to \$35 (as of April 2005) giving a market capitalization of \$3.5B. The Dec 31 2003

²⁰ Source: Thomson - Datastream

Balance Sheet is shown compared to the BS from 2001 in Appendix E. They currently have interests in 72 power projects totaling 18,200MW.

Balance sheet changes from year-end 2001 and the emergence from Chapter 11 in 2003 include:

- ♦ An addition of \$500MM of equity in early 2001 by Xcel
- ♦ A payment of \$640MM in 2003 by Xcel to settle lawsuits and allegations
- ♦ Asset sales, and a writedown of assets of over \$3 Billion
- ♦ forgiveness of over \$3 Billion in debt

VIII. Discussion

Overview

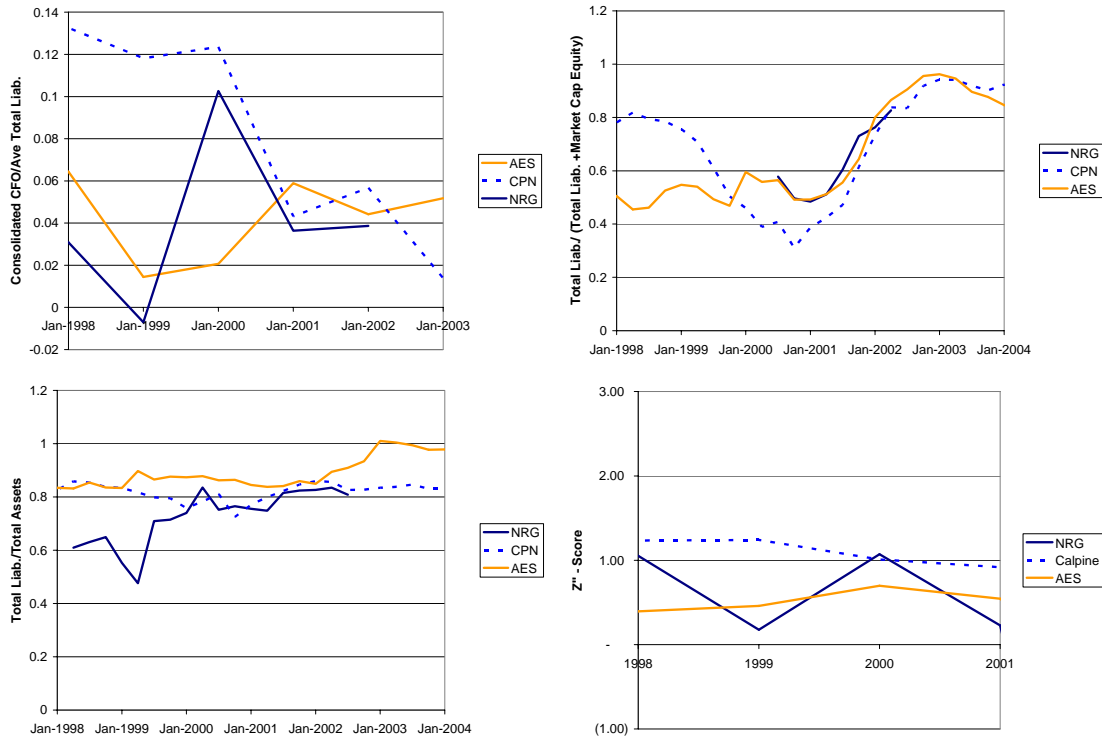
AES, Calpine, and NRG were compared to illustrate the complexities within the unregulated power sector particularly during the year 2002. AES participates primarily in international markets and its financial distress was caused by crises in South America, UK, and the US. Calpine operates natural gas-fired power plants in the United States and had to scale back its massive development plans due to weak fundamentals in that market. NRG operates worldwide however its exposure to the US market combined with a capital structure contingent on ratings caused sudden and unpredictable insolvency.

Other factors that differentiate the firms are discussed below.

Financial Analysis

Financial data is presented for the period from 1998 onwards for the three firms in order to compare the structure and risk associated with each of the firms.

Figure 8: Comparison of financial measures for Calpine, AES and NRG



It can be seen from the upper left chart in Figure 8 that in years 2000 and 2001, the CFO/Total Liabilities of Calpine and NRG are approximately the same. Inconsistencies and generally poor reporting in earlier years may account for the variability between firms. The market capitalization ratio (upper right), shows that all three firms were similarly capitalized, with Calpine relatively less levered during 2000 when stock prices were at their peak. The firms have virtually identical book capitalization ratios also (lower left). And finally, the Z''score shows again that these three firms have remarkably similar values. NRG exhibits more volatility over the period which could be in part due to their changing capital structure (full ownership and consolidation). It is interesting that the Z''-Score has not increased from 1998 to 2001 as the industry became more mature and the risk characteristics of the business increased as firms began selling uncontracted, merchant power.

Table 12: Operating Comparison

	AES	Calpine	NRG
Merchant Capacity	38%	35%	45%
% of Operating Capacity in Construction	15%	115%	17%

A comparison of operating makeup of each company is shown in Table 12. As of year end 2001, NRG has an estimated 45% of its capacity as merchant generation, whereas AES and Calpine have somewhat less. This would have had a significant effect on NRG as the US power market collapsed. The more capacity that was contracted, the more able to withstand the downturn a firm would be. Calpine on the other hand, has a massive amount of capacity in construction, with 14,000 MW in construction and 12,000 MW operating. One would expect the capacity in construction to strain a firm as it is not yet generating revenue but has incurred expenditures.

A comparison of a number of measures of leverage and risk show that the firms are similar in many respects.

Management Commitment

All firms in the industry were faced with the same scrutiny, declining market conditions, and restrictions in capital markets. Using asset sales and other liquidity enhancements as a proxy, the commitment and seriousness of management can be measured. Table 13 shows what measures were taken by Calpine and AES prior-to and post- the downgrade of NRG in July 2002.

Table 13: Comparison of measures to improve liquidity

		Calpine	AES
Prior to July 2002	Reduction in Capital Spending (includes planned turbine purchases)	\$3,200 (millions)	unspecified
	New Financing	\$2,522	\$0
	Monetization of assets ²¹	negotiations	\$260
	Asset Sales	\$0	\$780
Post July 2002	New Financing		\$1,600
	Sale of Plants and Gas Properties	\$471	\$174
	Monetizing assets	\$362.5	\$0
Total 2002		\$6,555	\$2,814

AES responded quickly with asset sales. It announced the agreements to sell its CILCORP utility and New Energy marketing business generating \$780MM cash (transactions closed post July). Calpine took on \$2.5B in new debt, perhaps sensing the coming liquidity crisis and drastically cut its development program, of which, the renegotiation of turbine purchase commitments alone saved \$1.2B for 2002 and \$1.8B in 2003.

In February 2002, NRG reacted slowly to threats of a downgrade, more like a staunch utility rather than an independent upstart. It announced a plan consisting of four elements: 1) financial support from Xcel; 2) asset sales (by the end of 2002); 3) capital spending reductions, and 4) combining systems with Xcel. By July when NRG was downgraded, Xcel had contributed \$500MM to NRG, they had not sold any assets, and all capital spending reductions had been scheduled for 2003 and 2004. In fact, NRG was still aggressively pursuing acquisitions including the \$1.5B acquisition that caused the original credit concerns.

²¹ Includes project financing, sale/leaseback transactions, income trusts (Canada), and other

The behavior of management is obviously a determinant in whether a firm can restructure or not. In this case, NRG management either disregarded the threats of downgrade or lacked the ability to follow through with liquidity-enhancements.

Capital Structure

The three firms illustrate the range of capital structure available.

AES maintains a ‘classic’ project finance structure where debt is held at each project that is non-recourse to the parent firm. There are ongoing financial disadvantages as discussed previously however, a key advantage is that the parent firm can ‘put’ the project back to its lenders if it doesn’t perform as AES did with its Drax UK facility and threatened to with AES Gener in Brazil. This provides the firm with some significant value during difficult times.

Calpine has virtually no project level, non-recourse debt. A key advantage to this structure is the level of flexibility it provides to the parent firm. Calpine was able to sell assets, as well as monetize facilities through income trusts, sale/leaseback transactions and other means.

Table 14: Comparison of Recourse Debt to Total Debt

	Calpine	AES	NRG
Recourse Debt to Total Debt	~100%	27%	38%

NRG originally looked like an investment firm with few consolidated assets. However by 2001, it had a structure that was a hybrid of Calpine and AES with a large amount of non-recourse debt at the subsidiary level. Some of the subsidiaries consisted

of a ‘pool’ of assets (NRG Northeast for example) perhaps as a means of reducing transaction costs or providing risk reduction through diversification. A key inconsistency of the financing structure is the guarantee of the subsidiary debt, and in this case doing so through “contingent liabilities’ – guarantees based on credit rating. Not only do cash flows get trapped at the projects, a disadvantage of the project-finance structure, but the parent firm is ultimately liable for the debt repayment. Also a certain amount of flexibility to sell assets is removed as lenders are secured against those assets and may be opposed to full or partial disposition of their security.

One cannot conclude that one financial structure is better than another, however, on balance, NRG may have had the least flexibility to make it through tough times.

IX. The Role of the Ratings Agencies

Perhaps the most interesting part of this study has been the role of the ratings agencies during this period and particularly with respect to the bankruptcy of NRG.

This study leads one has to fundamentally question the value of a credit rating. NRG had an investment grade rating but a downturn in the industry resulted in the bankruptcy of the firm in less than one year. Ironically, the cause of the bankruptcy was a downgraded rating. Moody’s Rating Action of Dec 2001²² did not mention the contingent liabilities that would be triggered by a downgrade. This leads one to believe that it was either so commonplace it needn’t be mentioned, or, perhaps the existence or magnitude of the liability was unknown or unappreciated. Incidentally, AES also had

²² Moody’s Rating Action, December 4, 2001 (note: the first public mention found was after an NRG analyst call December 15, 2001).

contingent liabilities relating to its trading arm NewEnergy, which was sold in July 2002, amounting to \$260MM which is considerably less than NRG, especially given the relative size of the two firms.

Prior to the bankruptcy of Enron, firms in the industry continued to receive accolades from analysts and the ratings agencies. For example, Moody's had upgraded Calpine in Oct 2001 and in doing so commented on the other investment grade firms (such as NRG):

*“Moody's upgrades CPN to investment grade as per the following. This morning, October 2 [2001], Moody's Investor Services upgraded the senior unsecured debt of Calpine Corporation ... to investment grade -- from Ba1 to Baa3. Moody's outlook is stable. * Moody's listed 6 primary reasons for the upgrade, including: 1) strong management 2) focused growth, vertical integration and operational commoditization strategies 3) demonstration of ability to implement those strategies 4) disciplined risk management 5) significant contracted power sales and gas hedges 6) Moody's projections demonstrating debt service coverage solely from contracted power sales of over 1x and debt service coverage comparable to other investment grade independent power issuers.”²³*

Moody's downgraded Calpine less than two months later in December, 2001 and then again in June 2002. By October 2002, Calpine's bonds were trading at yields greater than 30%.

The management of NRG and Xcel, on the other hand, did not seem to believe that it was possible to be downgraded. They did not commit to take action to improve their liquidity even after being put on credit watch. In fact, NRG continued to pursue the large acquisition that caused the December credit watch. Xcel, NRG's parent, was so sure it would not be downgraded that it bought the remaining shares of NRG to

²³ Deutsche Banc Alex Brown Research Report on Moody's downgrade (Oct 2, 2001)

restructure it in-house which lead to its own downgrade. Even the bond markets did not anticipate the possibility of the downgrade; NRG Senior Unsecured bonds traded approximately at par until late June 2002 when Xcel's rating was lowered.

The bankruptcies of Enron and Worldcom brought in a new era of increased scrutiny where behavior that had been justified or ignored in the past was now unacceptable. Enron filed for Chapter 11 on Dec 2, 2001; days afterwards, all firms in the industry were downgraded or put on credit watch. Worldcom filed for Chapter 11 on July 22, 2002; NRG's credit rating was downgraded only four days later on July 26, 2002.

X. Conclusion

This paper looked at the financial distress within the power industry particularly in the year 2002. A commonly-used bankruptcy prediction model, the Z-score, was applied to firms in the industry to determine whether it could have predicted the ensuing bankruptcies. The Z-scores for all firms in the industry were very low and therefore did not discriminate between bankrupt and non-bankrupt firms. However, as a measure of default risk for the industry, the Z-score may be perfectly accurate. Although most firms had had low Z-scores historically, the level of risk and exposure to cyclicity had increased as business models changed to embrace the new deregulated merchant energy era. Capital structures, leverage, and thus Z-scores should have changed to reduce that risk but did not. As such, a sudden industry downturn resulted in distress and bankruptcies.

Three firms were compared to understand the intricacies of the industry during 2002. AES and Calpine were distressed during 2002 and undertook restructuring; NRG

filed for Chapter 11 bankruptcy. The firms had exhibited similar growth over the past several years, and showed similarities in financial ratios. There were differences however in their business models, capital structures, and reaction to the downturn in the market.

The bankruptcy of NRG Energy however, was due to its reliance on an investment grade credit rating which caused it to amass an undue amount of contingent liabilities. The management of NRG showed flagrant disregard for the warnings of the credit rating agencies, and did not attempt to restructure. Even the bond markets did not believe that NRG would be downgraded. When NRG was eventually downgraded, the contingent liabilities were triggered resulting in almost immediate insolvency and filing for Chapter 11.

There has been a significant amount of value destruction related to the growth of this industry. Enthusiasm by Wall Street, and relaxed ratings policies have resulted in significant over supply and difficult conditions that will persevere.

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Appendix A: Altman's Z-Score

The final form of the original Z-score is:

$$Z = 1.2 \cdot X_1 + 1.4 \cdot X_2 + 3.3 \cdot X_3 + 0.6 \cdot X_4 + 1.0 \cdot X_5$$

Where: X_1 = working capital/total assets,
 X_2 = retained earnings/total assets,
 X_3 = earnings before interest and taxes/total assets,
 X_4 = market value equity/book value of total liabilities,
 X_5 = sales/total assets, and
 Z = overall index where a score of less than 1.81 will predict bankruptcy and a score above 2.675 will predict not-bankruptcy.

A later version of the Z-score called the "Z-double-prime" (Z'') was developed which has the form:

$$Z'' = 6.56 \cdot X_1 + 3.26 \cdot X_2 + 6.72 \cdot X_3 + 1.05 \cdot X_4$$

Where: X_1 = working capital/total assets,
 X_2 = retained earnings/total assets,
 X_3 = earnings before interest and taxes/total assets,
 X_4 = book value of equity/book value of total liabilities,
 Z'' = overall index where a score of less than 1.1 will predict bankruptcy and a score above 2.6 will predict not-bankruptcy.

Functionally the Z'' is the same as the original z-score although the X_5 term has been eliminated which allows a better comparison of firms/industries where asset turnover is unique or irrelevant.

Appendix B: Firms Studied

	Defaults	Date of Default	Total Liabilities
1	York Research Corp	2001	223
2	Covanta Energy Corp (formerly Ogden)	2002	3,180
3	NRG	2002	10,657
4	PG&E NEGT	2003	8,927
5	Northwestern Corp (Montana Power	2002/2003	3,129
6	Mirant	2003	<u>16,460</u>
	Total		42,576
	Distressed	Date of Distress	Total Liabilities
1	Calpine	2002	18,299
2	Dynegy	2002	19,349
3	Williams	2002	32,862
4	Reliant	2002	6,308
5	Aquila	2002	9,397
6	El Paso	2002	38,815
7	Allegheny Energy	2002	8,384
8	AES	2002	31,197
9	CenterPoint Energy Inc.	2002	23,822
10	MidAmerican Energy Holdings	2002	10,907
11	Edison Mission Energy	2002	<u>9,153</u>
	Total		208,493

Appendix C: Further Detail of AES Restructuring

AES Refinancing

The refinancing consisted of three steps.

1) Refinance current and near-term debt with “super” seniority notes and secured credit facility with short term debt giving generous terms for noteholders and new credit providers. (Compare 2001 to 2002 debt profiles)

2) Refinance mid-term debt to create a flatter debt profile. AES accomplished this with the May, 2003 private placement and continuing asset sales. (Compare 2002 to 2003 debt profiles)

3) Repay high interest rate debt and lower carrying costs. AES continued to cut debt through 2004 with asset sales and an equity offering. (Compare 2003 to 2004 debt profiles.)

All of the steps of the refinancing involved a commitment by management to improve liquidity by selling assets. Selling assets will always involve a tradeoff between liquidity and cash flows. Selling assets will inevitably reduce cash flows and may limit the firm’s ongoing viability. An examination of Figure 9 shows consolidated revenues and gross margin by region and year for AES, indicates that cash flows are at or above pre-distress levels even after asset sales. Gross margin and revenues from South America however, have increased substantially, indicating a larger exposure to these economies.

AES’ debt maturities have been pushed substantially into the future. Approximately \$500 and \$600MM come due in 2007 and 2008 respectively. They have

decreased their cost of debt and have substantial liquidity. Their current revolver is virtually undrawn with a 650MM limit doesn't come due for renewal until 2007.

Figure 9: AES Revenues and Gross Margin by Region

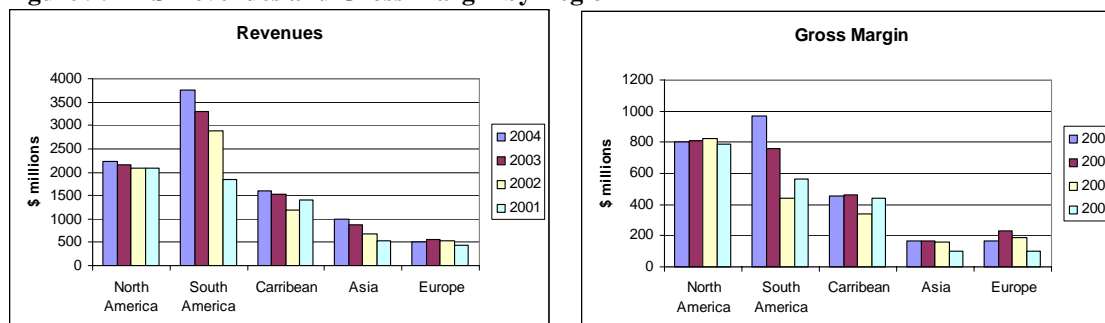


Table 15: Details of December 2002 Refinancing (AES)

Retired debt		New debt		Details
300MM, 8.75%	Dec 15, 2002	305MM 10% Sr. Secured	2005	- 65% of FV in cash immed. (300) - 35% new 10% notes (300)
200 MM, 7.375%	Jun 2003			- exchange at FV (200)
850MM, L+200	Mar 2003	1,600MM Sr. Secured Credit Facility LIBOR+650	Nov-04	-50% due Nov'04 and 50% due Nov'05
425MM, L+250	Aug 2003		Jul-05	-1 st lien on 100% of AES equity in subs
262MM, L+238	Jul 2003			
52.2GBP, L+250	2004			
New notes and credit facilities are secured against 100% of equity in AES domestic subs and 65% of equity in certain overseas businesses				
Cash from all new debt issuances, equity issuances, assets sales and parent level EBITDA must in part go to pay down new debt				
Required to repay \$810mm of credit facility by Nov 25, 2004				
Increase in interest expense of \$65MM per year.				

Table 16: Details of May 2003 Private Placement

Retired debt		New debt		Details
475MM Sr.Sec.Credit	2005	1,200MM (8.75%)	2013	2 nd priority to Senior Notes and credit facility issued Dec 2002
49MM Sr. Notes (8%)	2008	600MM (9%)	2015	
180MM Sr. Notes (8.75%)	2008			

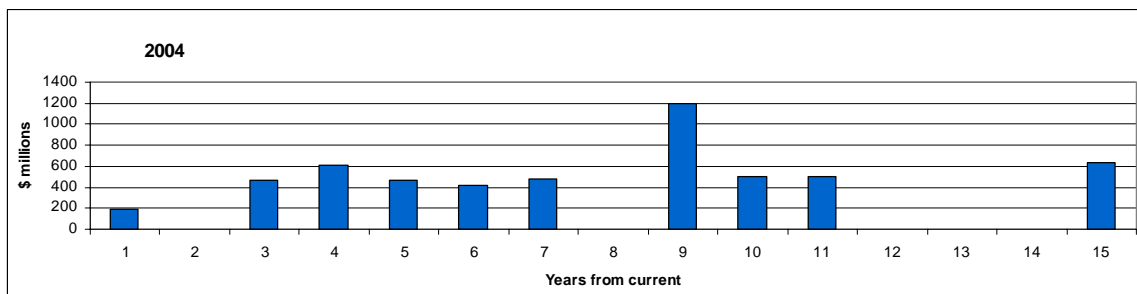
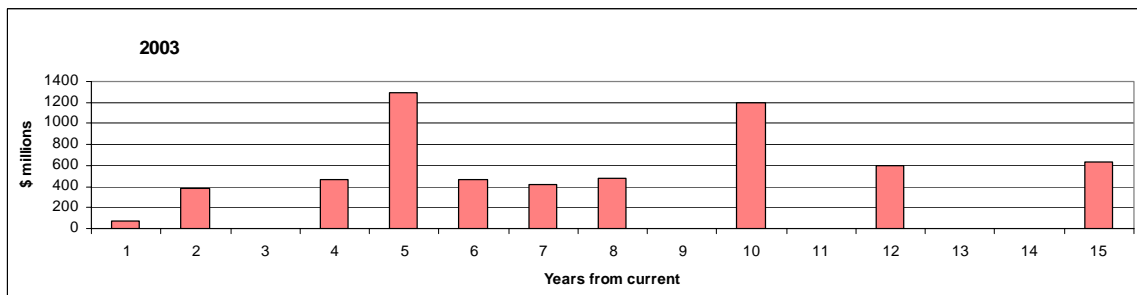
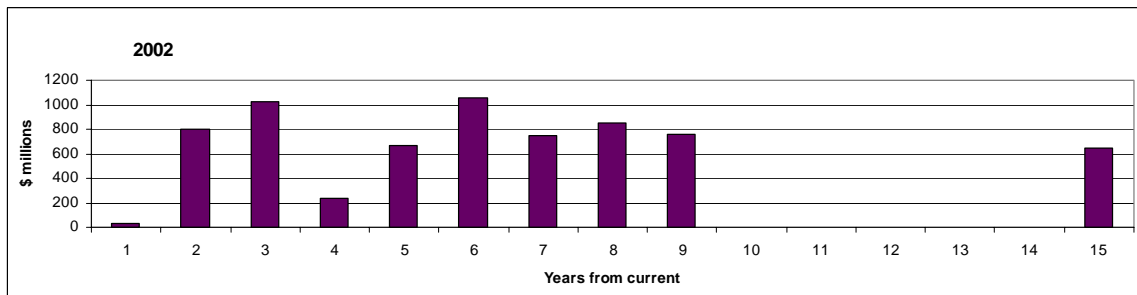
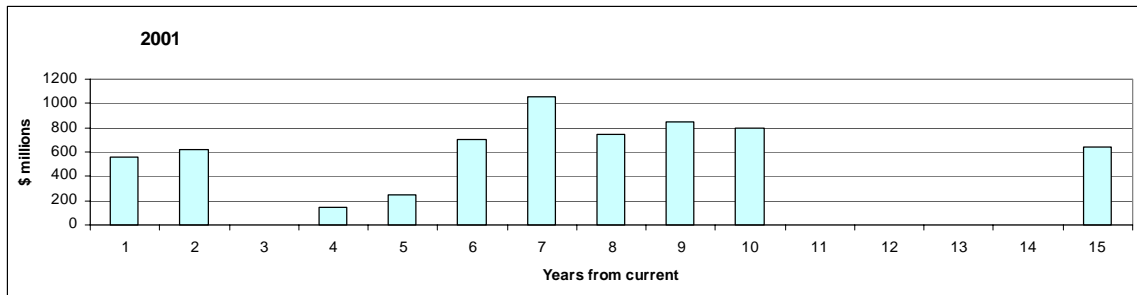
Retired debt		New debt	Details
283MM Sr. Notes (9.5%)	2009		
463MM Sr. Notes (9.375%)	2010		
250MM Sr. Notes (8.875%)	2011		
Total = \$1.7 billion		Total = \$1.8 billion	

Table 17: Summary of AES Debt Structure before and after distress

				After Refi	After Pvt PI
	Int Rate	Mat.	2001	2002	2003
Corporate Revolving Bank Loan	Var	2002	70		
Corporate Revolving Bank Loan	8.10%	2005		228	
Corporate Revolving Bank Loan	8.10%	2007			
Senior Secured Term Loan	5.13%	2008			300
Senior Secured Term Loan	5.32%	2008			400
Term Loan		2003	425		
Term Loan		2002	188		
Term Loan (50% due 2004)	8.12%	2005		500	
Term Loan (50% due 2004)	7.99%	2005		427	
Term Loan (50% due 2004)	7.94%	2005		260	
Total First Priority			683	1,415	700
First Priority as % of Total			11%	21%	12%
Senior Notes	8.75%	2002	300		
Senior Notes	8%	2008	200	199	150
Senior Notes	8.75%	2008	400	400	223
Senior Notes	9.50%	2009	750	750	470
Senior Notes	9.38%	2010	850	850	423
Senior Notes	8.88%	2011	600	537	313
Senior Notes	8.80%	2011	196	217	170
Senior Notes	10%	2005		258	232
Senior Notes (2nd priority)	8.75%	2013			1200
Senior Notes (2nd priority)	9.00%	2015			600

	Int Rate	Mat.	2001	After Refi 2002	After Pvt PI 2003
Remarketable or Redeemable Sec.	7.38%	2003	200	26	
Total Senior Notes			3,496	3,237	3,781
Senior Notes as % of Total			55%	48%	64%
Sr. Sub. Notes	10.25%	2006	250	231	
Sr. Sub. Notes	8.38%	2007	325	316	210
Sr. Sub. Notes	8.50%	2007	375	349	259
Sr. Sub. Notes	8.88%	2027	125	125	115
Conv. Jr. Sub. Debentures	4.50%	2005	150	150	150
Conv. Jr. Sub. Debentures	6%	2008	460	460	213
Conv. Jr. Sub. Debentures	6.75%	2029	518	518	517
Total Sub. Or Jr. Sub			2,203	2,149	1,464
Subordinated as % of total			35%	32%	25%
Total Recourse Debt			6,382	6,801	5,945

AES Debt Maturity Schedule Before, During and After Refinancing



Appendix D: Further Details of Calpine Restructuring

Table 18: Summary of July 11, 2003 \$3.3B refinancing:

Old Debt		New Debt	
May 2004 Term Loan	\$950	4 year term loan	\$750
2005 Corporate Revolver	\$450	2007 2 nd Priority Secured	\$500
2004 Puttable Convertible	\$400	2010 2 nd Priority Secured	\$1,150
Effective debt retirement @\$0.90	\$1,450	2013 2 nd Priority Secured	\$900
Fees	\$50		
Total	\$3,300	Total	\$3,300
Increase in pre tax interest cost: \$43MM			

Appendix E: NRG Balance Sheet After Restructuring

Balance Sheet			Common Size	
	2001	2003	2001	2003
Current Assets	1,187	2,113	9%	23%
Net PP&E	9,432	4,416	73%	48%
Investments in Projects	1,051	745	8%	8%
Other Non-Current Assets	1,224	1,986	9%	21%
Total Assets	12,895	9,260	100%	100%
Current Liabilities	1,951	2,026	15%	22%
Minority Interest	68	37	1%	0%
Non-Recourse Debt	4,871	0	38%	40%
Recourse Debt	2,972	3,661	23%	
Other Non-Current Liabilities	795	1,099	6%	12%
Total Liabilities	10,657	6,823	83%	74%
Retained Earnings	635	11	5%	0%
Total Equity	2,237	2,437	17%	26%
Total Liabilities and Equity	12,895	9,260	100%	100%

**Capital Restrictions as an Explanation of Stock Price Distortions during
Argentine Financial Collapse: December 2001 – March 2002**

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April 1, 2005

I. INTRODUCTION

By the last quarter of 2001, Argentina entered into one of the most important financial and economic crises of its history. The crisis was characterized by huge bank deposit withdrawals, a significant decrease in Central Bank reserves, the abandonment of the Argentine peso peg against the dollar, the country's formal declaration of the largest debt default in history, and a GDP decrease of 4.4% in 2001 and 10.9% in 2002.

Paradoxically, in the middle of this financial and economic collapse, the Argentine stock market boomed, shown by an increase in the Merval index (local index) of 115% (in Argentine pesos) between the end of November 2001 and the end of March 2002. This was contrary to what happened in other emerging countries' financial crises, such as Mexico, Malaysia or Korea during the 90's, whose stock markets declined by roughly 50%.

At the beginning of December 2001, before the debt default declaration and devaluation, extensive restrictions on bank deposit withdrawals and international transfers were imposed, in order to stop the severe decline in government reserves and local bank deposits, as well as to prevent a speculative attack to the local currency. This group of restrictions was named the Corralito. Under the Corralito's restrictions, it was legal to purchase Argentine stocks using frozen bank deposits, including stocks that were cross-listed in international stock markets.

This paper analyses the impact of the introduction of capital restrictions as an explanation of the stock market boom during this period. In particular, through the stock market, investors were able to evade the capital controls and transfer their wealth out of Argentina. The mechanism worked as follows: Argentine investors purchased stocks in the Buenos Aires Stock Exchange (BCBA – “Bolsa de Comercio de Buenos Aires”) using their frozen bank deposits, converted them into American Depositary Receipts (ADRs) in U.S.

stock markets, and finally sold the ADRs and deposited the proceeds in the U.S. banking system. This paper also compares and analyses the differences of the Corralito's impact on cross-listed stocks (ADR stocks) and non cross-listed stocks (non-ADR stocks).

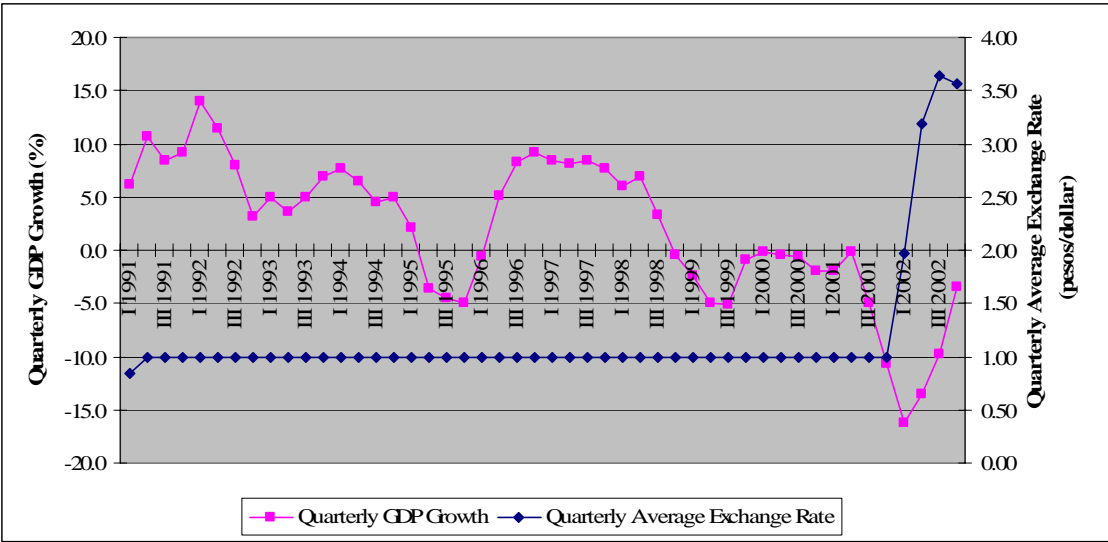
The paper is organized as follows. Section II provides an overview of the Argentine crisis and a detailed description of the capital controls introduced by the Corralito. Section III analyses the price impact of the Corralito on ADR and non-ADR stocks. Section IV qualitatively and quantitatively examines the reasons for the stock price distortions generated by the capital controls by decomposing the premium on ADR and non-ADR stocks. Finally, Section V analyses how local and global factors that have influence in stock pricing changed after the Corralito introduction and during the period in which Argentine stock market was closed.

II. OVERVIEW OF ARGENTINE CRISIS AND CAPITAL CONTROLS

II.1 Brief History of 2001-2002 Argentine Crisis

The 2001-2002 Argentine crisis was among the most severe of its history. The currency-board, under which the Argentine peso had been pegged at parity against the U.S. dollar since 1991, collapsed in January 2002, and by the end of March 2002, the Argentine peso was trading at 3 pesos per U.S. dollar. The crisis came after three years of economic recessions and had a devastating economic and social impact, reflected by the fall in GDP of about 20% over a three year period (2000 - 2002), the default of government debt, the collapse of the banking system, a deep corporate crisis, social unrest, and violent demonstrations against the government. In the following graph, we show the quarterly evolution of Argentine GDP and the peso price of the dollar from 1991 to 2002.

Graph 1: GDP and Exchange Rate Evolution



Source: CEI, IMF and The Economist

II.2 Description of Capital Controls introduced by the Corralito

Through the Corralito, the government imposed several restrictions on bank deposit withdrawals. In particular, only 250 pesos (250 U.S. dollar at the time it was implemented) per week per account could be withdrawn from banks' accounts and only 1,000 pesos were allowed to be taken abroad. An official permit was required to make foreign payments above this amount. In addition, all investors were prohibited from transferring funds outside the Argentine banking system. The Corralito was established on December 3, 2001, and was announced as a temporary measure to stop the significant capital outflows that the country was suffering. From July 2001 to November 2001, more than \$15 billion was withdrawn from Argentina's banks. In particular, in the three days from November 28 to November 30, 2001, \$3.6 billion, 6% of total deposits, left the banking system.

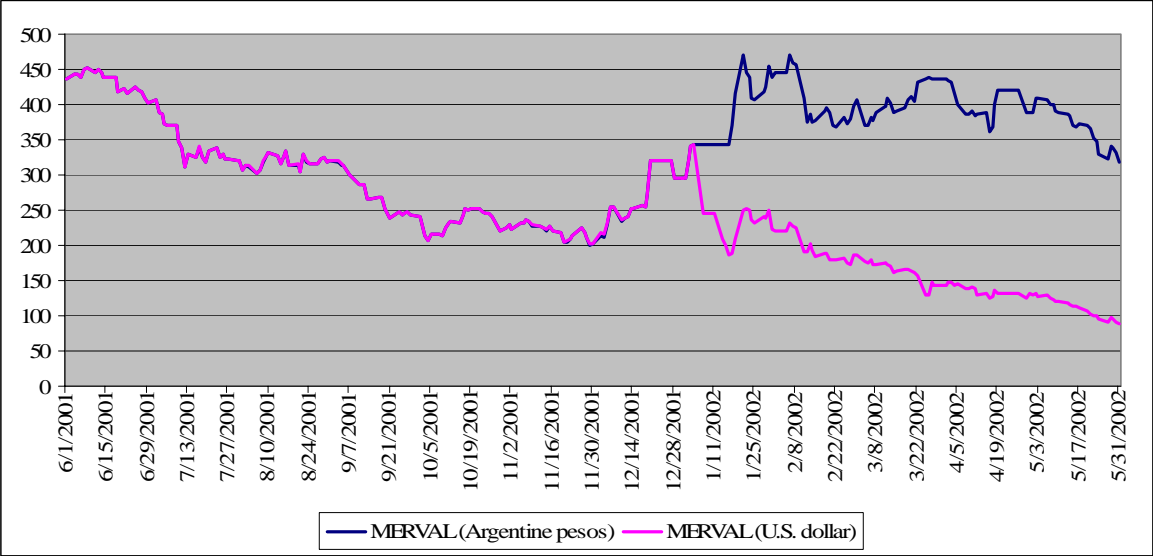
Under the Corralito, it was allowed to use the frozen bank deposits in excess of the 250 pesos per week to buy stocks that traded in the Argentine stock market. If the purchased stock was also listed in the U.S., it could be converted into an ADR and sold in the U.S., depositing the dollar proceeds in the U.S. banking system.

II.3 Stock Market Boom

As we can see in Graph 2, until the introduction of the Corralito, Argentine local index, the Merval, was decreasing at a significant rate, reflecting the economic conditions of the country. From June 1, 2001 to November 30, 2001, the Merval dropped by 53.5%. However, after the Corralito's introduction, the Argentine stock market increased significantly, even though the Argentine economy was collapsing. In fact, the Merval increased by 69.5% since the Corralito introduction on December 3, 2001 until the beginning of January 2002, just before the currency peg abandonment. In Argentine

pesos terms, the Merval increased by 115% from the Corralito imposition to the end of March 2002.

Graph 2: Merval Evolution



Source: DataStream

II.4 Time Line of Important Economic, Financial and Political Events

In order to analyze the impact of the introduction of capital controls on the local stock market, it is important to know the time line of the main economic, financial and political events during the period December 2001 - March 2002.

Table 1: Main Events in Argentine Crisis

Date	Events
December 3, 2001	The Corralito's restrictions are imposed.
December 19, 2001	Economy Minister Domingo Cavallo resigns.
December 20, 2001	President Fernando De La Rúa resigns. President of the Senate Ramon Puerta becomes interim President. Stock market is closed since December 21, 2001.
December 23, 2001	Adolfo Rodríguez Saá is elected President by Legislative Assembly. He announces partial suspension of external debt payments.
December 28, 2001	Stock exchange is re-opened after being closed for 7 days.
December 30, 2001	Rodríguez Saá resigns. Head of Lower House Eduardo Camaño becomes interim President.
January 1, 2002	Eduardo Duhalde is elected President by the Legislative Assembly.
January 4, 2002	Financial press suggests that devaluation is imminent. Devaluation estimate is approximately 40%.
January 6, 2002	The convertibility law (currency board) is abolished by the Congress. A dual exchange rate regime is introduced; one fixed at 1.40 pesos per U.S. dollar for foreign trade operations, and the other freely determined by the market. Financial markets are closed since January 7, 2002.
January 11, 2002	The exchange rate market is re-opened and the new exchange rate regime is implemented.
January 17, 2002	Stock exchange is re-opened after being closed for 10 days.
February 3, 2002	U.S. dollar deposits are "pesoized" ¹ at 1.4 pesos per U.S. dollar. The dual exchange regimes established in January 6 are unified in a floating exchange rate regime.
March 25, 2002	ADRs conversion restrictions are announced with the objective of regulating capital outflows through ADRs.

¹ Mandatory conversion of dollar-denominated deposits to pesos-denominated deposits at 1.4 pesos per dollar rather than at the prevailing market exchange rate.

III. OVERVIEW OF IMPACT OF CAPITAL CONTROLS ON LOCAL STOCK MARKET

III.1 Description of Data

In order to analyze the impact of the introduction of capital controls on stock prices, we separated Argentine stocks in two groups:

- Stocks traded in the local stock market and cross-listed in U.S. stock markets, and
- Stocks only traded in the local stock market.

As at December 2001, 25 Argentine firms were cross-listed in U.S. stock markets: 11 in the New York Stock Exchange (NYSE), 3 in the NASDAQ and 11 were private placements only available to institutional investors.

Based on these groups of stocks, we created three portfolios:

- ***ADR Stock Portfolio:*** Equally weighted portfolio denominated in U.S. dollar and composed by the following 11 stocks that traded in the BCBA and were cross-listed in the NYSE.

Table 2: Stocks included in ADR Stock Portfolio

BBVA Banco Frances
Cresud
Grupo Galicia
IRSA
Metrogas
Petrobras
Siderca
Telecom Argentina
Telefonica Argentina
Transportadora Gas del Sur
YPF

- ***ADR Portfolio:*** Equally weighted portfolio denominated in U.S. dollar and composed by ADRs representing the cross-listed stocks included in the ADR stock portfolio. To be comparable with the other portfolios, ADR prices were converted to

a per share basis by dividing the ADR price by the number of Argentine shares that the ADR represented.

- ***Non-ADR Stock Portfolio:*** Equally weighted portfolio denominated in U.S. dollar and composed of the 28 most traded stocks in the BCBA, excluding cross-listed stocks. The following firms were included in the portfolio.

Table 3: Stocks included in Non-ADR Stock Portfolio

Acindar Industria Argentina de Aceros SA
Agrometal
Aluar
Atanor SA
Banco de Galicia y Buenos Aires
Banco Hipotecario SA
Banco Macro Bansud SA
Boldt
Carlos Casado SA
Celulosa Argentina
Central Puerto SA
Cynba
Dycasa SA
Gas Natural BAN (Argentina)
Grupo Consorcio del Oeste
Hipotecario
Juan Minetti SA
Ledesma SA
Longvie
Molinos Rio de la Plata
Polledo SA
Quickfood SA
Renault Argentina
SA Importadora y Exportadora Patagonia
San Miguel
Sociedad Comercial del Plata SA
Solvay Indupa SAIC
Transener SA
Acindar Industria Argentina de Aceros SA

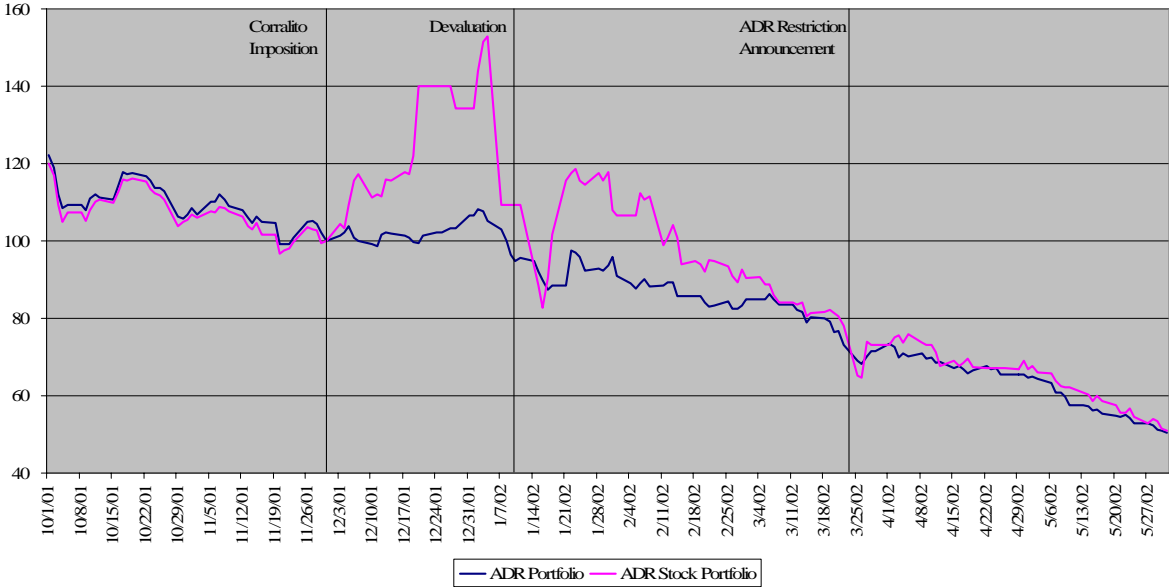
Local stock prices were converted to U.S. dollars using the dollar/peso spot exchange rate at the close of each day.

III.2 Evolution of Cross-Listed Stock Prices

In the following graph, we show the price evolution of the ADR stock portfolio and the ADR portfolio between October 2001 and May 2002. Note that in order to compare

local stock prices with ADR prices, ADRs were converted to the number of underlying shares using the ADR conversion factor. Transaction costs of ADR conversions were ignored.

Graph 3: ADR Stock Portfolio and ADR Portfolio
(at the Corralito imposition on 11/30/01 = 100)



Source: DataStream

As we can see from the graph, before the introduction of the Corralito, the gap between local share prices and ADR prices was minimal and may be explained by transaction costs. The weighted average deviation between local share prices and ADR prices was 0.16% during the period from June 1, 2001 to November 30, 2001 (see Table 4). The fact that ADRs and their underlying securities moved together is in line with finance literature that suggests that the law of one price hold for cross-listed stocks after adjusting for exchange rate differences and transaction costs, leading to no arbitrage opportunities.

However, after the Corralito introduction in December 2001, the deviation between local share prices and ADR prices increased significantly. While ADR prices were stable, local share prices were increasing at an astonishing rate. This gap between the local shares and the ADRs represented the premium that investors were willing to pay to transfer their

wealth from their frozen bank deposits in Argentina into the U.S. financial system, and explained the violation of the law of one price. The premium reached a peak of over 40% just before the peso peg abandonment in January 2002, implying the significant premium that investors were willing to pay to avoid losses in their frozen peso-denominated deposits that a potential devaluation would cause. Table 4 shows that for 7 of the 11 stocks analyzed in this portfolio, their maximum premium was reached on January 3 or January 4, 2002, days before the currency peg collapse, implying that a significant component of the premium was due to investors' expectations of an imminent devaluation. After Argentina's devaluation, the premium, though significant, decreased to lower levels and it tended to disappear, by the end of March 2002, after the announcement of certain restrictions that diminished Argentine investors' incentives to continue using the ADR vehicle.

In Exhibit 1, we show the evolution of the ADR premium for the two most liquid cross-listed stocks: Telecom Argentina and Petrobras.

In the following table, we show the average premium of the local shares over the ADRs for the 11 stocks and ADRs included in the ADR stock portfolio and ADR portfolio. Note that days where the BCBA was closed (December 21 – December 27, 2002 and January 7 – January 16, 2002) were excluded from the calculation.

Table 4: Premium per ADR Stock²³

	Pre-Corrallito 6/1/01 - 11/30/01		Post-Corrallito and Pre-Devaluation 12/3/01 - 1/10/02			Post-Devaluation 1/11/02 - 3/25/02		Post-ADR Restriction 3/26/02 - 5/31/02	
	Average	Peak	Average	Peak	Peak Day	Average	Peak	Average	Peak
BBVA Banco Frances	-8.62%	-2.52%	16.03%	48.29%	1/21/2002	6.79%	64.79%	-3.05%	9.95%
Cresud	0.77%	4.44%	8.58%	40.50%	1/4/2002	10.74%	38.98%	3.49%	13.11%
Grupo Galicia	-4.27%	2.60%	24.32%	61.07%	1/21/2002	8.10%	85.37%	-2.43%	11.11%
Irsa	2.13%	5.71%	19.54%	37.99%	1/3/2002	13.37%	28.60%	4.40%	13.34%
Metrogas	-2.67%	4.00%	5.19%	33.33%	12/20/2001	7.62%	28.27%	-1.07%	26.32%
Petrobras	0.14%	5.56%	28.49%	76.68%	1/4/2002	14.25%	39.80%	6.12%	15.87%
Siderca	0.07%	4.12%	30.54%	66.88%	1/3/2002	14.74%	33.81%	5.51%	14.57%
Telecom Argentina	0.19%	7.10%	26.97%	53.38%	1/4/2002	13.27%	36.90%	4.64%	16.67%
Telefonica Argentina	-0.46%	21.11%	17.27%	30.75%	1/29/2002	11.27%	32.71%	-8.24%	14.29%
Transportadora Gas Sur	-0.02%	7.22%	26.88%	57.79%	1/4/2002	12.11%	28.99%	0.88%	12.90%
YPF	1.61%	11.80%	19.16%	46.60%	1/4/2002	17.76%	43.55%	11.48%	33.29%
Average	-1.01%		20.27%			11.82%		1.98%	
Weigthed Average	0.16%		21.62%			14.39%		4.53%	

Source: DataStream

III.3 Evolution of Non Cross-Listed Stock Prices

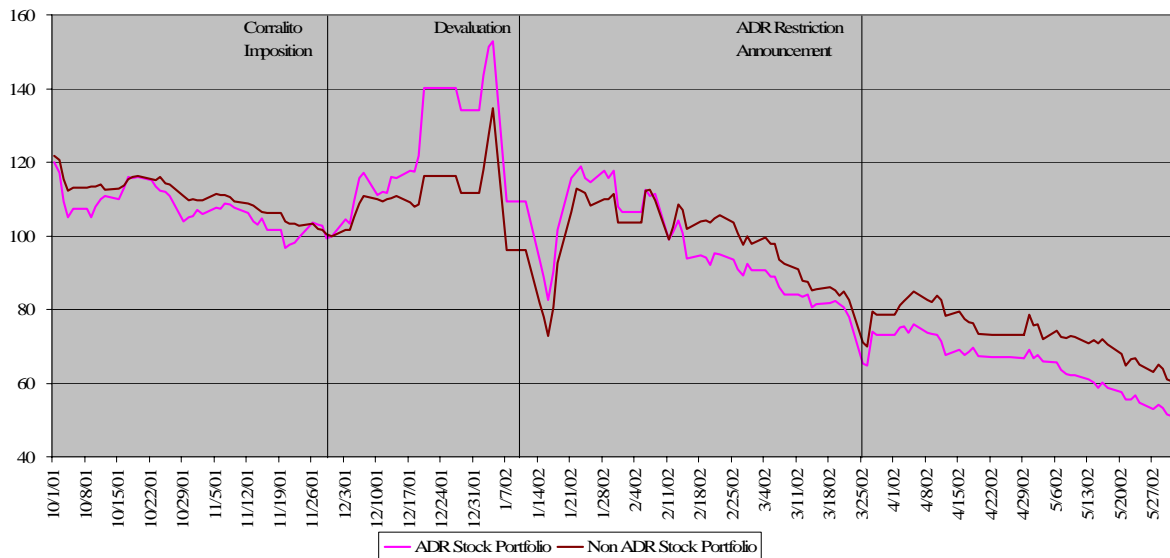
Although local stocks that were not cross-listed in U.S. stock markets did not represent, for Argentine investors, a vehicle to shift their wealth from Argentina to the U.S., they represented a better investment option than investors' current status quo of maintaining their frozen bank deposits. In particular, Argentine stocks were more liquid than Argentine bank deposits and were a better hedge alternative against a potential devaluation or "pesoization" of bank deposits.

In the following graph, we show the price evolution of the non-ADR stock portfolio compared with the price evolution of the ADR stock portfolio between October 2001 and May 2002. Note that a comparison between these two portfolios is meaningful as they are very strongly positive correlated. In particular, before the Corralito the correlation between the non-ADR stock portfolio and the ADR stock portfolio was 0.994, while after the Corralito introduction it slightly declined to 0.947.

² Premium was calculated as (Stock Price – ADR Price) / ADR Price and was not adjusted for transaction costs. ADR Price was calculated on a per share basis using the ADR conversion factor.

³ Weighted average based on market capitalization.

Graph 4: ADR Stock Portfolio and Non-ADR Stock Portfolio
 (at the Corralito imposition on 11/30/01 = 100)



Source: DataStream

As in the case of the ADR stock portfolio, the non-ADR stock portfolio reached a peak during the days before of the currency peg collapse, showing the significant impact of expectations of devaluation on the premium of non-cross listed stocks. However, the increase in stock prices was not as high as in the case of cross-listed stocks.

IV. DECOMPOSITION OF STOCK PREMIUM

IV.1 *Estimated Composition of ADR Stock Premium*

Under an efficient market, the price of local stocks reflects the fundamental value of the firms, and is the main factor that determines the price of ADRs. However, in the presence of capital controls, such as the Corralito, local stock prices were distorted as local stocks represented a vehicle for Argentine investors to move their deposits out of Argentina. As the Corralito only affected Argentine investors, and not foreign investors, ADR prices were not distorted and, under this scenario, could be considered a close estimate of the fundamental value of the stocks.

Under the hypothesis that ADRs reflected the fundamental price of the stock, the deviation between local share prices and ADR prices should represent the premium that Argentine investors were willing to pay to:

- Convert its frozen deposits, that could be partially or totally lost in value (by a potential reprogramming of deposits or bankruptcy of the financial institution), into liquid stocks (*liquidity premium*),
- Transfer wealth from Argentina to the U.S. (*control capital avoidance premium*), and
- Convert its peso-denominated deposits (or U.S. dollar-denominated deposits), which had a high probability of losing value through the local currency devaluation (or a significant threat of “pesoization”), into U.S. dollar-denominated securities or deposits in the U.S. banking system (*exchange rate hedge premium*).

As analyzed in Section III, the expectation of the abandonment of the currency peg was key in explaining the ADR stock and non-ADR stock price peak by the beginning of

January 2002, just before the exchange rate collapse. In order to estimate investors' devaluation expectations, we calculated the daily-expected devaluation rate as the percentage difference between the spot exchange rate and the one-week non-deliverable forward (NDF) exchange rate (mid bid-ask).

In order to estimate the average premiums previously described, we regressed the value of the ADR stock portfolio (S_A) against the value of the ADR portfolio (A), the expected devaluation rate (D) and two dummy variables (0 or 1) according to whether the data analyzed was before or after the Corralito imposition (X_1), and before or after the ADR restriction announcement (X_2):

$$S_A = \beta_0 + \beta_1 A + \beta_2 D + \beta_3 X_1 + \beta_4 X_2 + \varepsilon$$

While β_2 should reflect the impact of a D percent expected devaluation on the value of the ADR stock portfolio (exchange rate hedge coefficient), β_3 should represent the liquidity and control capital avoidance premium created by the Corralito, and β_4 the control capital avoidance premium that should have disappeared when ADR conversions were restricted. This analysis assumes that the exchange rate hedge coefficient, and the liquidity and control capital avoidance premium are constant during the period. Under this assumption, we can estimate the individual premiums:

$$\text{Exchange Rate Hedge Premium} = \beta_2 D$$

$$\text{Control Capital Avoidance Premium} = -\beta_4$$

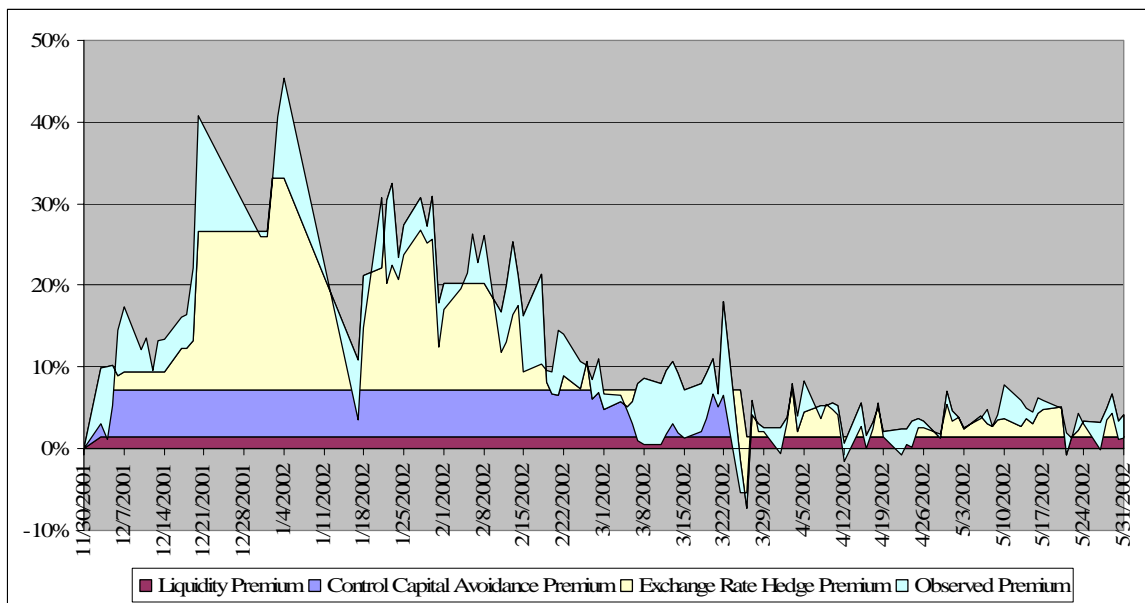
$$\text{Liquidity Premium} = \beta_3 + \beta_4$$

The period regressed was from June 1, 2001 to May 31, 2002, excluding the days in which the local stock market was closed (13 business days). The following regression was obtained (see Exhibit 2 for regression details):

$$S_A = -0.49 + 0.98 A + 0.87 D + 7.15 X_1 - 5.68 X_2 + \varepsilon \quad (R^2 = 99.4\%)$$

Based on the above regression, the control capital avoidance and liquidity premium imbedded in the ADR premium were 5.68% and 1.47% respectively. The estimated exchange rate hedge coefficient was 0.87, which implies that an expected devaluation of the Argentine peso of 1% generated a 0.87% increase in the ADR stock portfolio value. In the following graph, we show the evolution of the ADR premium based on its three components compared with the observed premium caused by the Corralito introduction.

Graph 5: Estimated Premiums for ADR Stock Portfolio



Source: DataStream

Our assumption of constant premiums over the period is an explanatory reason for certain deviations between the sum of our estimated premiums and the observed premium. In particular, the exchange rate hedge coefficient should be higher before the “pesoization” of U.S. dollars bank deposits in February 2002, and in particular previous the currency peg collapse. In fact, the exchange rate coefficient was $\beta_2 = 1.11$ before the peso-peg abandonment and $\beta_2 = 0.64$ after it. Moreover, even though the ADR conversion restrictions were announced by late March 2002, the easing of bank withdrawals

restrictions in February and March 2002 should have lowered the control capital avoidance and liquidity premium, partially explaining the gap between the sum of our estimated premiums and the total observed premium during this period.

IV.2 Estimated Composition of Non-ADR Stock Premium

While by buying non-cross listed stocks, investors were not able to transfer their wealth from Argentina to the U.S. (control avoidance premium), local shares, in theory, provided higher liquidity than frozen bank deposits and a partial hedge against the exchange rate risk. We have to note that even though stock prices in the BCBA are denominated in Argentine pesos, investors would be willing to pay a partial exchange rate hedge premium considering that part of the firms' cash flows are in foreign currencies.

In order to estimate the average liquidity and exchange rate hedge premiums, the value of the non-ADR stock portfolio (S_N) was regressed against the value of the ADR portfolio (A), the expected devaluation rate (D), and a dummy variable (0 or 1) according to whether the data analyzed was before or after the Corralito imposition (X_I):

$$S_N = \beta_0 + \beta_1 A + \beta_2 D + \beta_3 X_I + \varepsilon$$

This analysis also assumes that the exchange rate hedge coefficient and the liquidity premium are constant during the period, and therefore:

$$\text{Exchange Rate Hedge Premium} = \beta_2 D$$

$$\text{Liquidity Premium} = \beta_3$$

The period regressed was from June 1, 2001 to May 31, 2002, excluding the days in which the local stock market was closed. The following regression was obtained (see Exhibit 3 for regression details):

$$S_N = 29.6 + 0.73 A + 0.52 D - 0.19 X_I + \varepsilon \quad (R^2 = 98.4\%)$$

The exchange rate hedge coefficient obtained for the non-ADR stock portfolio is 0.52, implying a 0.52% increase in the price of non-ADR stocks for every 1% of devaluation expected. This is lower than the coefficient obtained for the ADR stock portfolio, but it is reasonable considering that non-cross listed stocks did not completely eliminated the exchange rate risk, but only partially mitigated it. The results from the regression imply that the capital controls did not introduce a liquidity premium on non-cross listed stocks, as its coefficient (β_3) is close to 0 and is not statistically significant. Cross-listed stocks are naturally more liquid than non-cross listed stocks (one of the main reasons for issuing ADRs in international markets is to increase the stock's liquidity), and investors may have been willing to pay a premium only for the extra liquidity offered by stocks with ADRs traded in the U.S. Therefore, Argentine investors were disposed to purchase non-cross listed stocks only to have a partial hedge against the devaluation, but they were not willing to pay an additional premium for the extra liquidity that these stocks may offer compared to investors' frozen bank deposits.

Selling pressures after the acquisition of non-cross listed stocks may partially explain the lower price increase in this group of shares. Investors that used their frozen bank deposits to purchase these stocks may have sold the shares acquired if they were able to move the peso proceeds out of the financial system and convert them into U.S. dollars in the exchange rate black market. This issue was not quantified in this analysis, and would require further investigation.

V. ADR MARKET PRICING CHANGES INTRODUCED BY CAPITAL CONTROLS

In Section III and Section IV, we showed the pricing distortions in local shares resulting from the introduction of capital controls. In this section we analyze whether or not the Corralito caused significant changes in the pricing of ADRs, particularly during the days in which the underlying securities were not trading, as the local stock market was closed.

We regressed the ADR portfolio returns (R_A) against a local index returns (Merval in U.S. dollar - R_M) and an international index returns (S&P500 - $R_{S\&P}$) before and after the Corralito introduction (June 1, 2001 – November 30, 2001 and December 3, 2001 – May 31, 2002, excluding the periods in which BCBA was closed):

$$R_A = \beta_0 + \beta_1 R_{S\&P} + \beta_2 R_M + \varepsilon$$

We also analyzed the ADRs pricing during the two periods in which the underlying local stock market was closed, but the ADRs were trading in the NYSE: December 21 – December 27, 2001, and January 7 - January 16, 2002:

$$R_A = \beta_0 + \beta_1 R_{S\&P} + \varepsilon$$

In the following table we show the results from the regressions (see exhibits 4, 5 and 6 for regression details):

Table 5: ADR Pricing Regression Results

	Pre-Corralito	Post-Corralito	BCBA Closed
β_1	0.230	0.406	0.824
β_2	0.622	0.098	N.A.
SE β_1	0.091	0.246	0.751
SE β_2	0.038	0.043	N.A.
t-stat β_1	2.530	1.650	1.100
t-stat β_2	16.380	2.300	N.A.
R ²	70.60%	10.70%	9.90%

N.A. : Not Applicable

The results suggest that the Corralito introduction made the ADR portfolio more dependent on the international market than the local market, which reflected a premium over the fundamental value of the stocks. In fact, the beta on the local market portfolio decreased from 0.62 before the Corralito to 0.10 during the Corralito. On the other hand, the ADR portfolio was more affected by international market conditions during the Corralito, as the beta on the international market portfolio increased from 0.23 before the Corralito to 0.41 during the Corralito. This is reasonable, as the Corralito's restrictions only affected Argentine investors, and not investors in the U.S. Argentine investors' incentives to invest in their local stock market were not in line with the market conditions that foreign investors were facing in the U.S. stock markets, where the ADRs trade. It is important to mention that while the local and international indexes explained more than 70% of the variance of the ADR portfolio returns before the Corralito, they only explained 11% of the variance of the ADR portfolio returns during the Corralito.

During the period in which the underlying local stock market was closed (13 business days), the ADR portfolio correlation with the international market increased

significantly. In particular, the beta on the international market portfolio increased to 0.82. It is important to consider that the regression is based on only 13 data points, that the t-statistic of the coefficient was not statistically significant and that the international index explained only roughly 10% of the variance of the ADR portfolio returns.

VI. SUMMARY

The introduction of capital controls in the middle of the Argentine crisis created a significant distortion in both cross-listed and non cross-listed local stock prices. Argentine investors used the local stock market to escape the capital controls imposed by the Corralito. In particular, by purchasing ADR stocks, converting them into ADRs and selling them in U.S. stock markets, Argentine investors were able to transfer their wealth from their frozen bank deposits in Argentina to the U.S. banking system. By doing so they were not only able to avoid the local capital controls, but to completely eliminate the devaluation risk that the Argentine peso was suffering, while increasing the liquidity of their investment. For these reasons, Argentine investors were willing to pay a significant premium for the local stocks, assuming an instant loss when they converted the stocks into ADRs that trade in the U.S. This premium varied during the period December 2001 – March 2002 according to the significance of the control capital, devaluation and liquidity risks, reaching a peak of over 40% just before the currency peg abandonment at the beginning of January 2002.

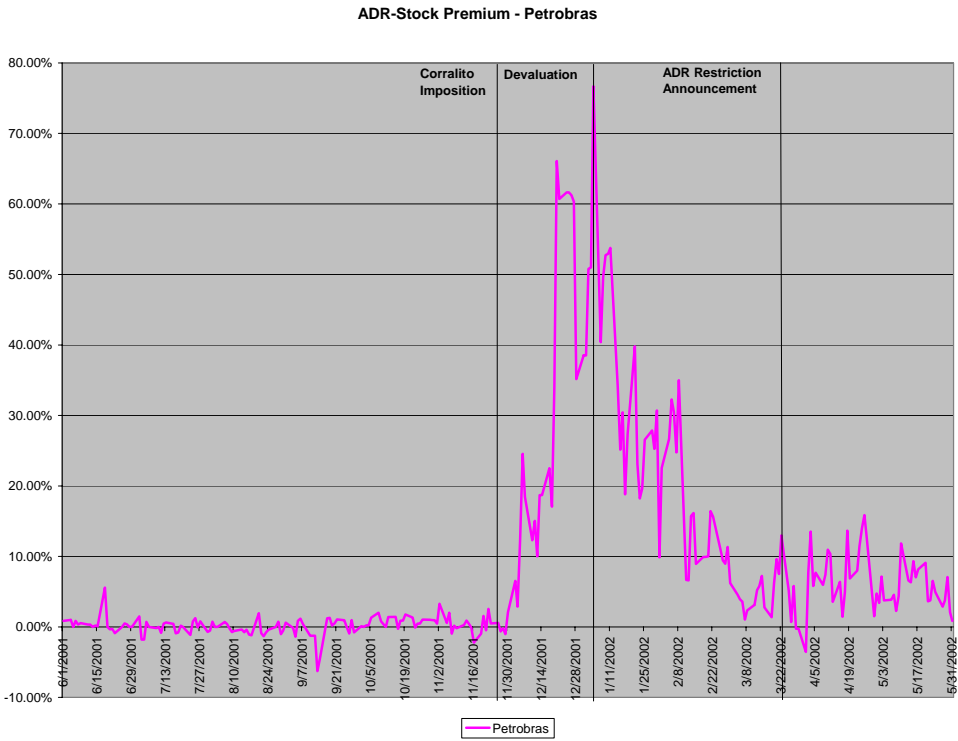
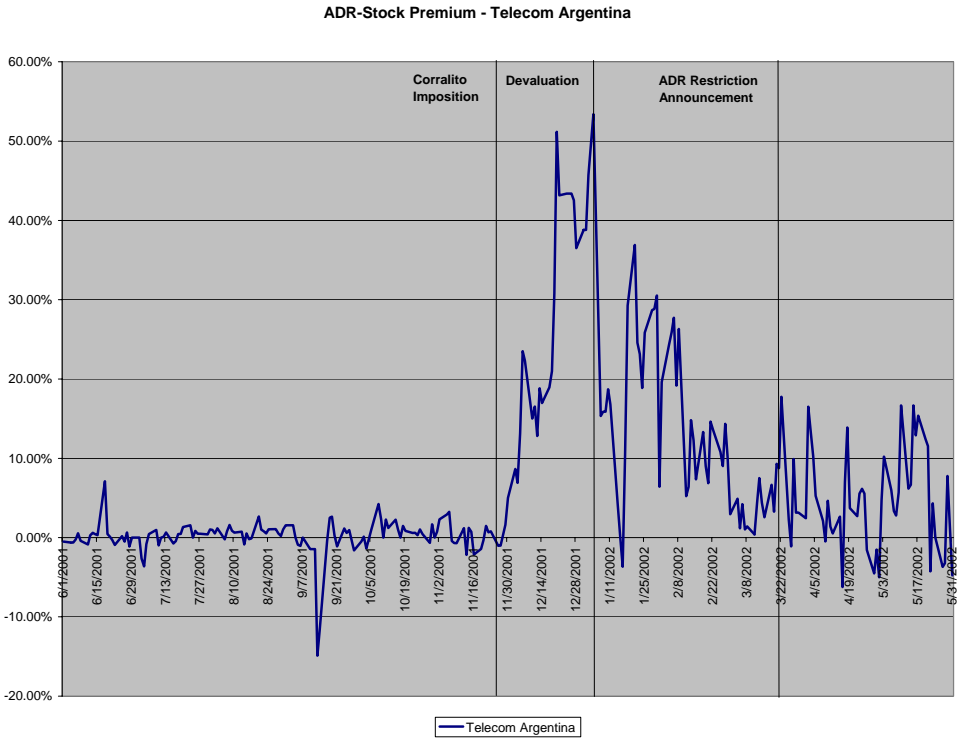
Even though their increase was lower than the one observed in ADR stock prices, non-ADR stock prices were also significantly impacted by the Corralito. While local stocks that were not cross-listed did not represent a vehicle for Argentine investors to transfer their funds abroad, they represented a partial hedge for a potential devaluation. According to our estimates, Argentine investors were willing to pay an average premium of 0.87% per every 1% expected devaluation for ADR stocks, but only an average premium of 0.52% per every 1% expected devaluation for non-ADR stocks during the analyzed period. Our analysis shows that, even though non cross-listed stocks should have higher liquidity than frozen bank deposits, Argentine investors were not disposed to pay a premium for this concept

when buying these stocks. However, as stocks that are cross-listed have a significant higher liquidity, an average liquidity premium of approximately 1.50% was attached to these stocks during the analyzed period. Finally, according to our calculations, an average capital control avoidance premium of approximately 5.70% was paid by Argentine investors when buying cross-listed stocks during the analyzed period.

The introduction of the Corralito not only distorted local stock prices, but also produced changes in the pricing of Argentine ADRs traded in the U.S. While before the Corralito, most of the variation on the returns of Argentine ADRs was explained by the Argentine stock market, after the introduction of capital controls, local conditions explained very little the changes in ADR returns. On the contrary, during this period, the correlation of Argentine ADR returns with the international market increased. This trend was even more significant during the period in which the local stock market was closed.

Some of these features result from the specific policies adopted in Argentina, but others may reflect the general distortions that follow from capital controls. In part, they produce sharp differences between local and international prices of capital, and potentially distort the allocation of capital internally. These costs would need to be considered when evaluating the overall impact of capital controls on the economy.

EXHIBIT 1 – PREMIUM FOR TELECOM ARGENTINA AND PETROBRAS⁴



Source: DataStream

⁴ Premium was calculated as (Stock Price - ADR Price) / ADR Price and was not adjusted for transaction costs. ADR Price was calculated on a per share basis using the ADR conversion factor.

EXHIBIT 2 – REGRESSION ADR STOCK PORTFOLIO PREMIUM

ADR Stock Portfolio = - 0.49 + 0.985 ADR Portfolio + 7.15 Corralito
- 5.68 ADR Restriction Announcement
+ 0.867 Exp Devaluation (%)

Predictor	Coef	SE Coef	T	P
Constant	-0.489	1.231	-0.40	0.692
ADR Portfolio	0.984883	0.007846	125.52	0.000
Corralito	7.1546	0.8406	8.51	0.000
ADR Restriction Announcement	-5.6794	0.7623	-7.45	0.000
Exp Devaluation (%)	0.86702	0.04183	20.73	0.000

S = 3.57796 R-Sq = 99.4% R-Sq(adj) = 99.4%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	4	487994	121999	9529.77	0.000
Residual Error	243	3111	13		
Total	247	491105			

EXHIBIT 3 – REGRESSION NON-ADR STOCK PORTFOLIO PREMIUM

$$\text{Non-ADR Stock Portfolio} = 29.6 + 0.730 \text{ ADR Portfolio} - 0.193 \text{ Corralito} + 0.523 \text{ Exp Devaluation (\%)}$$

Predictor	Coef	SE Coef	T	P
Constant	29.608	1.476	20.06	0.000
ADR Portfolio	0.730231	0.009388	77.78	0.000
Corralito	-0.1932	0.9804	-0.20	0.844
Exp Devaluation (%)	0.52301	0.04780	10.94	0.000

S = 4.42478 R-Sq = 98.4% R-Sq(adj) = 98.3%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	285493	95164	4860.61	0.000
Residual Error	244	4777	20		
Total	247	290270			

EXHIBIT 4 – REGRESSION PRE-CORRALITO ADR RETURNS

ADR Portfolio Return = - 0.00212 + 0.230 S&P500 Return + 0.622 Merval Return

Predictor	Coef	SE Coef	T	P
Constant	-0.002121	0.001100	-1.93	0.056
S&P500 Return	0.22977	0.09087	2.53	0.013
Merval Return	0.62169	0.03795	16.38	0.000

S = 0.0123221 R-Sq = 70.6% R-Sq(adj) = 70.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	0.046412	0.023206	152.84	0.000
Residual Error	127	0.019283	0.000152		
Total	129	0.065695			

EXHIBIT 5 – REGRESSION POST-CORRALITO ADR RETURNS

ADR Portfolio Return = - 0.00306 + 0.406 S&P500 Return + 0.0983 Merval Return

Predictor	Coef	SE Coef	T	P
Constant	-0.003063	0.002582	-1.19	0.240
S&P500 Return	0.4063	0.2461	1.65	0.103
Merval Return	0.09832	0.04281	2.30	0.025

S = 0.0216564 R-Sq = 10.7% R-Sq(adj) = 8.1%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	0.0038367	0.0019184	4.09	0.021
Residual Error	68	0.0318918	0.0004690		
Total	70	0.0357286			

EXHIBIT 6 – REGRESSION ADR RETURNS WHEN UNDERLYING STOCK MARKET WAS CLOSED

ADR Portfolio Return = - 0.00745 + 0.824 S&P500 Return

Predictor	Coef	SE Coef	T	P
Constant	-0.007454	0.005102	-1.46	0.172
S&P500 Return	0.8237	0.7505	1.10	0.296

S = 0.0177143 R-Sq = 9.9% R-Sq(adj) = 1.7%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	0.0003780	0.0003780	1.20	0.296
Residual Error	11	0.0034517	0.0003138		
Total	12	0.0038298			

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