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**The Impact of Increased Dividend Announcements on Stock Price: A Test
Of Market Efficiency**

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Abstract

The purpose of this study is to test the semi-strong form efficient market hypothesis by analyzing the effects of increased dividend announcements on stock price. Specifically, is it possible to earn an above normal return on a publicly traded stock when the firm announces an increased dividend? Numerous past studies suggest that with a company's increased dividend announcement goes a positive signal about the firm's future, thereby significantly increasing the firm's stock price. Likewise, the positive signal implies that the firm now attracts a new breed of investors, thus driving up demand for the firm's stock. According to the semi-strong form efficient market hypothesis, it is not possible to consistently outperform the market — appropriately adjusted for risk — by using public information such as increased dividend announcements. This type of information should impound stock price sufficiently fast to disallow any investor's earning an above normal risk adjusted return. Evidence here supports the positive signal associated with the sample of increased dividend announcements examined. However, the study results fail to support the semi-strong form efficient market hypothesis.

Introduction

Dividend announcements are one of the most highly studied and meaningful events for investors to research. They can be used as a direct signal of strength regarding a company's liquidity in today's market. A dividend can be thought of as the cost of equity capital to equity shareholders. The announcement of a dividend can be seen in two perspectives: if the dividend that is announced is up to expectations of shareholders, the market price of the shares will be positively affected. Whereas, if the dividend that is announced is not up to expectations of the equity investors, the market price of the shares will be negatively affected.

Market efficiency is defined as the amount of time it takes for the stock market to react to announced public information. Thus, there are three different levels of market efficiency. If a market is weak-form efficient, then the market reacts so fast to the announced information that no investor is able to earn a substantial return or a return higher than that of the S&P 500 Market Index. Semi-strong market efficiency is similar, but is defined as the impracticality of gaining an above average return based on announcements of public information. Finally, when a market is strong-form efficient, investors are unable to earn above normal returns by relying on both public and private information. The only possible way an investor would be able to benefit would be to engage in the illegal act of insider trading. Investors in the past have been able to obtain gains based off public information, so it is safe to say that the market is not strong-form efficient. Is the market semi-strong efficient with respect to dividend announcements? To answer this question, this study will analyze stock prices before the public dividend announcements and examine how this type of information affects trading, and how in advance investors can earn a return before the announcement is made. Is it possible for investors to "beat" the market relying solely on public information? In order to test the semi-strong efficient market hypothesis, this research will analyze how increased dividend announcements affect stock up to 30 days price before and after the announcement.

I. Background and Purpose

The purpose of this event study is to test market efficiency theory by analyzing the impact of a sample of 30 increased dividend announcements on the firm's stock price. Specifically, how fast does the market price of the firms' stock react to the sample of increased dividend announcements examined? This research tests whether the announcement of increased dividends directly incorporates the strong form, semi-strong form, or weak form of the

efficient market hypothesis based on the timing of the announcements and the modifications in stock price that occur.

This study tests the effects of a sample of 30 increased dividend announcements on stock price using the standard risk adjusted event study methodology. If a strong correlation exists between an announcement and an immediate equity market price change, there may not be opportunity to earn an above normal return and such evidence would support efficient market theory.

II. Literature Review

Fama defined market efficiency in respect to how quickly the stock market reacts to announced public information and proposed three levels of market efficiency. These three levels are characterized by how quickly the stock market responds as well as the amount of returns investors can possibly seek from carrying out legal trading actions. Weak-form, semi-strong form, and strong-form efficiency are the three different ways a market can be differentiated. The impact of an increased dividend announcement on stock prices has been widely researched and documented.

Mehndiratta and Gupta (2010) stated that the semi-strong form of efficient market hypotheses (EMH) states that stock prices reflect all the publicly available information instantaneously and accurately. An increased dividend announcement normally signals higher future earnings, which is seen in investor's eyes as a signal of strength. Fracassi (2008) however found interesting information when examining stock price reactions to increased dividend announcements. On a short time scale, Fracassi found a 3-day cumulative abnormal return of 1.34% for dividend increases. However, among companies that announce a dividend increase 42% have actually seen a negative stock price reaction. The reasoning behind this dispersion of returns is thought to be due to daily idiosyncratic and systematic volatility in respect to the dividend announcement.

Sheikhabahaei and Mohd investigated the market reaction of 356 dividend announcements by 138 firms at the Malaysia stock exchange. The result of their study concluded, "The market reacts positively to dividend increasing stocks but no significant react to the constant dividend or the decreasing group of dividend announcements. It was also observed from the information in a day prior to the announcement day that there is a probable leakage of information by the excess access to the insider information of the firms."

Dividend announcements, whether a surprise or an increase to an already existing dividend, are one of the most common actions firms take in order to attract new investors. These announcements by firms are usually seen as a sign of strength, suggesting that the firm has a substantial amount of excess capital. This study will test the efficiency and effect of the public announcement of an increased dividend on stock price.

III. Methodology and Study Sample

This study sample includes 30 randomly selected increased dividend announcements between the time period May 10, 2005 and February 5, 2013. The random sample was selected from increased dividend announcements in which the company is traded either on the NYSE or NASDAQ. Table 1 describes the sample.

Table 1: Description of Study Sample

Ticker	Firm name	Announcement Date	Traded index
BA	The Boeing Company	December 12 2011	NYSE
DIS	Walt Disney	November 30 2011	NYSE
AAPL	Apple	July 24 2012	NASDAQ
XOM	ExxonMobil Corp	April 25 2012	NYSE
NVS	Novartis	February 1 2012	NYSE
SO	Southern Company	April 16 2012	NYSE
CAT	Caterpillar, Inc.	June 13 2012	NYSE
IBM	International Business Machines	April 24 2012	NYSE
JNJ	Johnson & Johnson	April 23 2009	NYSE
NKE	Nike	November 20 2008	NYSE
MCD	McDonalds Corporation	September 22 2010	NYSE
AEP	American Electric Power Company Inc.	October 26 2010	NYSE
MSFT	Microsoft Corporation	September 20 2011	NASDAQ
PM	Philip Morris International Inc.	September 14 2011	NYSE
INTC	Intel Corporation	July 26 2012	NASDAQ
WMT	Wal-Mart Stores Inc.	March 3 2011	NYSE
MO	Altria Group Inc.	August 26 2011	NYSE
KMB	Kimberly-Clark Corporation	February 23 2010	NYSE
WAG	Walgreen Company	June 19 2012	NYSE
SWK	Stanley Black & Decker, Inc.	July 18 2012	NYSE
KO	The Coca-Cola Company	February 21 2008	NYSE
MMM	3M Company	February 5 2013	NYSE
AWR	American States Water Company	August 1 2012	NYSE
EMR	Emerson Electric Company	November 1 2011	NYSE
ITW	Illinois Tool Works Inc.	August 3 2007	NYSE
HRL	Hormel Foods Corporation	November 22 2010	NYSE
SYU	Sysco Corporation	November 10 2005	NYSE
BDX	Becton, Dickinson, and Company	November 20 2012	NYSE
LEG	Leggett & Platt, Incorporated	August 8 2012	NYSE
MSA	Mine Safety Appliances Company	May 10 2005	NYSE

To test semi-strong market efficiency with respect to public announcements of increased dividends and to examine the effect of increased dividends on stock return around the announcement date, this study proposes the following null and alternate hypotheses:

H1₀: The risk adjusted return of the stock price of the sample of firms announcing a dividend is not significantly affected by this type of information on the announcement date.

H1₁: The risk adjusted return of the stock price of the sample of firms announcing a dividend is significantly positively affected by this type of information on the announcement date.

H1₂: The risk adjusted return of the stock price of the sample of firms announcing a dividend is significantly negatively affected by this type of information on the announcement date.

H2₀: The risk adjusted return of the stock price of the sample of firms announcing a dividend is not significantly affected by this type of information around the announcement date as defined by the event period.

H2₁: The risk adjusted return of the stock price of the sample of firms announcing a dividend is significantly affected by this type of information around the announcement date as defined by the event period.

This study uses the standard risk adjusted event study methodology from the finance literature. The announcement date (day 0), obtained from <http://finance.yahoo.com/>, is the date of the firm's announcement of the increased dividend. The required historical financial data, i.e. the stock price and S&P500 index during the event study period was also obtained from the internet website <http://finance.yahoo.com/>.

1. The historical stock prices of the sample companies, and S&P 500 index, for the event study duration of -180 to +30 days (with day -30 to day +30 defined as the event period and day 0 the announcement date) were obtained.
2. Then, holding period returns of the companies (**R**) and the corresponding S&P 500 index (**R_m**) for each day in this study period were calculated using the following formula:

$$\text{Current daily return} = \frac{\text{current day close price} - \text{previous day close price}}{\text{previous day close price}}$$

A regression analysis was performed using the actual daily return of each company (dependent variable) and the corresponding S&P 500 daily return (independent variable) over the pre-event period (day -180 to -31 or period prior to the event period of day -30 to day +30) to obtain the intercept alpha and the standardized coefficient beta. Table 2 shows alphas and betas for each firm.

3. For this study, in order to get the normal expected returns, the risk-adjusted method (market model) was used. The expected return for each stock, for each day of the event period from

day -30 to day +30, was calculated as:

$$E(\mathbf{R}) = \text{alpha} + \text{Beta} (\mathbf{R}_m),$$

where **R_m** is the return on the market i.e. the S&P 500 index.

4. Then, the Excess return (**ER**) was calculated as:

$$\mathbf{ER} = \text{the Actual Return } (\mathbf{R}) - \text{Expected Return } E(\mathbf{R})$$

Table 2: Alphas and Betas of Study Sample

FIRM name	Alpha	Beta
BA	- 0.0002409	1.098504
DIS	0.0009307	1.080323
AAPL	0.0022015	0.9599692
XOM	0.0002125	0.9158344
NVS	-0.000066	0.7304069
SO	0.0007643	0.3269699
CAT	0.0003611	1.491303
IBM	0.0005025	0.7247484
JNJ	0.0001248	0.6031184
NKE	0.0013191	0.8471123
MCD	0.0011377	0.5949518
AEP	0.0006397	0.6966376
MSFT	- 0.0001563	0.8877574
PM	0.0013069	0.6767706
INTC	0.0004659	1.143574
WMT	.0000674	.4586088
MO	.0007643	.4380419
KMB	.0006488	.5633564
WAG	-.0002316	.5774825
SWK	-.0001101	1.4850590
KO	.0016401	.5055068
MMM	.0002035	.9518649
AWR	.0004031	.6599839
EMR	-.0010350	1.2458390
ITW	.0006254	.9857035
HRL	.0005688	.4298258
SYY	-.0005105	.8877918
BDX	.0000544	.6635091
LEG	-.0010485	1.1846740
MSA	-.0009430	1.4375850

5. Average Excess Returns (**AER**) were calculated (for each day from -30 to +30) by averaging the excess returns for all the firms for given day.

$$\text{AER} = \text{Sum of Excess Return for given day} / n,$$

where n = number of firms in sample i.e. 30 in this case

6. Also, Cumulative AER (CAER) was calculated by adding the AERs for each day from -30 to +30.
7. Graphs of AER and Cumulative AER were plotted for the event period i.e. day -30 to day +30. Chart 1 below depicts Average Excess Return (**AER**) plotted against time. Chart 2 below depicts Cumulative Average Excess Return (**CAER**) plotted against time.

IV. Quantitative Tests And Results

Did the market react to the announcements of increased dividends? Was the information surrounding the event significant? One would expect there to be a significant difference in the Actual Average Daily Returns (Day -30 to Day +30) and the Expected Average Daily Returns (Day -30 to Day +30) if the information surrounding the event impounds new, significant information on the market price of the firms' stock (see AER graph in Chart 1 below). If a significant risk adjusted difference is observed, then we support our hypothesis that this type of information did in fact significantly either increase or decrease stock price. To statistically test for a difference in the Actual Daily Average Returns (for the firms over the time periods day -30 to day +30) and the Expected Daily Average Returns (for the firms over the time periods day -30 to day +30), we conducted a paired sample t-test and found a significant difference at the 5% level between actual average daily returns and the risk adjusted expected average daily returns. Results here support the alternate hypothesis H_{21} : The risk adjusted return of the stock price of the sample of firms announcing increased dividends is significantly positively affected around the announcement date as defined by the event period. This finding supports the significance of the information around the event since the market's reaction was observed.

Is it possible to isolate and observe the sample's daily response to the announcement of an increased dividend from day -30 to day +30? If so, at what level of efficiency (weak, semi-strong, strong form according to efficient market theory) did the market respond to the information and what are the implications for market efficiency?

Another purpose of this analysis was to test the efficiency of the market in reacting to the announcement of an increased dividend event. Specifically, do we observe weak, semi-strong, or strong form market efficiency as defined by Fama, 1970, in the efficient market hypothesis? The key in the analysis or tests is to determine if the AER (Average Excess Return) and CAER (Cumulative Average Excess Return) are significantly different from zero or that there is a visible graphical or statistical relationship between time and either AER or CAER. See AER and CAER graphs in Charts 1 and 2 below. T-tests of AER and CAER both tested different from zero at the 5% level of significance. Likewise, observation of Chart 2 (graph of CAER from day -30 to day +30) confirms the significant positive reaction of the risk adjusted returns of the sample of firms tested, up to 10 days prior and 26 days after to the announcement of an increased dividend.

Chart 1: Average Excess Return over Event Period

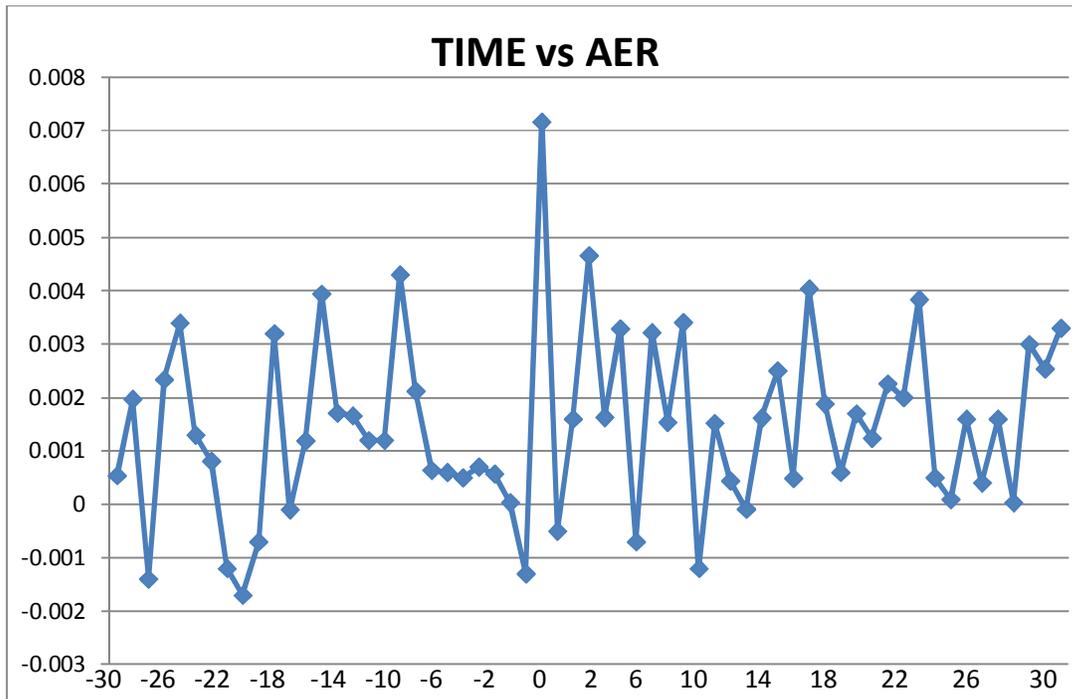
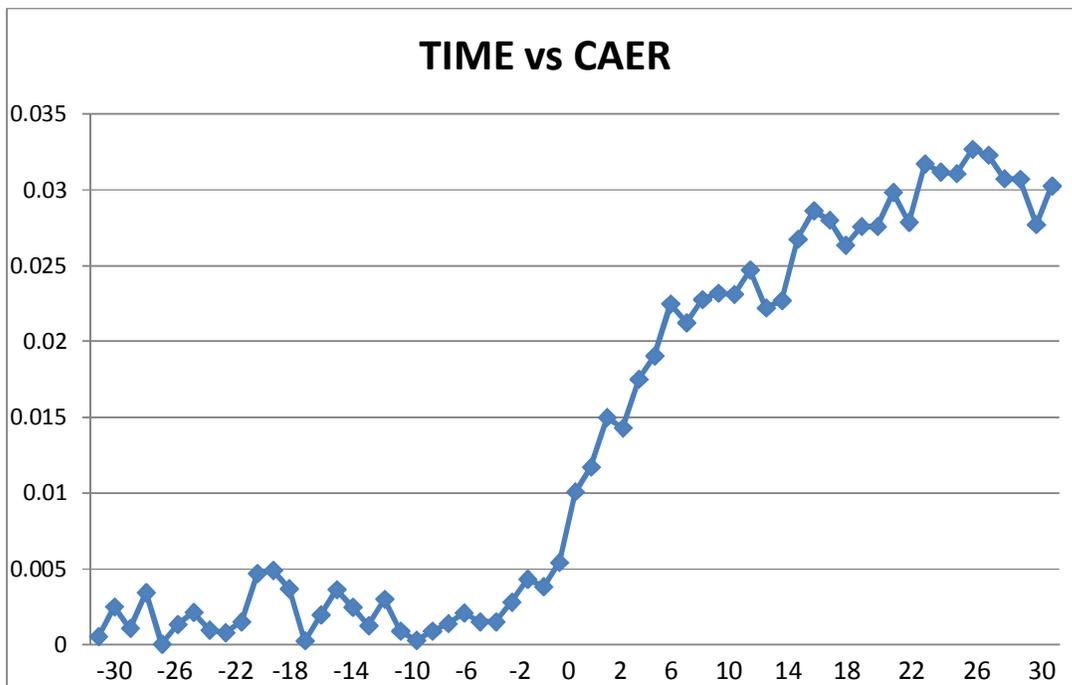


Chart 2: Cumulative Average Excess Return over Event Period



The graph in Chart 2 demonstrates that the announcements of increased dividends had a significant positive impact on the firm's share price up to twelve days prior and ten days after to announcement day 0, the increased dividend announcement date. The evidence rejects the

null hypothesis H_{10} : The risk adjusted return of the stock price of the sample of firms announcing increased dividends is not significantly affected by this type of information on the announcement date when made public. Instead, it supports the alternate hypothesis H_{11} : The risk adjusted return of the stock price of the sample of firms announcing an increased dividend is significantly positively affected by this type of information on the announcement date.

For the sample of firms analyzed, an investor is able to earn an above normal risk adjusted return by acting on the public announcement of an increased dividend. As of the announcement date, the firms' stock prices had not yet adjusted to the new information embedded in the increased dividend news. In fact, after the announcement, stock price increased from days +1 to +10, then returning to announcement day equilibrium on day +30. This is consistent with the semi-strong form market efficiency hypothesis which states that the stock price reflects all publicly available information. Interestingly, the results for this sample suggest significant insider trading activity up to 12 days prior to the announcement of the increased dividend.

V. Conclusion

This study tested the effect of announcing an increased dividend on the stock price's risk adjusted rate of return for a randomly selected sample of 30 firms from the time period May 10, 2005 to February 5, 2013. These stocks were traded on the NYSE or NASDAQ. Using standard risk adjusted event study methodology with the market model, the study analyzed 8,130 recent observations on the fifteen publicly traded firms and the S&P 500 market index. Appropriate statistical tests for significance were conducted. Results show a significant positive market reaction prior to the firms' announcement of increased dividends. Findings also support efficient market theory at the semi-strong form level as documented by Fama (1970). Similar to many other event study's findings in the finance literature (stock options, repurchase, dividend announcements etc.), apparently trading activity on the basis of this information surfaced prior to it being made public.

Specifically, for this study the announcement of the increased dividend is viewed as a signal of good news. Investors appear to receive the increased dividend news as an implicit signal from management that the firm's future cash flows and growth look bright and will culminate into continuously rising stock price. The market's positive reaction to the announcement suggests that management and stockholders have little to fear from initiating increased dividends.

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**An Analysis of The Perceptions of The Usefulness of Annual Reports and
Other Information By Individual Investors In Hong Kong**

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Abstract

This study reports the results of a survey of individual investors in Hong Kong with respect to their perceptions of information usefulness. First, we find that although investors use annual reports, they rank usefulness of annual reports lower than that of other alternative information sources. Second, consistent with the FASB's Conceptual Framework, individual investors view relevance and reliability as the two primary characteristics of useful financial reporting. However, they perceive relevance to be more important than reliability. Third, we provide evidence that the perceived usefulness of annual reports is affected not only by investor characteristics, but also by company type. Finally, we demonstrate that Hong Kong investors desire additional information, in particular relevant non-financial information, to be disclosed in annual reports to help them make better investment decisions. These findings help us better understand why and how financial reporting can be improved.

Key Words: Value-relevance, Financial Reporting, Hong Kong, Individual Investors.

The usefulness of financial reports has been one of the most important areas of research in accounting. Empirical accounting literature has documented the usefulness of accounting information in capital markets around the global (e.g., Amir et al. 1993; Barth and Clinch 1996; Graham and King 2000; Chen et al. 2001, Pouraghajan et al. 2012). While most of the studies conclude that financial reports provide important information to investors, the reported associations between accounting numbers and stock prices and/or returns are generally low. Some studies even report a decreasing trend in the value-relevance of financial statement information over the past decades (e.g., Francis and Schipper, 1999; Lev and Zarowin 1999, Lim and Park 2011). These findings, along with the discontent expressed by practicing accountants toward the current financial reporting model, provide support for suggestions that financial reports also should include other information such as better measures of intangible assets, fair value measurements, high-level financial and operational data that are used by management, and more forward-looking information (e.g., AICPA, 1994; Lev and Zarowin, 1999; Entwistle and Phillips, 2003; Bricker and Chandar, 2012). Although these concerns and suggestions seem appealing, it remains unclear how investors perceive the usefulness of these other information sources compared to what currently is contained in annual reports, and whether the qualitative characteristics of financial reporting, or even specific investor and investee characteristics, would affect these perceptions.

Though important, these questions cannot be effectively addressed by the existing capital market-based studies that rely on statistical association of reported accounting numbers with stock prices and/or stock returns to evaluate the usefulness of financial reporting. Hodge (2003) suggests that survey-based research can complement the archival-based research in that it gathers data on a multitude of individual beliefs and practices to provide the underlying reasons for investor behaviors. Using a survey approach, this study examines the perceived usefulness of annual reports and other information sources by individual investors in Hong Kong.

Based on 88 useful responses from a mail survey, this paper reports the following findings. First, although individual investors in Hong Kong use annual reports, they rank the usefulness of annual reports lower than other alternative information sources such as historical information on stock price, dividends and earnings, company news, as well as advice from analysts, newspapers and magazines. Second, consistent with the FASB Conceptual Framework, investors view relevance and reliability as the two primary characteristics of useful financial reporting. However, these investors perceive relevance as more important than reliability in determining the usefulness of annual reports. Third, this

paper provides evidence that the perceived usefulness of annual reports is affected not only by investor characteristics such as education, investment experience, investment horizon, and etc., but also by the type of companies in which they invest. Finally, this paper demonstrates that Hong Kong investors demand additional information, in particular relevant non-financial information, to be disclosed in annual reports to help them make better investment decisions.

I. Research Questions

Prior research has generally established the usefulness or value-relevance of financial reporting to equity investors in global stock markets through the examination of the association of accounting information with stock valuation (e.g., Alford and Jones 1993; Amir et al. 1993; Barth and Clinch 1996; Graham and King 2000; Chen et al. 2001; Pouraghajan et al. 2012). Over the years, however, practitioners and academicians have raised concerns about the extent of the usefulness of financial statement information. For example, in 1994, the AICPA Special Committee on Financial Reporting issued a report to address the loss of relevance of financial reporting. Entwistle and Phillips (2003) discussed many of the same concerns expressed in the AICPA report. Several studies (e.g., Lev and Zarowin, 1999; Francis and Shipper, 1999; Ely and Maymire, 1999; Lim and Park 2011) also demonstrated empirically that the usefulness of accounting information has deteriorated over the years.

Researchers often attribute this deterioration in value-relevance (usefulness) to the inability of the current accounting model to capture the changing business environment. This study examines four research questions that are logically related and motivated by the extant conceptual, as well as empirical, literature. First, to better understand the decrease in value-relevance of financial reporting as reported in archival-based research, the following question is asked:

Q1: How do individual investors perceive the usefulness of annual reports in comparison to other sources of commonly available information?

Next, an attempt is made to assess individual investors' perceptions about the relevance and reliability of financial reporting. Much of the debate and concern about the decreasing usefulness of financial reporting centers on the well-known "tradeoff" between relevance and reliability: the two primary characteristics of useful information as elaborated in the Financial Accounting Standards Board's Conceptual Framework (FASB, 1978). Some critics argue that accounting has lost its relevance because it fails to capture the values of internally generated intangible assets, while others suggest that accounting numbers have become less useful because of their decreasing reliability (Entwistle and Phillips, 2003). This study assesses individual investors' perceptions about the impact of relevance and reliability on financial reporting by asking the following question:

Q2: How is the perceived usefulness of annual reports affected by the two primary qualitative characteristics of accounting information: relevance and reliability?

Third, an important area of inquiry that is largely missing from the extant literature is that the usefulness of information is a joint function of both information and decision maker attributes. In *Statement of Financial Accounting Concepts No. 1* (FASB, 1978), the FASB states that decision usefulness is subject to user-specific constraints. Investor characteristics can influence how accounting information is used, and therefore, should affect investors' perceived usefulness of such information. Epstein and Pava (1995) examined the relationship between investor characteristics and usefulness of the management discussion and analysis (MD&A) section in the annual report, but found some conflicting results in that only wealthy (shareholders with more than \$50,000 invested in stocks), but inexperienced (with no formal

education or training in accounting, finance or investing), investors made substantial use of the MD&A. This current study incorporates investor characteristics into the research design in a more comprehensive manner as discussed in the Questionnaire Design and Sample section of the paper.

Furthermore, recent accounting literature often attributes the decline in the value relevance of accounting information to the fact that there is an increasing number of technology-intensive firms in the economy and that the current financial reporting model does not adequately capture the intangible value-drivers of these firms (e.g., Lev and Zarowin, 1999). Empirical evidence has been mixed in support of this claim that high-tech firms have suffered greater loss of the usefulness of their financial reports compared to other firms (Francis and Schipper 1999; Lev and Zarowin 1999). Consequently, it appears that both investor and investee characteristics may influence the perceived usefulness of financial accounting reports. As a result, this study asks the following question:

Q3: How do investor and investee characteristics affect the perceived usefulness of annual reports?

Finally, this study evaluates investors' perceptions about the usefulness of additional information included in annual reports. To improve the usefulness of financial reporting, both the practicing and academic accounting communities have recommended an increase in the current reporting content by including non-financial measures of key business processes and by providing more information about plans, opportunities, risks and uncertainties as well as information used by management to manage the business (e.g., AICPA, 1994, Lev and Zarowin 1999). This study attempts to provide some preliminary answers to this issue by asking the following question:

Q4: How do investors perceive the potential usefulness of some information that is not currently included in the annual report?

II. Data

A survey was conducted of individual investors in Hong Kong in order to gather evidence regarding our four research questions. As one of the most important financial centers in the World, Hong Kong has well-established accounting, auditing and corporate governance frameworks to help ensure the quality of published financial statements. The disclosure requirements for publicly held companies also ensure that financial information is available to the investing public via various communication channels on a timely basis. Young and Guenther (2003) compared the accounting disclosure requirements 23 countries, including the U.S. and Hong Kong, and concluded that Hong Kong has an accounting disclosure environment comparable to those of the U.S. and Canada.

The listing of securities in Hong Kong is primarily regulated by the *Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited* (the "Exchange Listing Rules"). Companies whose stock is listed on the Hong Kong Exchange must prepare an annual report and audited financial statements within 5 months of the end of their financial year. These must be circulated to shareholders not less than 21 days before the company's annual meeting, which must be held within 6 months of the end of each fiscal year. The annual report must include, at a minimum, a balance sheet, income statement, statement of cash flows, a statement of movements in equity, other than those arising from capital transactions with shareholders and distributions to shareholders, accounting policies, and explanatory notes (Appendix of the Listing Rules, APP 16.2). In addition, corresponding financial statements from the previous fiscal year are required to be presented for each of the current, primary financial statements reported in the annual report, and each set of financial

statements in an annual report must provide a true and fair view of the state of affairs of the listed enterprise and of the results of its operation (Deloitte Touche Tohmatsu, Hong Kong GAAP).

Listed companies are also required to provide Management Discussion and Analysis (MD&A) statement (APP 16.32). In “A Guide for Directors’ Business Review in the Annual Report” published by the HKSA in 1998, a recommendation was made that the Business Review be divided into an Operating Review and a Financial Review. Other detailed disclosures required for the listed companies include information about customers and suppliers, directors' interests in the company's shares and any contracts directors have with the company, and the details of significant contracts between the company and its controlling shareholders (APP 16.31).

In addition to the published annual report, newspaper reports also are a recognized channel for dissemination of information about listed companies. Listed companies are required to provide preliminary announcements of their full-year results in the newspaper the next business day after approval of their financial statements by the board of directors (APP 7A). A semi-annual report also must be published in the newspapers and sent to shareholders within 3 months of the end of the interim period. Additionally, listed companies also are subject to numerous disclosure requirements relating to matters such as the announcement of financial results, dividends, and changes to the company's capital structure or its constitutional documents (Deloitte Touche Tohmatsu, Hong Kong GAAP). These requirements generally are satisfied by a press announcement. In summary, Hong Kong has a rich institutional and financial reporting environment that allows us to investigate the four research questions listed above.

III. Questionnaire Design and Sample

The questionnaire used to gather data for our study was designed after an extensive review of the extant literature on the value-relevance (usefulness) of accounting information and investor perception surveys (e.g., AICPA, 1994; Epstein and Pava, 1995; Anderson and Epstein, 1996; Francis and Schipper, 1999; Lev and Zarowin, 1999). The questionnaire is four pages long and consists of four separate parts. Part I collects information on the perceived usefulness of annual report items such as the chairman and director reports, audit report, operations review, financial statements and notes, in addition to the perceived usefulness of other commonly available sources of information such as industry trends, market share, competitor position, historical information on dividends, share price and earnings, advice of financial analysts, newspapers, magazines, friends and stockbrokers, company news, and company officer and director information. Altogether, respondents were asked to rate the usefulness of 20 information items on a Likert scale ranging from 0 (never used) to 5 (the most useful).

Part II contains six statements used to assess investor perceptions about the relevance and reliability of financial statements. Respondents were asked to indicate their level of agreement with six statements on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The first four statements require respondents to evaluate the relevance of financial statements in terms of whether they provide information that helps investors evaluate a company's performance and financial position, dividend-paying ability, and future prospects. The next two statements require respondents to assess their perceptions about the reliability of financial statements using a similar five-point Likert scale.

Part III of the questionnaire examines investor perceptions of the usefulness of additional information disclosures in annual reports. Specifically, respondents were asked to evaluate,

on a five-point Likert scale, their perceptions of the necessity of disclosing additional financial items such as (1) high-level operating data and performance measures, (2) the effects of core and non-core activities and events on financial performance, and (3) the fair values of core and non-core assets and liabilities, as well as nonfinancial items such as (1) more complete product information, (2) forward-looking information, (3) dividend policy, (4) quality of management, and (5) competitive position. Finally, Part IV of the questionnaire collects demographic information from respondents including educational background, investment experience, investment objectives, number of stocks held, investment horizon, dollar amount invested, and investment training.

Overall the questionnaire demonstrates good reliability and validity. As reported in the next section, the average Cronbach alpha of various multi-item questions is .862, suggesting high internal reliability. The content validity of the instrument relies on previous studies (e.g., Streuly, 1994; Epstein and Pava, 1995; Anderson and Epstein, 1996) and professional literature (e.g., the U.S. and Hong Kong conceptual framework documents; the AICPA 1994 Special Committee Report on Financial Reporting) from which most of the survey questions were drawn. The construct validity of the instrument is assessed by factor analysis and, as reported in the next section, the factor solutions of various parts of the survey satisfactorily confirm the underlying constructs these questions are intended to measure, with factors explaining more than 72% of the variance for all constructs.

The questionnaire was sent to 1,062 individual investors whose names and addresses were provided by two share registrars in Hong Kong, Tengis Ltd. and Hong Kong Registrar Ltd. The sample of investors was randomly selected by the share registrars from seven companies that are typical of (1) conglomerates, (2) technology firms, and (3) traditional, non-diversified, industrial firms. The rationale behind sampling from these three types of firms is to measure investee characteristics that may affect the usefulness of annual reports. Financial reporting has been criticized for failing to capture and measure increasing complexity and intangibles in the business world (AICPA, 1994; Francis and Schipper, 1999; Lev and Zarowin, 1999; Entwistle and Phillips, 2003). Thus, conglomerates and technology companies seem more likely to present difficulties for financial reporting than traditional, non-diversified, industrial firms.

The survey was sent out in early March, and respondents were asked to respond by April 15th. Sixty nine responses were returned before the “nominal” deadline and 19 were returned after, resulting in a total of 88 usable responses. While this response rate of slightly over 8% is not very high, it is comparable to those of similar surveys found in the literature (e.g., Hodge, 2003). According to Wallace and Mellor (1988), potential non-response biases is analyzed by comparing the 69 “early” and 19 “late” responses. For all the variables in this study, only two differ at the 10 percent level. The early respondents tend to have a shorter investment time horizon than the late respondents, but have, on average, more money invested in the market than the late respondents, suggesting that the early respondents are likely to be more active investors relative to the late respondents.

IV. Results and Analyses

A. Usefulness of Annual Reports and Other Information Sources

Table I, Panel A presents descriptive statistics for the perceived usefulness of 20 information items from annual reports or other information sources. It appears that Hong Kong individual investors do not rank the usefulness of annual reports high; instead, (1) share price history, (2) prior year earnings, (3) dividend history, (4) company news, and (5) advice from analysts, newspapers, and magazines are perceived by respondents as the top five useful information

sources. While Panel A provides interesting descriptive information, further analysis becomes difficult due to the large number of items involved, some of which clearly measure the same dimension of an information source. To extract unique measurement constructs, factor analysis is conducted on the 20 information items and the results are presented in Table I, Panel B.

Refer Table I

Our factor analysis methodology uses procedures suggested by Hair et al. (1998) and Field (2000). First, the overall and individual Kaiser-Meyer-Olkin measures of sampling adequacy (MSA) were examined from an initial solution. While the overall MSA was sufficiently large, six variables showed an MSA of less than .5, suggesting a low level of communality. As a result, these six variables were deleted. Second, the 14 remaining variables were examined again using factor analysis, and, as a result, one more variable was lost. The seven deleted variables having less than a .6 factor loading are: (1) Footnotes, (2) Industry Trends, (3) Advice from Analysts, (4) Advice from Friends, (5) Advice from Stockbrokers, (6) Company News, and (7) Officer and Director Information. Third, common factors were extracted based on eigenvalues greater than .7, together with an inspection of the scree plot for the tailing-off point. Table I, Panel B reveals three clearly interpretable factors with factor I measuring the perceived usefulness of annual reports, factor II measuring the perceived usefulness of market analysis, and factor III measuring the perceived usefulness of historical information on prices, dividends, and earnings.

To further analyze and compare these information sources, an average score for each factor was computed. As shown in Table II, all three average measures appear to have high reliability based on the Cronbach's alpha values. Some of the items excluded from the factor analysis solution, i.e., items *p*, *q*, and *r* in Table I (advice from analysts, newspapers and magazines, advice from friends, and advice from stockbrokers), seem conceptually related, as do items *i*, *j*, *s* and *t*, which are also excluded from the factor analysis solution. However, due to the relatively low Cronbach's alpha (.689), item *p* (advice from analysts, newspapers and magazines) which has the largest mean score was selected to serve as a surrogate variable for this group. For the same reason, item *s* (company news) was used as a surrogate variable for items *i*, *j*, *s* and *t*. Table II reports descriptive statistics and mean comparisons.

Refer Table II

As shown in Table II, Panel A, Hong Kong individual investors rank the usefulness of these five information sources in the following descending order: (1) historical price, dividends, and earnings information (HisInf), (2) company news (ComNew), (3) advice from analysts, newspapers and magazines (AdvANM), (4) annual reports (AnlRpt), and (5) market analysis (MktAna). The ANOVA and Friedman tests results reported in Table II, Panel B clearly demonstrate significant differences among these five information sources. Furthermore, the pairwise comparisons reveal that while there is no significant difference among HisInf, ComNew, and AdvANM, they are all perceived to be significantly more useful than either AnlRpt or MktAna. No difference is found between AnlRpt and MktAna.

In summary, two basic findings are reported in Tables I and II. First, five useful information sources for individual investors in Hong Kong are identified. Second, the usefulness of these five information sources is clearly stratified into two tiers by investors, with the first tier information (historical information, company news, and advice from various channels) perceived as being more useful than the second tier information (annual reports and market analysis). Based on these results, we conclude that although Hong Kong investors use annual reports, they rank the usefulness of annual reports lower than other alternative information

sources. In the following sections, this paper provides evidence to explain why annual reports are not as important as they could be.

B. Role of Relevance and Reliability

Table III, Panel A reports descriptive statistics of investor perceptions of the relevance and reliability of financial statements. The results suggest that investors perceive that financial statements provide information that is most useful for assessing performance and financial position. Investors perceive financial statements also as providing information useful for assessing (listed in order of decreasing perceived usefulness) dividend-paying ability, forward-looking information, and capital allocation and possible investment. Finally, the results indicate that financial statements are perceived by investors as providing, to a lesser degree, information that is faithful and reliable. Table III, Panel B contains the factor analysis results which yield two interpretable common factors, with the first four factors measuring relevance of financial statements and the last two factors measuring reliability of financial statements.

Refer Table III

Average scores were then computed for the two factors identified in Table III, Panel B and further analyzed. As shown in Table IV, Panels A and B, investors perceive the financial statements to contain information that is more relevant than reliable, and the difference between investor perceptions of these two financial statement characteristics is highly significant according to the T test and the Wilcoxon test.

Refer Table IV

Table IV, Panels C and D report results from the analysis of the relationships between relevance and reliability and the perceived usefulness of annual reports. Based on the reported correlations, it appears that both relevance and reliability are positively related to the usefulness of annual reports at the 10% level (two-tailed), which suggests that enhancing the relevance and reliability of financial statements will likely improve the usefulness of financial reporting. However, as reported in Table IV, Panel D, the impact of relevance on financial statement usefulness is clearly greater than that of reliability. While the effect of relevance on financial statement usefulness is highly significant, the effect of reliability is not. The high level of correlation between these two characteristics (.639 in Table IV, Panel C) probably causes reliability to lose significance, although the VIF measure does not indicate serious multicollinearity. Considering these results, we conclude that relevance is perceived as more important than reliability for improving the usefulness of financial reporting.

C. Investor and Investee Characteristics and Usefulness of Annual Reports

Table V, Panel A reports six investor demographic characteristics that primarily represent investment experience and education. These characteristics are important because more experienced and/or highly educated investors may have the necessary knowledge and feel more comfortable using annual reports in investment decisions. Again, factor analysis was conducted to identify unique constructs underlying these six demographic variables. After two separate attempts, one variable (investment training) was dropped and two common factors emerged. While Factor I clearly measures investment experience, Factor II is difficult to interpret because it combines investor education and investment horizon. Furthermore, the Cronbach's Alpha of .730 for Factor I suggests a much higher level of reliability than that of 0.548 for Factor II. Consequently, due to the aforementioned reasons, Factor II will not be further explored in the following analyses.

Refer Table V

Table V, Panel B reports the distribution of respondents' investment objectives ranging from safety of capital to speculation. While we lack a theoretical basis to predict a relationship between investment objectives and perceived usefulness of annual reports, it appears that investors speculating in the stock market may perceive annual reports as less useful than investors with other investment objectives. Table V, Panel C presents the distribution of types of companies in which the respondents are invested (investee types). After eliminating respondents that invest in more than one type of company, the results indicate that 20 respondents invested in conglomerates, 29 respondents invested in high tech firms, and 18 respondents invested in traditional, non-diversified, industrial firms. Due to the complexity of conglomerates, the importance of intangible assets to technological firms, and the perceived inability of financial statements to capture and measure increasing complexity and intangibles in the business world, we expect that investors in conglomerates and high tech firms will perceive annual reports as less useful than investors with investments exclusively in traditional, non-diversified, companies.

The correlations of investor and investee characteristics with the usefulness of annual reports are presented in Table VI, Panel A. Many of the variables are significantly associated with annual reports with anticipated signs. The perceived usefulness of annual reports is higher for more experienced investors that (1) hold a larger number of stocks, (2) have longer investing histories, (3) invest more resources in the market, or (4) have formal investment training. In addition, investor educational background has a positive relationship with the perceived usefulness of annual reports. Although none of the three investment objectives (safety of capital, steady income, speculation) are associated with perceived annual report usefulness, investee types are evidently an important factor. As expected, investors perceive the usefulness of annual reports to be higher for traditional non-diversified industrial companies and lower for high tech firms. There is a negative, but insignificant, correlation between conglomerate investees and the perceived usefulness of annual reports.

Refer Table VI

To control for the correlations that exist among the investor and investee characteristics as well as the impact of relevance and reliability, regression analysis was conducted as reported in Table VI, Panel B. Model 1 includes relevance, reliability, all of the six investor characteristics, and two indicator variables for traditional and tech firms. The investment objectives are excluded because of their insignificant correlations with perceived usefulness of annual reports. The model is highly significant with an R^2 of 46%. Only two independent variables, relevance and traditional, are significant at the 5% level (one-tailed t-test with anticipated signs). The moderately high VIF measures suggest that multicollinearity may have caused some of the variables to be insignificant. Model 2 replaces the individual investment experience variables (stocks, history, money) by a composite average score based on the factor analysis in Table V and excludes the insignificant variables from Model 1. The performance of the model improves substantially with the adjusted R^2 exceeding 50% and most of the independent variables significant with anticipated signs.¹

In summary, the correlation and regression analyses demonstrate that the perceived usefulness of annual reports is determined not only by relevance of financial statement information, but also by investor characteristics such as experience, education, and investment horizon. In addition, the current financial reporting model appears more

¹ Given the anticipated sign, the Education variable is significant at the 10% level based on a one-tailed t-test.

appropriate for measuring business activities of traditional, non-diversified, companies than those of either conglomerates or high tech companies.

D. Investor Demand for Additional Information

Given our finding of the relatively low usefulness of annual reports, this section presents evidence on additional information that investors would like to see in annual reports. As reported in Table VII, Panel A, items *a* to *c* intend to measure the perceived usefulness of additional financial information, while items *d* through *h* capture perceived usefulness of additional non-financial information. A casual inspection reveals that investors appear to perceive that additional nonfinancial information has greater levels of usefulness than additional financial information. The factor analysis results in Table VII, Panel B confirm the existence of the two underlying informational dimensions, with factor I measuring financial information and factor II measuring nonfinancial information. Item *h* was excluded in the final solution due to its low factor loading of less than .6.

Refer Table VII

Finally, Table VIII presents a further analysis based on summated scores for the two factors. It seems that investors' perceived usefulness of both additional financial and nonfinancial information indicates a desire for additional information of both types in annual reports. However, the perceived usefulness and corresponding demand for additional non-financial information is significantly higher than that for financial information based on both the T test and the Wilcoxon test. These findings, together with the results of the previous sections, lead us to conclude that Hong Kong investors are not satisfied with the usefulness of information they receive from current annual reports, and as a result, they have a demand for additional information. In particular, they perceive relevant non-financial information to be particularly useful and desire that such information be disclosed in addition to information contained in annual reports.

Refer Table VIII

V. Conclusions

Using a survey approach, this study examines the perceptions of the usefulness of information to individual investors in Hong Kong. This paper reports some interesting findings that not only complement archival-based research on the value-relevance (usefulness) of accounting information, but also offer implications on how to improve financial reporting.

First, the results show that while investors make use of annual reports, they rank the usefulness of financial statements lower than other alternative information sources such as historical information on stock prices, dividends and earnings, company news, as well as advice from analysts, newspapers and magazines. This result may explain why the value-relevance literature finds accounting information useful, but the reported R^2 s are generally low. Second, consistent with the FASB Conceptual Framework (FASB, 1978), individual investors view relevance and reliability as the two primary characteristics of useful financial reporting. However, relevance is more important than reliability in influencing investor perceptions of the usefulness of annual reports. This result complements the findings of studies that indicate that fair value accounting reports are value relevant in the sense that fair value numbers have been found to be value relevant, even though reliability is a concern (Barth et al. 2001). In addition, our second result is consistent with the accounting profession's move toward emphasizing relevance over reliability as reflected in the FASB and IASB Joint Conceptual Framework Project (Heffes, 2005).

Our results also show that investor characteristics, such as education, investment experience, and investment horizon, affect investors' perceptions of annual report usefulness. In addition, the type of companies in which they invest also has a significant impact on investors' perceived usefulness of annual reports. Our results also demonstrate that the current financial reporting model appears to be more appropriate for measuring business activities of traditional, non-diversified, companies than for either conglomerates or high tech companies. These two results suggest that the usefulness of annual reports will likely improve with both enhanced investor education and improved financial reporting models capable of measuring business activities across different types of companies.

Finally, consistent with investor discontent with current financial reporting, this study finds a strong demand by individual investors for the disclosure of additional financial and non-financial information in annual reports. Additionally, our results indicate that investor demand for non-financial information, such as quality of management and forward-looking information, is significantly higher than that for financial information, such as fair value of assets and liabilities and performance measures. These results indicate possible ways by which the current financial reporting model can be improved.

While this study presents new evidence about user perception of the usefulness of annual reports and other information, several limitations should be noted when evaluating the findings. First, a relatively low response rate is a cause for concern. While the non-response analysis did not reveal any major differences between the early and late respondents, the analysis was limited in that the classification of early vs. late respondents was based on an arbitrary submission date. Second, measurement errors inherent in survey studies cannot be ruled out. There is no direct control over whether respondents interpret the survey questions in the manner intended. Although the survey instrument was designed after an extensive review of the user perception literature, it is difficult to eliminate response errors that might result from the possibility that people answer questions erroneously, either deliberately or unconsciously. Third, while the selection of individual investors in the seven companies representing conglomerate, technological, and traditional, non-diversified firms was random, these companies were not randomly selected. Instead, they were chosen by the two share registrars that helped with the sampling process. Finally, the current survey is limited to individual investors. While an important user group, individual investors are generally believed to be less sophisticated than institutional investors which may have different perceptions of financial reporting usefulness. Future studies may want to compare the perceptions of financial statement usefulness among different user groups and identify the reasons for such differences, if they exist.

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Table I: Usefulness of Annual Reports and Other Information Sources (n = 88)

Panel A: Descriptive Statistics						
Items	Rank	Mean	Median	SD	Min	Max
a. Chairman Report	14	2.32	3.00	1.95	0	5
b. Auditor Report	19	2.00	1.50	2.11	0	5
c. Director Report	17	2.16	3.00	1.95	0	5
d. Operational Review	10	2.50	3.00	2.04	0	5
e. Financial Review	9	2.59	3.00	1.93	0	5
f. Balance Sheet	8	2.73	3.00	2.00	0	5
g. Cash Flow Statement	10	2.50	3.00	2.17	0	5
h. Income Statement	7	2.98	3.50	1.99	0	5
i. Footnotes	19	2.00	1.50	2.00	0	5
j. Industry Trends	15	2.30	3.00	1.89	0	5
k. Company Market Share	13	2.43	2.50	1.84	0	5
l. Competitor Position	18	2.09	2.00	1.92	0	5
m. Dividends History	3	3.64	4.00	1.59	0	5
n. Share Prices History	1	3.75	4.00	1.39	0	5
o. Prior Years Earnings	2	3.68	4.00	1.62	0	5
p. Advice from Analysts, Newspapers, and Magazines	5	3.27	4.00	1.55	0	5
q. Advice from Friends	12	2.45	3.00	1.58	0	5
r. Advice from Stockbrokers	16	2.20	3.00	1.79	0	5
s. Company News	4	3.39	4.00	1.61	0	5
t. Officer and Director Information	6	3.05	3.00	1.60	0	5

Panel B: Factor Analysis				
Factors and Questionnaire Items	Factor Loadings > .6			MSA
	I	II	III	
Factor I: Eigenvalue = 6.986				
Director Report	.901			.817
Chairman Report	.837			.790
Balance Sheet	.788			.886
Income Statement	.739			.850
Auditor Report	.738			.914
Financial Review	.704			.845
Operational Review	.699			.879

Cash Flows Statement	.683	.836
Factor II: Eigenvalue = 1.712		
Competitor Position	.931	.615
Company Market Share	.877	.614
Factor III: Eigenvalue = 1.419		
Share Prices History	.871	.713
Dividends History	.840	.679
Prior Years Earnings	.826	.765
Kaiser's Overall MSA		.805
Cumulative % of Variance Explained		77.89%

Table II: Mean Comparisons - Annual Reports and Other Information Sources (n = 88)

Panel A: Descriptive Statistics						
	Rank	Mean	Median	SD	Min	Max
HisInf	1	3.69	4.00	1.35	0	5
ComNew	2	3.39	4.00	1.61	0	5
AdvANM	3	3.27	4.00	1.55	0	5
AnIRpt	4	2.47	2.81	1.70	0	5
MktAna	5	2.26	2.00	1.80	0	5

Panel B: Repeated Measures Analysis						
ANOVA:	F = 17.539,		p = .000			
Friedman Test:	Chi-Square = 50.819,		p = .000			
Bonferroni Pairwise Comparison:			Mean Diff	Std Error	p	
HisInf	vs.	ComNew	.303	.188	1.000	
		AdvANM	.417	.175	.192	
		AnIRpt	1.218	.168	.000	
		MktAna	1.428	.211	.000	
ComNew	vs.	AdvANM	.114	.201	1.000	
		AnIRpt	.915	.247	.004	
		MktAna	1.125	.243	.000	
AdvANM	vs.	AnIRpt	.801	.225	.006	
		MktAna	1.011	.223	.000	
AnIRpt	vs.	MktAna	.210	.187	1.000	

All p-values are 2-tailed.

HisInf: Average score of items for Factor III in Table I, Cronbach's alpha = .848

ComNew: Original score for Company News in Table I

AdvANM: Original score for Advice from Analysts, Newspapers, and Magazines in Table I

AnIRpt: Average score of items for Factor I in Table I, Cronbach's alpha = .941

MktAna: Average score of items for Factor II in Table I, Cronbach's alpha = .911

Table III: Relevance and Reliability of Financial Statements (n = 88)

Panel A: Descriptive Statistics							
Items	Rank	Mean	Median	SD	Min	Max	
a. Information for assessing performance and financial position	1	3.57	3.50	1.20	1	5	
b. Information for assessing dividend-paying ability	2	3.23	3.00	1.30	1	5	
c. Forward-looking information	3	2.98	3.00	1.06	1	5	
d. Information for capital allocation and possible investment	4	2.93	3.00	1.18	1	5	
e. Faithful information	5	2.91	3.00	1.13	1	5	
f. Reliable information	6	2.89	3.00	.89	1	5	
Panel B: Factor Analysis (Factor Loading > .6)							
Factors and Questionnaire Items		I	II	MSA			
Factor I: Eigenvalue = 4.161							
Information for assessing performance and financial position		.913		.863			
Information for assessing dividend-paying ability		.868		.822			
Forward-looking information		.783		.911			
Information for capital allocation and possible investment		.735		.871			
Factor II: Eigenvalue = .886							
Faithful information			.918	.793			
Reliable information			.865	.807			
Kaiser's Overall MSA				.846			
Cumulative % of Variance Explained				84.11%			

Table IV Analysis of Relevance and Reliability (n = 88)

Panel A: Descriptive Statistics							
	Rank	Mean	Median	SD	Min	Max	
Relevance	1	3.176	3.13	1.06	1.00	5.00	
Reliability	2	2.898	3.00	0.95	1.00	5.00	

Panel B: Pairwise Comparison							
		Mean Diff	Std Error	T-Test t	p	Wilcoxon Ranks Test z	P
Relevance	vs. Reliability	.278	.009	3.038	.003	-2.658	.008

Panel C: Correlations			
	AnlRpt	Relevance	Reliability
AnlRpt	1		
Relevance	.387 (.000)	1	
Reliability	.184 (.086)	.639 (.000)	1

Panel D: Regression (AnlRpt as Dependent Variable)			
	β	t (p-value)	VIF
Relevance	.730	3.517 (.001)	1.692
Reliability	-.192	-.827 (.410)	1.692

Adjusted R² = .137, F = 7.893 (.001), All p-values are 2-tailed.

Relevance: Average score of items for Factor I in Table III, Cronbach's alpha = .914
 Reliability: Average score of items for Factor II in Table III, Cronbach's alpha = .854
 AnlRpt: Average score of items for Factor I in Table I

Table V Investor and Investee Characteristics

Panel A: Investor Demographics						
	Counts			Factor Loading > .6		MSA
	One	Zero	Total	I	II	
Stocks	30	55	85	.865		.585
History	34	28	62	.837		.691
Money	63	20	83	.646		.640
Education	51	32	83		.857	.554
Horizon	42	43	85		.803	.653
Training	20	66	86			
Eigenvalue				2.202	1.418	
Kaiser's Overall MSA						.620
Cumulative % of Variance Explained						72.34%

Panel B: Investment Goal				
	Safety of Capital	Steady Income	Speculation	Total
Counts	18	53	13	84

Panel C: Type of Companies Invested				
	Conglomerate	Technology	Traditional	Total
Counts	20	29	18	67

Stocks: 1 for numbers of stocks held over 10
 History: 1 for investing history over 10 years
 Money: 1 for total investment over HK\$100,000
 Education: 1 for education above the university level
 Horizon: 1 for average holding period over 2 years
 Training: 1 for any formal training in securities investment

Table VI: Relationship of Investor and Investee Characteristics and Financial Reporting

Panel A: Correlations												
	1	2	3	4	5	6	7	8	9	10	11	12
1 AnlRpt	1.000											
2 Stocks	.314 (.003)	1.000										
3 History	.296 (.019)	.538 (.000)	1.000									
4 Money	.365 (.001)	.417 (.000)	.451 (.000)	1.000								
5 Education	.259 (.018)	.070 (.532)	.210 (.101)	.417 (.000)	1.000							
6 Horizon	-.043 (.695)	.050 (.654)	.029 (.821)	.205 (.063)	.377 (.000)	1.000						
7 Training	.201 (.063)	.287 (.008)	.387 (.002)	.307 (.005)	.099 (.373)	.148 (.178)	1.000					
8 Safety	.061 (.580)	-.009 (.936)	-.231 (.071)	-.125 (.268)	.070 (.532)	.169 (.126)	-.292 (.007)	1.000				
9 Income	-.099 (.369)	-.060 (.588)	-.072 (.580)	.104 (.357)	-.081 (.468)	-.115 (.300)	.080 (.469)	-.683 (.000)	1.000			
10 Spec	.063 (.570)	.090 (.420)	.281 (.027)	.004 (.972)	-.067 (.546)	-.038 (.731)	.224 (.040)	-.223 (.041)	-.559 (.000)	1.000		
11 Conglom	-.059 (.633)	.284 (.022)	.251 (.082)	.301 (.017)	.369 (.003)	.271 (.030)	.078 (.537)	.110 (.391)	.042 (.746)	-.149 (.244)	1.000	
12 Tech	-.333 (.006)	-.642 (.000)	-.590 (.000)	-.376 (.003)	-.379 (.002)	-.399 (.001)	-.279 (.025)	-.201 (.115)	.057 (.657)	.113 (.377)	-.570 (.000)	1.000
13 Traditional	.433 (.000)	.429 (.000)	.439 (.002)	.118 (.361)	.046 (.720)	.174 (.170)	.232 (.063)	.110 (.391)	-.104 (.416)	.025 (.847)	-.395 (.001)	-.529 (.000)

Table VI Relationship of Investor and Investee Characteristics and Financial Reporting

Panel B: Regressions (AnlRpt as Dependent Variable, n = 47)							
Model 1				Model 2			
Indep. Var	β	t (p-value)	VIF	Indep. Var	β	t (p-value)	VIF
Relevance	.836	1.875 (.069)	4.606	Relevance	.971	4.632 (.000)	1.102
Reliability	.289	.661 (.513)	3.752	Experience	1.161	2.032 (.049)	1.606
Stocks	.637	1.036 (.307)	2.862	Education	.636	1.406 (.167)	1.342
History	.217	.356 (.724)	3.064	Horizon	-.642	-1.722 (.093)	1.222
Money	.633	.944 (.352)	2.144	Traditional	1.015	2.094 (.042)	1.437
Education	.739	1.411 (.167)	1.658				
Horizon	-.580	-1.267 (.213)	1.704				
Training	-.004	-.009 (.993)	1.647				
Traditional	1.045	1.923 (.062)	1.668				
Tech	.358	.425 (.673)	5.984				
Adjusted R ² = .461				Adjusted R ² = .502			
F = 4.936 (.000)				F = 10.285 (.000)			

All p-values are 2-tailed.

AnlRpt: Average score of items for Factor I in Table I

Experience: Average score of items for Factor I in Table VI, Cronbach's alpha = .730

Relevance: Average score of items for Factor I in Table III

Reliability: Average score of items for Factor II in Table III

Traditional: 1 for holding stocks in an ordinary business

Stocks: 1 for numbers of stocks held over 10

Tech: 1 for holding stocks in a tech company

History: 1 for investing history over 10 years

Conglom: 1 for holding stocks in a conglomerate

Money: 1 for total investment over HK\$100,000

Safety: 1 for safety of capital as the investment goal

Education: 1 for education above the university level

Income: 1 for steady income as the investment goal

Horizon: 1 for average holding period over 2 years

Spec: 1 for speculation as the investment goal

Training: 1 for any formal training in securities investment

Table VII
Disclosure of Additional Information Items (n = 88)

Panel A: Descriptive Statistics							
Items	Rank	Mean	Median	SD	Min	Max	
a. High-level operating data and performance measures	7	3.41	3.00	1.29	1	5	
b. Core and non-core activities and events	5	3.45	3.00	1.18	1	5	
c. Fair values of core and non-core assets and liabilities	4	3.73	4.00	1.18	1	5	
d. More complete information of products/services	8	3.30	3.00	1.20	1	5	
e. Forward-looking information	3	4.00	4.00	.96	1	5	
f. Dividend policy	2	4.09	4.00	.85	1	5	
g. Quality of management	1	4.11	4.00	.92	1	5	
h. Competitive position	6	3.43	3.00	.89	1	5	
Panel B: Factor Analysis							
Factors and Questionnaire Items	Factor Loading > .6						
	I	II					MSA
Factor I: Eigenvalue = 4.123							
Fair values of core and non-core assets and liabilities	.905						.744
Core and non-core activities and events	.887						.761
High-level operating data and performance measures	.819						.802
Factor II: Eigenvalue = .990							
Quality of management		.823					.747
Dividend policy		.767					.770
More complete information of products/services		.735					.712
Forward-looking information		.638					.834
Kaiser's Overall MSA							.768
Cumulative % of Variance Explained							73.05%

Table VIII
Mean Comparisons: Disclosure of Additional Information Items (n = 88)

Panel A: Descriptive Statistics						
	Rank	Mean	Median	SD	Min	Max
Financial	2	3.53	3.67	1.12	1.00	5.00
NonFin	1	3.88	4.00	0.78	2.25	5.00

Panel B: Pairwise Comparison							
		Mean	Std	T-Test		Wilcoxon Ranks Test	
		Diff	Error	t	p	z	
						P	
Financial	vs. NonFin	-.345	.094	-3.656	.000	-3.373	.001

All p-values are 2-tailed.

Financial: Average score of items for Factor I in Table VII, Cronbach's alpha = .904

NonFin: Average score of items for Factor II in Table VII, Cronbach's alpha =.796

**Assessment Ratios and the Consequences of Buying into the Housing
Bubble**

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Abstract

This study addresses the relationship the assessment value to purchase price ratio had on the probability of that home being foreclosed on or experiencing a sheriff's sale. Using housing data from 2002 to 2012, and controlling for the housing market crash in 2008, this study employs a binary logit regression to determine the effects of buying above assessed value of a home before and after the crash, while controlling for the hedonic variables of the home.

Introduction

The mortgage default crisis has been accompanied by a decline in property values throughout the United States. Prior to this crisis studies focused on the decrease in prices relative to the loan-to-value ratio where defaulting on a mortgage as a rational decision (Capozza, Kazarian, and Thomson, 1997; Ong, Neo and Spieler, 2006). However, what was left unstudied was how this decline was exacerbated by the challenges created by paying over assessed value on purchases. The idea that bidding above assessed value was unimportant in a rising market, a type of "irrational exuberance" exhibited earlier in the financial markets had merit, as long as the rising tide of home prices eventually lifted domiciles to a value above the purchase price. As this expectation of appreciation has proven false, the subsequent years of declining prices left little room for financial calamities.

To acknowledge the problem, this study looks at the impact the bid above assessment has had on the probability of default. Specifically, both sheriff sales and foreclosures are addressed. While it is noted that the default is due to a laundry list of individual factors, such as employment turmoil, family crisis, medical emergencies and such, the inability to sell the home in the face of such challenges results in an untenable condition. Given the lack of equity, and the possibility that the home's loan-to-value ratio will be "underwater", default is the potential outcome. In this model, the home is decomposed into its constituent characteristics and isolates the estimated contributory value of each characteristic. The variable of interest for this analysis is the level of "overbidding" (as defined by purchasing the home for more than the assessed value).

This study investigates patterns of mortgage default using a database of mortgages for the City of Muskego, Wisconsin. Muskego serves as a strong example of an exurb, just outside the City of Milwaukee. It is a bedroom community with a strong agricultural presence. With a population of 24,135 and a median household income of \$83,994 with 2.1% of families living below the poverty line (United States Census Bureau), it is representative of the growing exurbs of recent years. The average home price in Muskego was \$269,500. Waukesha County, where Muskego exists, has a median household income of \$75,845 with 4.7% of the families living below the poverty line and an average home price of \$261,100. As a result, Muskego is slightly wealthier than the overall county in which it exists.

Literature Review

While this paper focuses on the recent housing default crisis, it is also imbedded in the issue of market bubbles. The issue of investment behavior founded on an unfounded belief in ever rising prices was explored by Baker and Wurgler (2007). This idea intersects with a history of price swings in the housing market (Capozza and Seguin, 1995). Ong, Neo and Spieler (2006) use data from Singapore to examine the effect of housing purchase prices on subsequent defaults.

Case and Shiller (1988) used survey data from New England to assess the impact positive appreciation expectations have on the purchase decision. However, this paper did not assess the subsequent default risk embedded in these expectations. Gerardi, Shapiro, and Willen (2007) suggest that the rise of foreclosures in 2006 and 2007 was driven by external factors. They point to evidence from Massachusetts showing that high home price appreciation correlates with low foreclosures, while low home price appreciation correlates with higher levels of foreclosures.

The literature that specifically relates to foreclosures is wide and varying. Much of it is based on the negative externality created by defaulting. These spatial papers began in Ernest in the 1960's (Jung, 1962; Von Furtstenberg, 1969; Von Furtstenberg, 1970a; Von Furtstenberg, 1970b; Von Furtstenberg, 1974). This early literature provides a platform upon which future research develops and examines foreclosures according to a bank's risk assessment. Given, our papers focus on the risk created by electing to pay in excess of the assessed value, this research serves to examine the relationship between mortgage default and loan-to-value ratios, risk factors, loan quality and interest rates. Much of the early foreclosure literature is covered in Quercia and Stegman (1992) and Vandell (1995).

Data and Descriptive Statistics

This analysis uses a ten-year panel from Muskego, Wisconsin that encompasses home sales from 2002 through 2012. The dataset begins in 2002 as there were a very limited number of sheriff sales that occurred prior to this. As the decade progressed, sheriff sales have become more commonplace and appear more often in the Muskego's assessment records. The foreclosure and sheriff sale data was collected from a multitude of state and local sources. The City of Muskego Assessor Office keeps updated records on all homes sold during our data set. However, this set is limited to information on the sale price and assessed value. Note that the data is censored. Home sales prior to 2002 were not included, nor the possible (but not yet occurred) sheriff sales subsequent to 2012. Finally, only sheriff's sales and foreclosures related to properties that sold during the 2002 to 2012 time frame are included. Given that property sales in the years 2011-2012 are not yet seasoned, there is limited knowledge regarding the full effect the housing bubble will have on current years until more time passes. Note that no property purchased subsequent to 2009 has experienced a sheriff's sale as of December 31, 2012.

Information on the location of the property relative to Muskego landmarks was provided by a mapping system offered by the City Assessor. Data on the foreclosures that occurred in Muskego within the last decade was collected from the Wisconsin Circuit Court and aligned with the home sales information based on the address. Foreclosures that ultimately resulted in a sheriff sale were determined through the City Assessor's personal notes that had been included with all property sales that indicated unusual sales circumstances.

Although the decline in home sales first began to manifest in 2008, the number of foreclosures and sheriff sales was on the rise as early as 2006. There was a rise in both, the number of foreclosures and the number of sheriff sales. While respectively, seeing a recent decrease in the amount of time between foreclosure and sheriff sale (almost one standard deviation below the mean in 2010). This could in part be caused through increased efficiency of selling properties by the bank, despite a depressed real estate market.

The common home in Muskego is typical of what one would expect, with an average of three bedrooms and two bathrooms. A number of older homes were sold during this time period, some of which were built in the mid 1800's. Properties located on one of Muskego's three lakes were rare among the homes that sold, or sheriff-sold, with slightly more than five percent of the population having lakefront property.

Empirical Model

The model created considers a logit model that tests whether or not a property's purchase price to assessed value ratio has any significant effect on the probability that foreclosed home ultimately becomes a sheriff sale. This paper regards Ambrose and Capone's model as a baseline guide by which a test is developed to determine whether or not a home that is foreclosed can redeem itself (Ambrose and Capone, 1998). An important determinant in their model is the unique financial position of the home borrower. Our model looks at this cost as the important determinant.

Ambrose and Capone's primary findings were twofold. First, a default can "be generated from borrowers with positive as well as negative equity" (Ambrose and Capone, 1998). Second, "the process and rates of transition from default to foreclosure are different for each of these groups of defaulters" (Ambrose and Capone, 1998). Specifically, they found that the resulting redemption occurs between 22.5 percent (for low loan to value (LTV) borrowers) and 49.7 percent (for high LTV borrowers). This is to be expected because the higher the LTV, the more likely those borrowers would have the financial means. The model included in this paper does not include any financial information on the homeowners. Rather, it incorporates hedonic housing characteristics along with the sales price and assessed value.

Our model builds upon earlier works and is conducted in two stages. The first stage, looks at whether price/assessed ration is a determinant to the probability that a sheriff's sale would occur. In this binary logic analysis, hedonic variables are included as controls. The second stage examines that given a foreclosure was filed against a homeowner, whether or not a sheriff's sale had occurred. Once again, hedonic variables are included. However, this test questions whether "overpaying" puts the homeowner in a corner once the foreclosure is filed.

In a fashion, this paper is akin to Ambrose and Capone (1998) in their conditional probability analysis of default by homeowners, whose loans were underwater. In that paper, the homeowners were separated into two groups. The first group experience loans that were underwater and "ruthless" whose strategy was to walk away from the home due to its lack of investment value. The second group, also witnesses the foreclosure process, but their equity position is positive and their foreclosure was due to actions beyond their control. Our paper does not create a conditional format. Rather, the paper determines if (1) the price/assessment ration was a significant variable in the probability to have a foreclosure action filed. The second question (2) was, whether price assessment was a significant variable in the probability that a home would progress to sheriff's sale. Finally, (3) the data is reduced to those properties that were party to a foreclosure lawsuit, whether price/assessment was a positive and significant factor in the resulting sheriff's sale.

Results

For both Tables 1 and 2 (displayed below) the price/assessment ratio interaction variables, indicates with denotation (\tilde{I}), are significant from the years 2002-2008. This means that homeowners who bought housing above market value before the crash were more likely to foreclose on or have their property go to sheriff sale than someone who bought at or below the assessed value of the property. Although, running the binary logit revealed that these interaction variables were significant for both foreclosures and sheriff sales, the betas for these interactions were greater for sheriff sales. This indicates that buying above market value for a home greatly increased the probability of a home going to sheriff sale compared to a home going into foreclosure.

For sheriff sales exclusively, (\tilde{I}) 2009 was positive and significant. Buying above assessed value one year after the housing crash still increased the probability of the property going to sheriff sale, but there was no evidence to indicate that the probability of foreclosures would go up for overpaying in 2009. (\tilde{I}) The year 2010 was insignificant for both foreclosures and sheriff sales. Note, the years 2011 and 2012 were used as the reference groups in this set of binary logits.

For foreclosures exclusively, the age of the home at sale was positive and significant, however the beta on this variable is small. By being this small, the beta does not hold much predictive value. The more important descriptive variable of a property would be the sales price.

The sales price of a property was significant and negatively correlated with the probability of a property going to sheriff sale or being foreclosed upon. Buying above market value raised the probability of default; however buyers who buy expensive homes in general are less likely to default on their property payments.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Dummy (Foreclosure)	3701	0	1	.04	.190
Sheriff Sale	3701	0	1	.02	.141
Sales Price	3701	19550	1850000	255625.03	114006.440
total rooms	3699	3	14	6.24	1.529
bedrooms	3699	1	8	3.09	.848
bathrooms	3698	1	5	1.99	.679
Sq Feet	3701	624	7620	1876.66	690.732
Sq Feet Squared	3701	389376	58064400	3998829.70	3359058.875
Age at Sale	3701	0	161	26.77	24.461
2002	429	0.452696	2.361012	1.086839	0.134068
2003	408	0.47379	1.46267	1.07454	0.12548
2004	367	0.25956	1.56465	1.06463	0.15008
2005	457	0.75674	3.84009	1.37445	0.24566
2006	359	0.61250	1.73459	1.03378	0.11784
2007	346	0.35845	1.52010	0.96291	0.12069
2008	252	0.53859	1.28143	0.95240	0.12038
2009	276	0.47468	1.47528	0.92261	0.13904
2010	296	0.33654	2.38175	0.90916	0.19668
Valid N (listwise)	3698				

Table 1: Sheriff Sales			
Years 2002-2010			
	Coefficient (B)	Standard Error	P-Value
SalesPrice	(***) -0.00000817	0.00000234	.000
totalrooms	.172	.174	.323
bedrooms	-.160	.246	.516
bathrooms	-.230	.289	.426
SqFeet	.001	.001	.218
SqFeetSquared	.000	.000	.575
AgeatSale	.000	.003	.971
(I) 2002	(***) 1.878	.521	.000
(I) 2003	(***) 2.017	.648	.002
(I) 2004	(***) 2.650	.639	.000
(I) 2005	(***) 2.257	.478	.000
(I) 2006	(***) 3.637	.678	.000
(I) 2007	(***) 2.783	.781	.000
(I) 2008	(***) 3.036	.788	.000
(I) 2009	(**) 2.130	.909	.019
(I) 2010	-28.915	3204.148	.993
Constant	(***) -6.367	1.010	.000
*** Significant at the 1% level			
** Significant at the 5% level			
* Significant at the 10% level			
(I) Signifies any variable that acts as an interaction variable			

Table 2: Foreclosures			
Years 2002-2010			
	Coefficient (B)	Standard Error	P-Value
SalesPrice	(***) -0.00000546	.000	.001
totalrooms	.037	.132	.778
bedrooms	.091	.185	.624
bathrooms	-.265	.213	.213
SqFeet	.001	.001	.337
SqFeetSquared	.000	.000	.690
AgeatSale	(**) 0.00244	.001	.016
(I) 2002	(***) 1.531	.350	.000
(I) 2003	(***) 1.998	.407	.000
(I) 2004	(***) 1.862	.444	.000
(I) 2005	(***) 1.695	.323	.000
(I) 2006	(***) 2.767	.454	.000
(I) 2007	(***) 2.598	.496	.000
(I) 2008	(***) 2.334	.540	.000
(I) 2009	.811	.752	.280
(I) 2010	1.034	.665	.120
Constant	(***) -5.0292	.712	.000
*** Significant at the 1% level			
** Significant at the 5% level			
* Significant at the 10% level			
(I) Signifies any variable that acts as an interaction variable			

Conclusions

This paper looks at the impact purchase price (relative to assessed value) has on the probability of a sheriff’s sale. This relationship has been determined in the case of Muskego, Wisconsin. While there has been a growing amount of literature concerning foreclosures as a result of the most recent recession and the bursting of the housing property bubble, this research is limited in the area of “over-bidding” in the purchase price ideal of the housing market. This paper combines includes this idea in its analysis of the foreclosure market in Muskego, Wisconsin. By limiting the analysis to a single community, this paper has the advantage of confirming this negative factor while controlling for positive externalities. However, upon analysis, the relationship between positive externalities and foreclosure and sheriff’s sales was rare: only 4 properties of the 75 sheriff’s sales were located on a lake, abutted a golf course, or were adjacent to a working farm. While this limitation is noted, it leaves open a ripe area for future research. The unique property characteristics featured include traditional hedonic variables, such as the number of bedrooms, bathrooms and square feet.

This study found the interaction (\tilde{I}) 2002-2008 to be positive and significant for both foreclosure and sheriff sales and found (\tilde{I}) 2009 to be positive and significant for sheriff sale. Furthermore, it was found that sales price was significant and negatively correlated with foreclosures and sheriff sales. These results showed that buying over the market value of a property before the housing crash increased the probability of foreclosure and sheriff sale, but sheriff sales were more probable than foreclosures for overpayment.

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An Economic Model for the Determination of the Efficiency of Outsourcing

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Abstract

This paper examines the efficiency of outsourcing as a manufacturing arrangement. Assuming that outsourcing results in savings in both fixed and variable costs, the model presented in this study demonstrates that outsourcing is profitable only when outside contractor has lower variable costs than the outsourcing firm or the outsourcing firm's fixed costs decline significantly as a result of outsourcing. Empirical data on the outsourcing of janitorial services by a leading airline supports the model's predictions.

Key Words: outsourcing, outside contractor

I. Introduction

A major concern facing the corporations is to find ways of cutting costs in order to improve competitiveness. To address this issue, corporations may periodically revise strategies reduce the degree of backward integration in favor of purchasing goods and services from outside. When an original producer (OP) hires an outside contractor (OC) in exchange of a contractual payment (PMT) to supply or manufacture goods or services that could be produced in-house, the arrangement is called outsourcing. Since outsourcing arrangements are made with companies who are specialized and bulk producers, the OCs are expected to be able to produce and supply the goods at a lower cost than OPs (Giffi et al 1990, Hayes and Wheelwright, 1984). There may, however, be additional costs (C_A) that OP incurs due to coordination, transportation and other reasons, which at times can be substantial [Cross (1995), Lacity and Hirschheim (1995)]. Since contracting outside also means that OP will not need as many employees, outsourcing can reduce fixed costs in administrative head count and salaries. Thus, outsourcing can be convenient means of downsizing (Hoskisson and Hitt, 1994). Sometimes it allows a firm to reduce an entire division to a few employees overseeing the outsourcing process or assembling jobs. Thus, outsourcing can be convenient means of downsizing (Hoskisson and Hitt, 1994). In addition, inventories can be substantially reduced and in high interest rate periods reduction of inventories can save interest costs substantially.

In spite of such advantages of outsourcing, corporations tend to differentiate between strategic and commodity based operations: if an operation is a core or strategic one, it may be kept in-house to retain control. If it is a commodity or service which a supplier can provide at a lower cost, it is likely to be outsourced (Lacity, Willcocks, and Feeny, 1995). This way OP will have to watch over fewer things, while OC keeps up with environmental changes in its area of specialization. Firms may outsource completely, partially, or not at all. The extent of outsourcing differs widely across firms in an industry and across industries. Partial outsourcing is not practical in certain situations (such as services) where outsourcing remains an all-or-nothing proposition.

The issue of outsourcing may not be readily understood by net present value (NPV) analysis, commonly applied in corporate finance. If OCs make profit (which they are observed to do) , then the projects have positive NPV. A firm should not pass up a positive NPV project. By

cutting the cost of production to the level of OCs, OPs should be able to keep the profits to themselves. However, a project that is positive NPV for OC is not necessarily positive NPV for OP, because cutting OP's costs to the level of OC may not be feasible for several reasons. First, OC is specialized in its core business and is perhaps more efficient than OP. Second, OC may have smaller overhead and labor costs than OP. Third, OC may be able to provide additional services which OP cannot provide except at higher costs. These explanations suggest that OC has to be intrinsically more efficient than OP for outsourcing to take place. In other words, for outsourcing to be rational, disintegration must generate positive synergy. If that indeed is the case, outsourcing is a win situation for both OP and OC and the society at large benefits from the replacement of high cost producers by low cost ones. To the extent over-diversification and excessive integration has occurred in the past, outsourcing has the potential for reducing inefficiencies (Buzzell, 1983). It can make both OP and OC more efficient as each concentrates on its core competencies.

The efficiency of outsourcing is, however, not automatic. Several difficulties arise; firms lose control over production processes, labor morale is compromised, quality of the product or service may suffer, and additional costs of transportation and management due to outsourcing may be substantial. There have been instances where outsourcing contracts have been terminated after a short period inducing heavy penalty for the original producer (See Cross, 1995 for IT outsourcing by BP). It is, therefore, useful to analyze conditions under which outsourcing is likely to succeed.

This paper utilizes the framework developed in Sen and Zhu (1996) to examine the efficiency of outsourcing. It determines conditions under which outsourcing is an efficient manufacturing arrangement. Our main conclusions are twofold: first, outsourcing is feasible (profitable) only when OC has lower variable costs than OP or OP's fixed costs decline dramatically as a result of outsourcing. If such conditions are not met, outsourcing is not desirable at all. Second, an all or nothing outsourcing decision based on comparison of costs is efficient. Only in the event an intermediate degree of outsourcing is optimal, efficiency of outsourcing is uncertain. In such cases, additional conditions need to be satisfied, although such conditions do not appear to be very stringent. In developing the model, the following symbols are utilized:

- V OP's variable (material, capital and labor) cost per unit of output
- γV OC's variable cost per unit of output; ($1 - \gamma > 0$)
- C_A OP's additional costs due to outsourcing one unit of the product
- P price of one unit of output
- α portion of the production process outsourced expressed as a fraction of the product: $0 \leq \alpha \leq 1$.
- F fixed cost per unit of output
- n sensitivity of fixed cost; F, to outsourcing, $n > 0$
- PMT payment made by OP to OC for outsourcing one unit of output.

Section II of this paper develops the conditions for efficient outsourcing and section III analyzes outsourcing decisions by a major airline to verify the implications of the model.

II. The Model

1. OP'S profit from own production (before outsourcing) is given by its revenue minus cost. Cost included both variable and fixed costs.

$$\Pi = P - V - F \tag{1}$$

2. OP'S profits, with α portion outsourced, are given by:

$$\Pi_{op} = P - (1 - \alpha)^n F - (1 - \alpha)V - \alpha(PMT + C_A) \text{ which can be rewritten as}$$

$$\Pi_{op} = -(1 - \alpha)^n F + (P - V) + [V - (PMT + C_A)]\alpha \tag{2}$$

$(1 - \alpha)^n F$ represents OP's fixed costs when α portion is outsourced. A comparison with fixed costs without outsourcing in Equation 1 shows that outsourcing reduces fixed costs irrespective of the value n assumes. When $n=1$, fixed costs decline at a constant rate as α increases. When $n>1$ ($n<1$) fixed costs decline at a decreasing (increasing) rate. Thus, n represents the intensity of fixed costs' response to outsourcing. To give an example, if 1% is outsourced, fixed costs reduce by 1% when $n=1$, by more (less) than 1% when $n>1$ ($n<1$). Thus fixed costs decline as a result of outsourcing by any amount. Variable costs are assumed not sensitive to outsourcing. $\gamma > 0$ implies that OC is not necessarily more efficient than OP. All costs are per unit or average costs. The product price is a constant.

3. With α portion outsourced, OC's profits are given by

$$\Pi_{oc} = \alpha [PMT - (F + \gamma V)] \tag{3}$$

Because PMT is determined by selecting from competitive bids submitted by vendors, if OC does not overbid, it is expected to make a profit and such profits are proportional to the degree of outsourcing. It is possible that in its eagerness to win a bid, OC will understate its cost. We assume no such instance of "winners curse" (Thaler, 1992). Although fixed costs are assumed to be the same for both OP and OC, it is not a required assumption.

4. The combined profit of OP and OC is obtained by adding (2) and (3):

$$\begin{aligned} \Pi_{op + oc} &= -(1-\alpha)^n F \\ &+ [(P-V) + (V - C_A - PMT)\alpha] + [PMT - F - \gamma V]\alpha \end{aligned} \tag{4}$$

Notice that in the absence of outsourcing, $\alpha=0$, and (4) reduces to (1), when $n=1$.

5. PMT determines how gains from outsourcing is distributed between OP and OC. Typically, PMT is determined by inviting competitive bids from vendors. It is expected that OC will not bid below its cost and OP will not accept a bid above its own cost of production. $\Pi_{oc} \geq 0$ yields $PMT \geq F + \gamma V$. For a given $\alpha=\alpha_0$, the range of PMT depends on whether $V \geq (PMT + C_A)$ or

$V < (PMT + C_A)$. In the first case, the range is given by $F + \gamma V \leq PMT \leq V - C_A$. In the second case, the range is given by:

$$F + \gamma V \leq PMT \leq (V - C_A) + \left[\frac{1 - (1 - \alpha_0)^n}{\alpha_0} \right] F \tag{5}$$

The range in (5) suggests that PMT has to exceed the sum of OC’s total costs in order to make OC profitable, but should not exceed the sum of OP’s variable cost *less* additional cost *plus* saving in fixed costs. For any PMT in the range in (5), outsourcing is profitable for a given value of alpha.

A more stringent condition for profitable outsourcing is that Π_{op} be positive for all α . The condition $\Pi_{oc} \geq 0$ yields $PMT \leq F + \gamma V$. When $n \geq 1$ and $\Pi \geq 0$, $\Pi_{op} \geq 0$ for all α requires $PMT \leq (P - C_A)$. Combining the two, we obtain a range of feasible values of PMT:

$$F + \gamma V \leq PMT \leq (P - C_A) \tag{6}$$

A PMT in the range suggested by (6) appears to be easily met when $n \geq 1$ and $\Pi \geq 0$. This is a more stringent feasibility condition than (5) as it requires that n be no less than one. Both (5) and (6) require that OC’s variable costs do not exceed OP’s variable costs. Notice that $\Pi_{op} \geq 0$ and $\Pi \geq 0$ do not imply that $\Pi_{op} \geq \Pi$. However, if $\Pi_{op} < \Pi$, there will be no outsourcing and no PMT to determine. It is also *not* necessary that $\Pi_{op} \geq 0$ for all α . If $\Pi < 0$, while $\Pi_{op} \geq 0$ for at least one α , then the range of feasible PMT is given by

$$F + \gamma V \leq PMT \leq (V - C_A) + \left[\frac{(P - V) - (1 - \alpha_0)^n F}{\alpha_0} \right] \tag{7}$$

The difference between (5) and (7) is in the term inside the brackets. Since, $\Pi < 0$ implies $(P - V) < F$, the RHS of (7) is smaller than that of (5). Thus the feasible range of payment is narrower in the case of $\Pi < 0$.

6. Outsourcing is profitable if at least one α exists for which $\Pi_{op} - \Pi \geq 0$. This condition is met when (8) below is satisfied:

$$\Pi_{op} - \Pi = [F - (1 - \alpha)^n F] + \alpha[V - (PMT + C_A)] \geq 0 \tag{8}$$

Since outsourcing reduces fixed costs or leaves them unchanged, $F - (1 - \alpha)^n F \geq 0$. Thus, a cheaper supply by the vendor, $V \leq (PMT + C_A)$, is a sufficient condition for outsourcing to be profitable. If $V < (PMT + C_A)$, then profitable outsourcing requires

$$[F(1 - \alpha)^n - F] < \alpha[V - (PMT + C_A)] \tag{9}$$

In other words, when OP’s variable costs are lower than the cost of outsourcing, OP can still profitably outsource if its saving in fixed costs exceeds the loss in variable costs. By a loss in variable costs we mean that OP’s variable cost is less than OC’s variable cost plus additional cost

of outsourcing. If $V < (PMT + C_A)$ and this last condition is not met, outsourcing can not be profitable.

7. The optimal degree of outsourcing

A mathematically determined optimal degree of outsourcing is not always economically meaningful. It is necessary that outsourcing itself is profitable, that is, either condition (8) or (9) is satisfied. Let optimal α be denoted by α^* . From (2)

$$\frac{\partial \pi_{op}}{\partial \alpha} = n(1 - \alpha)^{n-1} F + [V - (PMT + C_A)] \tag{10}$$

To evaluate (10), we need to consider cases involving different values of n . Throughout, we assign $\alpha=1$ when it exceeds 1, and $\alpha=0$ when it falls below 0. Drawing upon Sen and Zhu (1996), a summary of results regarding optimal degree of outsourcing is provided in Table 1 below.

Table 1 Degree of Optimal Outsourcing and its Conditions

$\alpha^*=1$	$\alpha^*=0$	$0 \leq \alpha \leq 1$
$n > 1 \quad V - (PMT + C_A) \leq 0$	$-nF > V - (PMT + C_A)$	$-nF \leq V - (PMT + C_A) < 0$
$n = 1 \quad V - (PMT + C_A) \leq -nF$	$-nF > V - (PMT + C_A)$	$-nF = V - PMT - C_A$
$n < 1 \quad V - (PMT + C_A) \leq 0$ or $V - (PMT + C_A) < 0$ and $P - (PMT + C_A) > \text{Max}[\Pi, 0]$	$V - (PMT + C_A) < 0$ and $\Pi > \text{Max}[0, P - (PMT + C_A)]$	

In summary, when OP’s fixed costs sharply decline, n is greater than 1, and variable costs of own production exceed costs of outsourcing, the optimal degree of outsourcing is 100%. If OP’s variable costs of own production are lower than costs of outsourcing, it can still profit from outsourcing if its fixed costs decline dramatically. In the presence of a trade off between fixed and variable costs (that is, when fixed costs decline but variable costs do not), optimal outsourcing can be an intermediate $0 \leq \alpha^* < 1$. If OP’s variable costs are lower and its fixed costs do not greatly respond to outsourcing, it should not outsource at all.

8. The efficiency of outsourcing

Outsourcing is efficient when combined profits of the original producer and the vendor are greater than the profits of the original producer, i.e., $\Pi_{op+oc} \geq \Pi$. For $\Pi \geq 0$, this requires

$$\frac{F[(1 - \alpha) - (1 - \alpha)^n]}{\alpha} \geq C_A - (V - \mathcal{W}) \tag{11}$$

If original production is unprofitable, outsourcing is efficient only if $\Pi_{op+oc} \geq \text{Max}[\Pi, 0]$.

If OP and OC both benefit by outsourcing, such a manufacturing arrangement should prove socially beneficial as the stock of wealth created by the production endeavor is greater with outsourcing than without outsourcing. We show further that outsourcing has the potential for improving social benefits by turning a losing business profitable. Traditional economic theory predicts that a firm which is recovering its variable costs and a portion of fixed costs will not shut down. We notice that by resorting to outsourcing, such a firm can even become profitable if the following condition is satisfied for at least one α :

$$F(1-\alpha)^n - (P - V) \geq [V - (PMT + C_A)]\alpha$$

or, equivalently,

$$F[1 - (1 - \alpha)^n] + [F - (P - V)] \geq [V - (PMT + C_A)]\alpha \tag{12}$$

This condition is obtained by setting $\Pi_{op} \geq 0$ which guarantees that OP is profitable with outsourcing although it was not profitable before outsourcing. Condition (12) shows that when original production is unprofitable, outsourcing can improve profits if savings in variable costs exceed or equal savings in fixed costs due to outsourcing *plus* the uncovered portion of fixed costs under original production. The uncovered portion of fixed costs is $F - (P - V)$ where

$(P - V) < F$. (Notice that $\Pi < 0$ makes $(P - V) < F$). If the vendor’s variable costs are lower than OP’S by an amount greater than OP’s uncovered fixed costs, outsourcing will make OP profitable. Clearly, such a prospect is brighter when α is large. We discuss below, formal conditions under which optimal α is also efficient. We divide the discussion between cases where optimal α is an extreme, i.e., outsourcing is an all or nothing proposition and cases where optimal α is intermediate.

Conditions for Efficiency When Optimal Outsourcing is ‘All or Nothing’:

For $\alpha^*=1$, (4) becomes $\Pi_{op+oc} = P - F - (C_A + \gamma V)$. (13)

(i) From Table 1, it is clear that for $n=1$, optimal outsourcing is 100% ($\alpha=1$), whenever

$V - (PMT + C_A) \geq 0$. Because $\Pi_{oc} = PMT - F - \gamma V \geq 0$ (by assumption),

it follows that $V - C_A \geq \gamma V + F$. Thus, $\Pi_{op+oc} = P - F - (C_A + \gamma V) > P - V$. Since, $P - V > P - V - F$ (always), $\Pi_{op+oc} > \Pi$. Outsourcing is efficient, whenever $V - (PMT + C_A) \geq 0$ and $n \leq 1$.

(ii) However, if $n=1$, $\alpha^*=1$, optimal outsourcing is 100% , only when

$V - (PMT + C_A) \geq -nF$. Utilizing this and recalling that $\Pi_{oc} = PMT - F - \gamma V \geq 0$, we obtain

$V - C_A \geq \gamma V$. Putting it back in (13), $\Pi_{op+oc} = P - F - (C_A + \gamma V) \geq P - F - V (= \Pi)$.

(iii) If $V - (PMT + C_A) < 0$ and $P - (PMT + C_A) > \text{Max}[\Pi, 0]$, then $\Pi_{op+oc} > \text{Max}[\Pi, 0] + PMT - F - \gamma V$. Again, since $\Pi_{oc} \geq 0$, i.e., $PMT \geq F + \gamma V$ (for $\alpha^*=1$), it follows that $\Pi_{op+oc} > \Pi$. Thus, whenever optimal outsourcing is 100%, it is efficient as well. Obviously, for $\alpha^*=0$, $\Pi_{op+oc} \leq \Pi$ and the efficiency criterion is satisfied.

Conditions of Efficiency When Optimal Outsourcing is Intermediate

From (12), if $V - (PMT + C_A) < 0$, the First-Order-Condition yields

$$\alpha^* = 1 - \frac{(PMT + C_A) - V}{nF} \quad (14)$$

The RHS implies $0 < \alpha^* < 1$ when $-nF < V - (PMT + C_A) < 0$. Plugging α^* from (14) into (4), we get

$$\Pi_{op+oc} = P - F - (C_A + \gamma V)\alpha^* + F[1 - (1 - \alpha^*)^{n-1}](1 - \alpha^*) \quad (15)$$

The sufficient condition for efficiency, $\Pi_{op+oc} > \Pi$, is

$$\alpha^*C_A > (1 - \alpha^*)V + (1 - \alpha^*)^n F \quad (16)$$

which makes $(C_A + V)\alpha^* + F[1 - (1 - \alpha^*)^{n-1}](1 - \alpha^*) > V$

and, therefore, $(C_A + \gamma V)\alpha^* + F[1 - (1 - \alpha^*)^{n-1}](1 - \alpha^*) > V$ (since, $\gamma < 1$).

This, in turn, makes

$$\Pi_{op+oc} = P - F - (C_A + \gamma V)\alpha^* + F[1 - (1 - \alpha^*)^{n-1}](1 - \alpha^*) > P - F - V (= \Pi)$$

Thus when intermediate outsourcing is optimal, the sufficient condition for efficiency in (16) requires that OP’s additional cost of outsourcing does not exceed its production costs. Although, efficiency of outsourcing in the intermediate case requires an additional condition, the condition appears not very restrictive. Assuming that such a condition is easily met, it is likely that intermediate outsourcing is efficient as well. Recall that outsourcing is optimal whenever OC’s variable costs are lower than OP’s. When OC’s variable costs are not lower than OP’s, outsourcing is optimal only if OP’s fixed costs decline by an amount greater than the differential in variable costs of OP and OC.

III. Efficiency of Outsourcing - A Case Study

In this section, data from a major airline’s outsourcing of janitorial services in various airports are analyzed to test the efficiency of outsourcing implied in the above model. The airline serves several airports for which bids were invited through national advertising. Responses were received from both national and regional vendors and in some cases from workers organizations of the airline itself. The bidding was competitive and independently considered for each airport. Information provided by the bidders included the headcount and the rate of labor cost, supplies and equipment costs, overhead expenditure, profit rates and taxes. On receiving the bids, the airlines estimated expected savings and decided whether to outsource or not, and if it decided to outsource, a winning vendor was chosen. From this information, the methodology utilized by the airlines to make such decisions becomes transparent.

It appears that expected savings from outsourcing in each case were substantial and the primary source of savings was labor costs. Savings on labor costs arise due to reduction in the headcount as well as saving in labor rates. Table 2 below summarizes expected savings in labor costs from four airports.

Table 2 Labor Saving From Outsourcing

	HEADCOUNT		LABOR RATE		TOTAL SAVING
	Saving over winning bid	Saving over average bid	Saving over winning bid	Saving over average bid	Saving over winning bid
Airport 1	14.5%	17.5%	31.03%	39.4%	45.5%
Airport 2	23.4	17.2	28.4	14.9	40.6
Airport 3	-4	-7.0	42.7	35.1	42.3
Airport 4	11.4	4.38	42.2	27.4	53.6

It is clear that expected savings in labor costs were overwhelming. The airline’s own estimate of total savings from outsourcing was more moderate, implying that some of the savings in labor costs was offset by the airline’s non-labor costs. Interestingly, however, additional costs due to outsourcing, C_A , were ignored completely, implying that the airline did not expect to spend resources on review and monitoring the vendor’s works. In addition, since cost savings were substantial and a markup was explicitly included in the bid, no winner’s curse phenomenon (Thaler, 1992) was suspected.

Decisions were made to outsource completely in each case, and contracts were offered, most often, but not always, to the lowest bidder. Judgement calls were made whenever bids were poorly specified (parts of the services were excluded) or quality of service was suspect.

Dividing the data on fixed and variable costs for the airlines (OP) and the bidding vendor (OC), we calculated the optimal degree of outsourcing in each airport for each pair of OP and OC. Because $\Pi > 0$, and assuming $n > 1$, and knowing that a 100% outsourcing decision was made in each case, we tested if α^* turned out to be 1 for the winning bidders and 0 for the losing bidders. Notice that it is not expected that $\alpha^* = 0$ for all non-winning bids. It is likely that many bidders will satisfy conditions for profitable outsourcing and only the best among them will be chosen. Recall that if $V - (PMT + C_A) \geq 0$, optimal $\alpha = 1$ for most n . We therefore, examined if this condition was satisfied by the winning bids.

Understanding that airport janitorial services are labor intensive (nearly three-fourths of all costs are labor costs), empirical estimates of γ were expected to be considerably below unity. Table 3 below shows values of γ implied by the bidders in different airports on the basis of labor costs alone. In 6 of 28 cases, were labor costs of vendors greater than 80% of the airline’s labor costs.

Of these 6, the vendor’s variable costs exceeded the airline’s in 3 cases. In all 6 cases, in line with the prediction of the model, no outsourcing contract was reached between the airline and the vendors.

In column 6, we check if the condition $V - (PMT + C_A) \leq 0$ is satisfied by the vendor by placing a y for yes and an n for no. In column 7, actual outsourcing decision is indicated by 1 (if an outsourcing contract was offered to this vendor) or 0 (no outsourcing contract offered to this vendor).

Table 3: Efficiency Condition and Outsourcing Decision

airport	γ				$V - (PMT + C_A) \leq 0?$				α^*			
	1	2	3	4	1	2	3	4	1	2	3	4
vendor 1	.58	.74	.63	.52	y	y	y	y	1	1	0	1
vendor 2	1.16	.98	.52	.62	n	n	y	y	0	0	1	0
vendor 3	.70		.39		y		y					
vendor 4	.50	.59			y		y					
vendor 5	.82	.48	.66	.58	n	y	y	y				
vendor 6	.62	.40	.66	.40	y	y	y	y				
vendor 7	1.02	.75			n	y			0	0		
vendor 8	1.01	.52			n	y			0	0		
vendor 9	.75	.51			y	y			0	0		
vendor 10	.84	.38			n	y			0	0		

Note: Airports are marked 1, 2, 3 and 4. If the condition $V - (PMT + C_A) \leq 0$ is satisfied by the vendor, a y to mean ‘yes’ is placed in the column. If it is not satisfied, an n is placed to mean a ‘no’. The last column shows the actual decision. If the vendor won the bid, the column shows a 1, 0 if it did not. Blanks indicate that no bid was made for the particular airport by the particular vendor.

It is found that α^* had the right solution for seven of eight cases shown in the first two rows. Thus for vendors 1 and 2, actual decisions made by the airline are in conformity with the prediction of the model. Given the cost conditions offered by vendor 1, a 100% outsourcing is predicted for airports 1, 2 and 4. No outsourcing with vendor 1 is predicted for airport 3. Similarly, vendor 2 meets the conditions of 100% outsourcing for airports 3 and 4 and fails to meet the conditions for airports 1 and 2. In airport 4, vendor 1 had a superior bid. Airports 1, 2 and 4 were contracted out to vendor 1 and airport 3 was contracted out to vendor 2. The airline’s decisions are in line with the model’s predictions.

The airline’s method of selection of bids was to choose the vendor which has the lowest costs. Preferences appear to have been given to national vendors over regional ones. Several

improvements can be suggested to the method adopted by the airline. First, it is inappropriate to disregard additional costs C_A . Secondly, rather than looking at many cost factors separately, the use of a composite index of factors will be a superior method for outsourcing decisions. Thirdly, it is possible that vendors would bid low initially to obtain the business and then raise claims later. The firm clearly needs control over the quality of goods or services supplied by the vendor. This would generate additional costs of monitoring vendor's production.

By taking the average of the bids as the PMT (rather than taking the lowest bid) and assuming that additional costs are a 10% of current costs of own production, savings from outsourcing were recalculated. It is found that all winners still generated potential savings for the airline. Gains from outsourcing, although remain positive, do not appear as outstanding as the airline expects. Further, if the vendor's costs can rise in the future or provisions are made for frequent re-contracting, the gains from outsourcing can decline even more. In a non-revenue generating labor intensive service such as janitorial services in the airports, gains from outsourcing do appear compelling and the efficiency gains are at least moderate.

IV. Conclusions

Outsourcing is efficient when combined profits of the original producer and the outside contractor are greater than the profits of the original producer before outsourcing. This paper presented an economic model to examine the efficiency of outsourcing as a manufacturing arrangement. Outsourcing is efficient when it leads to savings in both fixed and variable costs. However, when the original producer's variable costs of own production exceeds that of the outside contractor, it can still profit from outsourcing if it can achieve substantial savings in fixed costs that outweighs the differences in variable costs. In such a situation, partial outsourcing may become optimal. Efficiency of outsourcing in this case is not obvious, but the conditions of efficiency seem to be easily satisfied. Although outsourcing may be profitable, a firm which is itself a low variable cost producer, should not possibly outsource unless its fixed costs greatly reduce. In the model presented in this paper, outsourcing always results in a decline of fixed costs. This is an optimistic view of outsourcing. In reality, cost reductions are not guaranteed, additional costs can be substantial, and costs can increase over time.

In spite of this limitation, the model demonstrates meaningful conditions for partial, complete or no outsourcing decisions. It incorporates firm's trade-off between fixed and variable costs, and its own costs and outsourcing cost. Data from outsourcing of janitorial services in one Airline Company shows that outsourcing decisions made by the airlines were in conformity with the model. In the case of outsourcing of a labor intensive service, fixed costs had very limited significance since the sufficient condition for efficient outsourcing (which involves only the variable costs) were frequently satisfied. Winning bidders, who received outsourcing contracts, fulfilled the condition of efficient outsourcing and many of the losing bidders did not fulfill such conditions. In addition, reduction in the firm's fixed costs and/or lower variable costs of the vendor is sufficient conditions for outsourcing to be efficient.

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Cost of Equity Adjustment for Wholly Owned Subsidiaries

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Abstract

As a parent company holds the subsidiary's equity as assets, its debt capacity is enhanced and more debt financing is feasible. Valuable interest tax shields are available to the parent company when the parent is profitable and paying taxes. If the wholly owned subsidiary is treated as an independent firm, the value of the parent's interest tax shields is ignored and new investments with net incremental value to the parent will be rejected. Moreover, to prevent cross subsidies among the wholly owned subsidiaries, the subsidiary's risk should be recognized in the subsidiary's equity hurdle rate. This paper reinforces the point that the wholly owned subsidiary's cost of equity should be adjusted to account for both the value of the parent's interest tax shields and the subsidiary's risk so as to maximize the value of the parent company in capital budgeting.

When 100% of an operating firm's equity is owned by a parent company as assets, the firm is known as a wholly owned subsidiary. Wholly owned subsidiaries are widespread in the business world, especially in public utility, airline and banking industries. One common approach adopted in determining the costs of equity of public utility wholly owned subsidiaries is the double leverage approach. In this method, the parent's weighted average cost of capital is employed as the cost of equity for its wholly owned subsidiaries. When all subsidiaries' equity investments are evaluated using the same hurdle rate, the parent tends to over (under) allocate its resources to the higher (lower) risk subsidiaries. This approach is inconsistent with the goal of value maximization in capital budgeting. It is well documented that this traditional double leverage approach ignores subsidiary risk and results in misallocation of resources among the subsidiaries. See for example, Rozeff (1983), Beedles (1984), Sweeney (1985), Ezzell, Hsu and Miles (1991), O'Donnell and Walker (1989, 1993), and Hsu (2000), etc. Another popular approach used to define a wholly owned subsidiary's cost of equity is the independent firm approach, supported by Pettway and Jordan (1983), and Beranek and Miles (1988), among others. Under the independent firm approach, the subsidiary is treated as an independent firm and the subsidiary's required rate of return on equity is set to equal its standalone cost of equity. Ezzell, Hsu and Miles (1991) point out that the wholly owned subsidiary's common stocks, held as the parent company's assets, enhance the parent's debt capacity and create valuable interest tax shields for the parent (i.e., the subsidiary's shareholder). If the valuable interest tax shields are ignored, profitable investments may be rejected and the shareholder's wealth will not be maximized. The objective of this paper is to reinforce the point that the wholly owned subsidiary's cost of equity should be adjusted to account for the present value of interest tax shields via several simple numerical examples. These examples will be investigated using the adjusted net present value valuation framework established in Myers (1974) and the risk-adjusted cost of equity specified in Hsu (2000).

I. Analysis with numerical examples

For illustration and comparison purposes, the example with debt in the subsidiaries and no debt in the parent presented in Pettway and Jordan (1983) is employed as a starting point. The simplified book value balance sheets of the parent and the three wholly owned subsidiaries (Subsidiary 1, Subsidiary 2, and Subsidiary 3) are given below:

Parent Balance Sheet
(Book values)

E ₁ 55	200 E _p
E ₂ 50	
E ₃ 95	
Total 200	200 Total

Subsidiary 1 Balance Sheet
(Book values)

A ₁ 100	45 D ₁
	55 E ₁
Total 100	100 Total

Subsidiary 2 Balance Sheet
(Book values)

A ₂ 100	50 D ₂
	50 E ₂
Total 100	100 Total

Subsidiary 3 Balance Sheet
(Book values)

A ₃ 120	25 D ₃
	95 E ₃
Total 120	120 Total

where E_p is the parent’s equity, E_j is Subsidiary j’s equity (j = 1, 2, 3), D_j is Subsidiary j’s debt, and A_j are the Subsidiary j’s total assets (j = 1, 2, 3). Pettway & Jordan (1983) assume the following standalone cost of equity for the wholly owned Subsidiary j, k_{ej}, j = 1, 2, 3.

Standalone cost of equity for Subsidiary 1 = k_{e1} = 16.73%

Standalone cost of equity for Subsidiary 2 = k_{e2} = 17.4%

Standalone cost of equity for Subsidiary 3 = k_{e3} = 17.43%

The subsidiary’s standalone cost of equity is affected by each subsidiary’s business risk and financial leverage. In other words, Subsidiary 1 has the lowest risk and Subsidiary 3 has the highest risk among the three wholly owned subsidiaries in this example. The parent’s weighted average cost of capital, WACC_p, i.e., its required rate of return on assets, is the weighted average of the subsidiaries’ costs of equity capital.

$$WACC_p = (55/200) (16.73\%) + (50/200) (17.4\%) + (95/200) (17.43\%) = 17.225\%$$

This is also the parent’s unlevered cost of capital, k_{up}.

It is now assumed that the parent’s debt to total assets ratio is 10% (= 20/200), and the book value balance sheets for the parent and the subsidiaries are:

Parent Balance Sheet
(Book values)

E ₁ 55	20 D _p
E ₂ 50	180 E _p
E ₃ 95	
Total 200	200 Total

Subsidiary 1 Balance Sheet
(Book values)

A ₁ 100	45 D ₁
	55 E ₁
Total 100	100 Total

Subsidiary 2 Balance Sheet
(Book values)

A ₂ 100	50 D ₂
	50 E ₂
Total 100	100 Total

Subsidiary 3 Balance Sheet
(Book values)

A ₃ 120	25 D ₃
	95 E ₃
Total 120	120 Total

where D_p is the parent’s debt. Pettway and Jordan (1983) recommend that the three wholly owned subsidiaries be treated as if they were independent firms. Thus, the equity hurdle rate for each subsidiary is set to equal its standalone cost of equity, which is independent of the parent’s debt; it remains constant even if the parent is highly leveraged, given the subsidiary’s business risk and debt ratio.

Nonetheless, it is apparent that the wholly owned subsidiaries’ common stocks that are held as the parent’s assets add to the parent’s borrowing capacity. As debt financing becomes feasible, the parent captures the valuable debt-related tax shields due to tax deductibility of interest expenses. To evaluate the interest tax shields, it is assumed in this paper that (i) the parent company is profitable and pays marginal income taxes of 35%, (ii) there is no cost of financial distress, and (iii) the parent’s debt is fixed and permanent. This debt policy is explained in Brealey, Myers and Allen (2011): “That is, the company commits to refinance its present debt obligations when they mature and to keep rolling over its debt obligations indefinitely.” If the parent is to maintain this permanent debt policy and it is profitable enough to shield the interest expenses, the present value of its interest tax shields, $PVTS_p$, equals

$$PVTS_p = T D_p = .35 (20) = 7$$

where T is the marginal corporate income tax rate. This valuation procedure is first presented in Modigliani & Miller (1963). The market value of the parent’s equity, S_p , is higher than its book value, E_p , because of the valuable interest tax shields, $PVTS_p$. That is why the parent’s market value balance sheet is different from its book value balance sheet as shown below:²

Parent Balance Sheet (Book values)			Parent Balance Sheet (Market values)		
E_1	55	20 D_p	E_1	55	20 D_p
E_2	50	180 E_p	E_2	50	187 S_p
E_3	95		E_3	95	
			$PVTS_p$	7	
Total	200	200 Total	Total	207	207 Total

The present value of interest tax shields is related to the amount of the parent’s debt and its marginal income tax rate. If the parent’s debt to total assets ratio is 60% ($= 120/200$), then $PVTS_p$ increases to

$$PVTS_p = T D_p = .35 (120) = 42$$

and the market value of the parent equity, S_p , is higher than its equity book value, E_p , by 42 ($= PVTS_p$) as revealed in the parent’s balance sheets below:

Parent Balance Sheet (Book values)			Parent Balance Sheet (Market values)		
E_1	55	120 D_p	E_1	55	120 D_p
E_2	50	80 E_p	E_2	50	122 S_p
E_3	95		E_3	95	
			$PVTS_p$	42	
Total	200	200 Total	Total	242	242 Total

² Market value balance sheets in this format can be found in Brealey, Myers and Allen (2011), page 443.

To maintain the parent’s value, a risk-adjusted cost of equity for a wholly owned Subsidiary j, RA_{ej} , is derived to account for the present value of the interest tax shields in Hsu (2000) as

$$RA_{ej} = k_{ej} (1 - T L_p)$$

where L_p is the parent’s debt to total assets ratio. This risk-adjusted cost of equity is different from the standalone cost of equity adopted under the independent firm approach as it is adjusted downward to account for the parent’s interest tax shields, $T L_p$. This risk-adjusted double leverage approach is also different from the traditional double leverage approach; it accounts for the subsidiary’s risk as reflected in the standalone cost of equity, k_{ej} .

Assuming a 10% parent’s debt to total assets ratio in Table I Panel A, the risk-adjusted cost of equity for each subsidiary is determined as

$$RA_{e1} = 16.73\% (1 - .35 (10\%)) = 16.1445\%$$

$$RA_{e2} = 17.4\% (1 - .35 (10\%)) = 16.7910\%$$

$$RA_{e3} = 17.43\% (1 - .35 (10\%)) = 16.8200\%$$

If the subsidiary’s expected rate of return on equity equals its risk-adjusted cost of equity, then the expected equity cash flows from the subsidiary’s equity investment are

$$\text{Subsidiary 1’s expected equity cash flows} = 16.1445\% (55) = 8.8795$$

$$\text{Subsidiary 2’s expected equity cash flows} = 16.7910\% (50) = 8.3955$$

$$\text{Subsidiary 3’s expected equity cash flows} = 16.8200\% (95) = 15.9790$$

The present value of the subsidiary’s perpetual equity cash flows can be computed using its standalone cost of equity as the discount rate. That is

$$\text{PV of Subsidiary 1’s expected equity cash flows} = 8.8795 / 0.1673 = 53.0752$$

$$\text{PV of Subsidiary 2’s expected equity cash flows} = 8.3955 / 0.1740 = 48.2500$$

$$\text{PV of Subsidiary 3’s expected equity cash flows} = 15.9790 / 0.1743 = 91.6753$$

The net present value of the subsidiary’s equity investment, NPV, is the present value of its expected equity cash flows net of its equity investment outlay;

$$\text{NPV of Subsidiary 1’s equity investment} = 53.0752 - 55 = -1.925$$

$$\text{NPV of Subsidiary 2’s equity investment} = 48.2500 - 50 = -1.750$$

$$\text{NPV of Subsidiary 3’s equity investment} = 91.6753 - 95 = -3.325$$

$$\text{Total NPV of Subsidiaries’ equity investments} = -7.000$$

Note that the total NPV of the three investments adjusted for the present value of the parent’s interest tax shields ($PVTS_p = 7$) equals zero. In other words, the shareholder’s wealth is maintained if the three investments are undertaken when each subsidiary’s expected return on equity equals its risk-adjusted cost of equity. Specifically, each subsidiary’s contribution to $PVTS_p$ is determined under the risk-adjusted double leverage approach as follows:

$$\text{Subsidiary 1’s contribution} = (55/200) (7) = .275 (7) = 1.925$$

$$\text{Subsidiary 2’s contribution} = (50/200) (7) = .250 (7) = 1.750$$

$$\underline{\text{Subsidiary 3's contribution} = (95/200) (7) = .475 (7) = 3.325}$$

$$\text{PVTS}_p = 7.000$$

It is interesting to point out that each investment's negative NPV is exactly offset by the subsidiary's contribution to PVTS_p under the risk-adjusted double leverage approach.

A similar analysis is performed in Table I Panel B, assuming a parent debt ratio of 60%. The risk-adjusted cost of equity for each subsidiary is determined as

$$\text{RA}_{e1} = 16.73\% (1 - .35 (60\%)) = 13.2167\%$$

$$\text{RA}_{e2} = 17.4\% (1 - .35 (60\%)) = 13.7460\%$$

$$\text{RA}_{e3} = 17.43\% (1 - .35 (60\%)) = 13.7697\%$$

and each subsidiary's contribution to the present value of the parent's debt related tax shields, PVTS_p , is determined under the risk-adjusted double leverage approach as

$$\text{Subsidiary 1's contribution} = (55/200) (42) = .275 (42) = 11.55$$

$$\text{Subsidiary 2's contribution} = (50/200) (42) = .250 (42) = 10.50$$

$$\underline{\text{Subsidiary 3's contribution} = (95/200) (42) = .475 (42) = 19.95}$$

$$\text{PVTS}_p = 42.00$$

The net present value, NPV, of each subsidiary's equity investment adjusted for its contribution to PVTS_p is as follows:

Adjusted NPV of Subsidiary 1's equity investment

$$= .132167(55)/.1673 - 55 + 11.55 = 0.00$$

Adjusted NPV of Subsidiary 2's equity investment

$$= .13746(50)/.174 - 50 + 10.5 = 0.00$$

Adjusted NPV of Subsidiary 3's equity investment

$$\underline{= .137697(95)/.1743 - 95 + 19.95 = 0.00}$$

Total Adjusted NPV of Subsidiaries' equity investments = 0.00

In summary, Table I Panel A (B) shows the net incremental value of each subsidiary's equity investment to the parent with a 10% (60%) debt ratio when the expected rate of return on Subsidiary j's equity investment equals the risk-adjusted cost of equity, RA_{ej} . The net incremental value of each subsidiary's equity investment to the parent, the adjusted NPV, is the investment's net present value, NPV, adjusted for the present value of the parent's interest tax shields created by each subsidiary's equity. Accounting for each subsidiary's risk and the subsidiary's contribution to the parent's interest tax shields, the risk-adjusted cost of equity, RA_{ej} , is just high enough to yield zero adjusted NPV of the subsidiary's equity investment and preserve the value of the parent company.

Refer to Table I

A similar adjusted net present value analysis under the traditional double leverage approach is performed in Table II Panel A (B) with a 10% (60%) parent debt ratio. Note that the expected rate of return on the subsidiary's equity investment is set to equal the parent's weighted average cost of capital, $\text{WACC}_p = 16.6221\% (13.6078\%)$, in Panel A (B) of Table II as determined below:

$$r_{ej} = WACC_p = k_{up} (1 - T L_p) = 17.225\% (1 - .35(.1)) = 16.6221\%, \quad j = 1, 2, 3$$

$$r_{ej} = WACC_p = k_{up} (1 - T L_p) = 17.225\% (1 - .35(.6)) = 13.6078\%, \quad j = 1, 2, 3$$

Refer to Table II

Table II Panel A shows the net present value of the subsidiary's equity investment adjusted for the subsidiary's contribution to PVTSP_p as follows:

$$\begin{aligned} \text{Adjusted NPV of Subsidiary 1's equity investment} \\ = .166221(55)/.1673 - 55 + 1.925 = 1.5703 \end{aligned}$$

$$\begin{aligned} \text{Adjusted NPV of Subsidiary 2's equity investment} \\ = .166221(50)/.174 - 50 + 1.75 = -0.4853 \end{aligned}$$

$$\begin{aligned} \text{Adjusted NPV of Subsidiary 3's equity investment} \\ = .166221(95)/.1743 - 95 + 3.325 = -1.0784 \end{aligned}$$

$$\text{Total Adjusted NPV of Subsidiaries' equity investments} = 0.00$$

Additionally, Table II Panel B presents the adjusted NPV of each subsidiary's equity investment financed with 60% parent debt:

$$\begin{aligned} \text{Adjusted NPV of Subsidiary 1's equity investment} \\ = .136078 (55)/.1673 - 55 + 11.55 = 1.2857 \end{aligned}$$

$$\begin{aligned} \text{Adjusted NPV of Subsidiary 2's equity investment} \\ = .136078 (50)/.174 - 50 + 10.5 = -0.3971 \end{aligned}$$

$$\begin{aligned} \text{Adjusted NPV of Subsidiary 3's equity investment} \\ = .136078 (95)/.1743 - 95 + 19.95 = -0.8824 \end{aligned}$$

$$\text{Total Adjusted NPV of Subsidiaries' equity investments} = 0.00$$

Notice from Table II that the parent value is maintained as the total adjusted NPV of the subsidiaries' investments equals zero. Nonetheless, the lower risk subsidiary (Subsidiary 1) is subsidizing the higher risk subsidiaries (Subsidiary 2 and Subsidiary 3). This is because the subsidiary's risk is ignored, resulting in cross subsidizations among the subsidiaries under the traditional double leverage approach.

In summary, Tables I and II illustrate that the value of the parent's interest tax shields must be accounted for in the subsidiary's cost of equity if the parent value is to be maintained and not enhanced. Both the risk-adjusted double leverage approach and the traditional double leverage approach achieve this goal, total adjusted NPV = 0. However, the risk-adjusted double leverage approach is superior to the traditional double leverage approach as it recognizes the subsidiary risk. The risk-adjusted cost of equity is the minimum acceptable rate of return on the subsidiary's equity investment, and should be used as the hurdle rate to evaluate its proposed equity investment. In applying the internal rate of return decision rule in capital budgeting, when the expected internal rate of return on the subsidiary's equity investment is greater than this adjusted

hurdle rate, the investment is profitable and should be undertaken to enhance the wealth of the shareholder (the parent) and vice versa.

Table III Panel A (B) presents the capital budgeting accept/reject decisions using the internal rate of return rule under all three approaches: the independent firm approach, the traditional double leverage approach and the risk-adjusted double leverage approach, when the parent's debt to total assets ratio is 10% (60%). For demonstration purposes, it is assumed in the Table that the expected rates of return on equity are 16.3%, 16.5% and 16.7% for Subsidiary 1, 2 and 3, respectively.

Both Panels A and B of the Table show that the independent firm approach and the risk-adjusted double leverage approach result in very different capital budgeting decisions. Namely, the independent firm approach rejects the wholly owned subsidiaries' investments as each expected rate of return from the subsidiary's equity investment is below its standalone cost of equity; while the risk-adjusted double leverage approach accepts the investments because the expected rate of return is higher than the subsidiary's risk-adjusted cost of equity in all cases. Table III Panel A shows that only the investment of the highest risk subsidiary, i.e., Subsidiary 3, is accepted and the investments of the lower risk subsidiaries, i.e., Subsidiary 1 and Subsidiary 2, are rejected under the traditional double leverage approach. It is clear that both the independent firm approach and the traditional double leverage approach are inconsistent with the goal of shareholder wealth maximization as profitable investments are rejected.

Refer to Table III

II. Conclusion

The independent firm approach treats the wholly owned subsidiary as if it were a standalone firm and fails to account for the parent company's valuable interest tax shields. Profitable investments are rejected as the subsidiary's standalone cost of equity is used as the hurdle rate to evaluate proposed investments. The result is an inconsistency with the goal of shareholder wealth maximization in capital budgeting. Both the traditional double leverage approach and the risk-adjusted double leverage approach adjust the cost of equity for the wholly owned subsidiary to account for the parent company's debt related tax shield, maintaining the value of the parent. However, the traditional double leverage approach fails to recognize the subsidiary's risk and uses the same hurdle rate (i.e., the parent company's weighted average cost of capital) to evaluate all investments across all subsidiaries, resulting in cross subsidies among the subsidiaries. The risk-adjusted double leverage approach is superior to the traditional double leverage approach because the risk-adjusted cost of equity for a wholly owned subsidiary reflects the subsidiary's standalone cost of equity, it increases as its standalone cost of equity increases and vice versa. As illustrated in the numerical examples, this risk-adjusted cost of equity is the minimum acceptable rate of return on the wholly owned subsidiary's equity investment. The use of the risk-adjusted cost of equity as the equity hurdle rate to evaluate the wholly owned subsidiary's proposed equity investment is consistent with the goal of shareholder wealth maximization.

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Table I. Net incremental value of subsidiaries’ equity investments to the parent under the risk-adjusted double leverage approach

This Table shows that the net present value (NPV) of each subsidiary’s equity investment adjusted for its contribution to the present value of the parent’s interest tax shields, $PVTS_p$, equals zero. The shareholder’s wealth (or the value of the parent company) is maintained when each wholly owned subsidiary’s expected return on equity, r_{ej} , equals its risk-adjusted cost of equity, RA_{ej} , with a parent debt to total assets ratio, L_p , of 10% (60%) in Panel A (B).			
Panel A. Parent’s debt to total assets ratio = 10%			
	Subsidiary 1	Subsidiary 2	Subsidiary 3
Subsidiary j’s standalone cost of equity: k_{ej}	16.73%	17.4%	17.43%
Expected return on equity to Subsidiary j: $r_{ej} = RA_{ej} = k_{ej} (1 - T L_p) = k_{ej} (1-.35(.1))$	16.1445%	16.791%	16.82%
Subsidiary j’s equity investment outlay: E_j	\$55	\$50	\$95
Expected equity cash flows to Subsidiary j: $r_{ej}E_j$	\$8.8795	\$8.3955	\$15.979
Present value of j’s equity cash flows: $r_{ej}E_j/k_{ej}$	\$53.0752	\$48.25	\$91.6753
$PVTS_p$ created by subsidiaries’ equity: $PVTS_p = T D_p = .35 (20)$	\$7		
Subsidiary j’s contribution to $PVTS_p$: $E_j/\sum_i E_i = E_j /200$	0.275	0.25	0.475
$PVTS_p$ created by Subsidiary j’s equity: $(E_j/\sum_i E_i) PVTS_p = (E_j /200) (7)$	\$1.925	\$1.75	\$3.325
NPV of Subsidiary j’s equity investment adjusted for $PVTS_p$: $r_{ej}E_j/k_{ej} - E_j + (E_j/\sum_i E_i) PVTS_p$	\$0.00	\$0.00	\$0.00
Incremental value to the parent: Sum of the adjusted NPVs	\$0.00		
Panel B. Parent’s debt to total assets ratio = 60%			
	Subsidiary 1	Subsidiary 2	Subsidiary 3
Subsidiary j’s standalone cost of equity: k_{ej}	16.73%	17.40%	17.43%
Expected return on equity to Subsidiary j: $r_{ej} = RA_{ej} = k_{ej} (1 - T L_p) = k_{ej} (1-.35(.6))$	13.2167%	13.7460%	13.7697%
Subsidiary j’s equity investment outlay: E_j	\$55	\$50	\$95
Expected equity cash flows to Subsidiary j: $r_{ej}E_j$	\$7.2692	\$6.8730	\$13.0812
Present value of j’s equity cash flows: $r_{ej}E_j/k_{ej}$	\$43.45	\$39.50	\$75.05
$PVTS_p$ created by subsidiaries’ equity: $PVTS_p = T D_p = .35 (120)$	\$42		
Subsidiary j’s contribution to $PVTS_p$: $E_j/\sum_i E_i = E_j /200$	0.275	0.25	0.475
$PVTS_p$ created by Subsidiary j’s equity: $(E_j/\sum_i E_i) PVTS_p = (E_j /200) (42)$	\$11.55	\$10.50	\$19.95
NPV of Subsidiary j’s equity investment adjusted for $PVTS_p$: $r_{ej}E_j/k_{ej} - E_j + (E_j/\sum_i E_i) PVTS_p$	\$0.00	\$0.00	\$0.00
Incremental value to the parent: Sum of the adjusted NPVs	\$0.00		

Table II. Net incremental value of subsidiary's equity investment to the parent under the traditional double leverage approach

This Table shows that the value of the parent company (i.e., the shareholder's wealth) is maintained when the wholly owned subsidiary's expected return on equity equal the parent's weighted average cost of capital, $WACC_p = k_{up} (1 - T L_p) = 17.225\% (1 - .35 L_p)$, with a parent debt to total assets ratio, L_p , of 10% (60%) in Panel A (B). Nonetheless, Subsidiary 1 (the lower risk subsidiary) is subsidizing Subsidiaries 1 and 2 (the higher risk subsidiaries).			
Panel A. Parent's debt to total assets ratio = 10%			
	Subsidiary 1	Subsidiary 2	Subsidiary 3
Subsidiary j's standalone cost of equity: k_{ej}	16.73%	17.4%	17.43%
Expected return on equity to Subsidiary j: $r_{ej} = k_{up} (1 - T L_p) = 17.225\% (1 - .35(.1))$	16.6221%	16.6221%	16.6221%
Subsidiary j's equity investment outlay: E_j	\$55	\$50	\$95
Expected equity cash flows to Subsidiary j: $r_{ej}E_j$	\$9.1422	\$8.3111	\$15.7910
Present value of j's equity cash flows: $r_{ej}E_j/k_{ej}$	\$54.6453	\$47.7647	\$90.5966
PVTS _p created by subsidiaries' equity: $PVTS_p = T D_p = .35 (20)$	\$7		
Subsidiary j's contribution to PVTS _p : $E_j/\sum_i E_i = E_j /200$	0.275	0.25	0.475
PVTS _p created by Subsidiary j's equity: $(E_j/\sum_i E_i) PVTS_p = (E_j /200) (7)$	\$1.925	\$1.75	\$3.325
NPV of Subsidiary j's equity investment adjusted for $PVTS_p: r_{ej}E_j/k_{ej} - E_j + (E_j/\sum_i E_i) PVTS_p$	\$1.5703	-\$0.4853	-\$1.0784
Incremental value to the parent: Sum of the adjusted NPVs	\$1.5703 - \$0.4853 - \$1.0784 = \$0.00		
Panel B. Parent's debt to total assets ratio = 60%			
	Subsidiary 1	Subsidiary 2	Subsidiary 3
Subsidiary j's standalone cost of equity: k_{ej}	16.73%	17.4%	17.43%
Expected return on equity to Subsidiary j: $r_{ej} = k_{up} (1 - T L_p) = 17.225\% (1 - .35(.6))$	13.6078%	13.6078%	13.6078%
Subsidiary j's equity investment outlay: E_j	\$55	\$50	\$95
Expected equity cash flows to Subsidiary j: $r_{ej}E_j$	\$7.4843	\$6.8039	\$12.9274
Present value of j's equity cash flows: $r_{ej}E_j/k_{ej}$	\$44.7357	\$39.1029	\$74.1676
PVTS _p created by subsidiaries' equity: $PVTS_p = T D_p = .35 (120)$	\$42		
Subsidiary j's contribution to PVTS _p : $E_j/\sum_i E_i = E_j /200$	0.275	0.25	0.475
PVTS _p created by Subsidiary j's equity: $(E_j/\sum_i E_i) PVTS_p = (E_j /200) (42)$	\$11.55	\$10.50	\$19.95
NPV of Subsidiary j's equity investment adjusted for $PVTS_p: r_{ej}E_j/k_{ej} - E_j + (E_j/\sum_i E_i) PVTS_p$	\$1.2857	-\$0.3971	-\$0.8824
Incremental value to the parent: Sum of the adjusted NPVs	\$1.2857 - \$0.3971 - \$0.8824 = \$0.00		

Table III. Capital budgeting decisions using internal rate of return rule

Panel A (B) of this Table shows that that all three investments are accepted because they yield excess returns to the parent when the risk-adjusted costs of equity are used as the benchmark returns while all three investments are rejected under the independent firm approach since the expected rates of return are not high enough as compared to the subsidiaries' standalone costs of equity. On the other hand, Panel B presents the same accept decisions for all three investments under the traditional double leverage and the risk-adjusted double leverage approaches. However, Panel A shows that only the investment of the highest risk subsidiary, i.e., Subsidiary 3, is accepted and the investments of the lower risk subsidiaries, i.e., Subsidiary 1 and Subsidiary 2, are rejected under the traditional double leverage approach. Both the independent firm approach and the traditional double leverage approach are inconsistent with the goal of shareholder wealth maximization in capital budgeting because profitable investments are rejected.

Panel A. Parent's debt to total assets ratio = 10%				
Approach	Subsidiary	Expected rate	Required rate	Decision
Independent firm	1	16.3%	16.7300%	reject
Traditional double leverage			16.6221%	reject
Risk-adjusted double leverage			16.1445%	accept
Independent firm	2	16.5%	17.4000%	reject
Traditional double leverage			16.6221%	reject
Risk-adjusted double leverage			16.7910%	accept
Independent firm	3	16.7%	17.4300%	reject
Traditional double leverage			16.6221%	accept
Risk-adjusted double leverage			16.8200%	accept
Panel B. Parent's debt to total assets ratio = 60%				
Approach	Subsidiary	Expected rate	Required rate	Decision
Independent firm	1	16.3%	16.7300%	reject
Traditional double leverage			13.6078%	accept
Risk-adjusted double leverage			13.2167%	accept
Independent firm	2	16.5%	17.4000%	reject
Traditional double leverage			13.6078%	accept
Risk-adjusted double leverage			13.7460%	accept
Independent firm	3	16.7%	17.4300%	reject
Traditional double leverage			13.6078%	accept
Risk-adjusted double leverage			13.7697%	accept

On the constitutionality and Rationality of Dividend Distribution Tax

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Abstract

It is surprising that the Hon'ble Supreme Court of India has not had opportunity to examine the rationality and constitutional validity of the Dividend Distribution Tax. A few of its pitfalls are elucidated in this article. It is believed that sufficient appreciation would be created to induce the prejudicially affected to prefer a plea to the apex court enabling a convincing and irrefutable determination of the contentious issues in this piece of legislation.

It is, indeed, intriguing to observe that the Hon'ble Supreme Court of India has not had opportunity to examine the constitutional validity of the Dividend Distribution Tax (DDT, hereinafter) despite this issue having cropped up for adjudication before several High Courts in the country e.g. Jayshree Tea & Industries Ltd. vs Union of India & Ors., (2006), 205 CTR Cal 370, Calcutta High Court; George Williamson (Assam) Ltd. vs Union of India & Ors., (2007) (6) TMI 174, Gauhati High Court; Godrej & Boyce Mfg. Co. Ltd. vs. Dy CIT, (2010) (8) TMI 15, Bombay High Court etc. Although, these Hon'ble Courts have unfailingly ruled in favour of the Revenue, the premises on which these decisions were taken have been varied and inequivalent leaving substantial scope for a once-for-all examination of the underlying issues by the apex court of the country.

The fact that DDT is not devoid of conflict, even within the legislature, is amply testified in the budget speeches of the Finance Ministers involved in the introduction/abolition and the reintroduction of DDT. DDT was incorporated into the statute books by the Finance Act, 1997 presented by the erstwhile Finance Minister M Chidambaram while observing in his budget speech, as to the rationale thereof, that:

“D0. Another area of vigorous debate over many years relates to the issue of tax on dividends. I wish to end this debate. Hence I propose to abolish tax on dividends in the hands of the shareholder.

D1. Some companies distribute exorbitant dividends. Ideally they should retain the bulk of their profit and plough them into fresh investments. I intend to reward companies who invest in future growth. Hence, I propose to levy a tax on distributed profits at the moderate rate of 10 per cent on the amount so distributed. This tax shall be an incidence on the company and shall not be passed on to the shareholder.”

However, Yashwant Sinha, while abolishing DDT observed in his budget speech of 2002 that:

“Under the existing provisions contained in Section 115O, in addition to the income-tax chargeable in respect of the total income of a domestic company, any amount declared, distributed or paid by way of dividends is charged to additional income-tax at the rate of 10 per cent. The tax so paid by the company is treated as the final payment of tax in respect of the amount declared, distributed or paid by way of dividend. Such dividend referred to in section 115O is exempt in the hands of the shareholders under Sub-Clause (i) of Clause (33) of Section 10. The incidence of tax is, thus, on the payer company and not on the recipient where it should normally be.

The dividend is income in the hands of the shareholders and not in the hands of the company. The incidence of the tax should therefore, be on the recipient. Moreover, the present provisions levy tax at a flat rate of 10% on the distributed profits across the board irrespective of the

marginal rate at which the recipient is otherwise taxed. The provisions are hence, considered, iniquitous also.

It is, therefore, proposed to revert to earlier system of taxing dividend and shift the incidence of tax on to the shareholder receiving the dividends.....”

However, DDT was reintroduced in the immediately following year by the Finance Act, 2003 by Jaswant Singh while observing, in his budget speech, that:

“89. From April 1, 2003, it is proposed that dividends be tax free in the hands of the shareholders. Correspondingly, there will be a 12.5 percent dividend distribution tax on domestic companies.”

Interestingly, both Yashwant Sinha & Jaswant Singh represented the same Government.

The iniquitous character and inconsistency insofar as the point of incidence of DDT have already been alluded to by Yashwant Sinha in his budget speech of 2002. Taxes, like other instruments of State management, must necessarily satisfy the tests of “rationality” and “reasonableness” to be non-violative of Article 14 of the Constitution of India. The author sincerely believes that there is immediate necessity to examine DDT on these counts threadbare.

“Dividend” is declared and paid by companies from post-tax profits i.e. from profits that have already suffered taxation in the hands of the company. Thus, levy of DDT (whose incidence also falls on the company) invariably amounts to double taxation of the portion of the profits that are distributed by way of dividend. In this context, it may be contended that the earlier scheme of dividend taxation suffered from a similar fallacy viz. it also involved double taxation of dividend. However, it may be argued to the contrary on the premises that (i) the earning of “dividend” has a causal proximity to the act of “investing” in the shares of the company rather than the act of earning profits by the company (Bacha F Guzdar vs CIT); (ii) “dividend” like any other income in the hands of the recipient is allowed to be aggregated/set off against other incomes/losses suffered by the recipient; and (iii) the company has a juristic personality so that the treating of “dividend” in the hands of shareholders as part of company’s income would tantamount to “lifting of the corporate veil” – an act that has, hitherto, been confined for the benefit of the Revenue rather than to its detriment (State of UP & Ors. vs Renusagar Power Corpn & Ors. (1988) AIR 1737 and citations therein).

The issue of “incidence of DDT” is of cardinal importance in assessing its constitutionality. As mentioned earlier, DDT is a tax that is levied on the profits distributed by a company out of its post-tax profits. The incidence of such tax, by design and intention of the legislature is on the dividend paying company and not on the dividend recipient. This issue was examined by the Hon’ble Calcutta High Court in Jayshree’s case (supra). Jayshree Tea & Industries Ltd. (JIL hereinafter) was engaged in the business of growing and manufacturing tea. Under Rule 8 of the Income Tax Rules, 1961, 60% of the income of such companies was to be treated as “agricultural income” that would be exempt from income-tax levied under the provisions of the Income Tax Act, 1961 and 40% of the income would be “industrial income” subject to tax under the Income Tax Act, 1961. Observing that “Section 115O provides additional tax on the company and not on the shareholder” Ashim Kumar Banerjee, J. held that only 40% of the amount allocated for distribution by JIL by way of dividend would be liable to DDT under the provisions of the impugned section. An immediate corollary to this judicial pronouncement is that distributed profits by the company retain the colour and flavour of the overall profits earned by it. If this is

the true picture, then are the provisions of Section 115O not massively regressive, depriving the corporate sector of its cardinal attribute – that of a juristic personality?

This is another important fallout to the above pronouncement. Sec 115O provides, inter alia that

*“.....a domestic company for any assessment year, any amount declared. distributed or paid by such company by way of dividends (whether interim or otherwise) on or after the 1st day of April, 2003, whether out of **current or accumulated profits** shall be charged to additional income-tax (hereafter referred to as tax on distributed profits) at the rate of fifteen per cent.....”*

The highlighted words are important. The use of the words “accumulated profits” imply that (i) the legislature acknowledges that profits are earned on a year to year basis; (ii) such profits may either be distributed by way of dividend or carried forward e.g. as balances in the constituent accounts of “Reserves & Surplus” (iii) dividends may not only be paid out of current profits but also from brought forward profits so that profits subject to DDT could include accumulated profits of earlier years. This is clearly contrary to the provisions of Section 3 of the Income Tax Act, 1961 that defines “income-tax” as a tax on the income of the previous year and hence it should not take into account any income for the earlier years to be tagged with it. The possible contention that profits would lose their time-indexing once they get pooled as “distributed profits” would, it is submitted, go contrary to the views of Hon’ble Ashim Kumar Banerjee, J in JIT. Besides, the observation of Ashim Kumar Banerjee, J on this issue

“When a company earns a profit for a particular year and does not declare a dividend such profit is automatically ploughed back to the company’s growth and in the next year the profit earned by the company is a profit for that particular year for tax purpose.”

does not, on a literary construction of Sec 115O, seem to conform to the legislated language in view of the use of the words “*current or accumulated profits*” therein. The legislature seems to endorse the accounting description of “profits”. If it were otherwise, the highlighted words would not have been necessary.

It is pertinent to mention here that the law as regard the character of dividend in the hands of the recipient as being independent of the nature of the profit earning activities of the company is well settled by the apex court in Mrs Bacha F Guzdar vs CIT, (1955) SCR(1), 876 while holding that the dividends received by the shareholder do not partake the character of the profits of the company. The apex court adjudicated that:

“The dividend of a shareholder is the outcome of his right to participate in the profits of the company arising out of the contractual relation between the company and the shareholder and this right exists independently of any declaration of the dividend though until such declaration, the enjoyment of the profits is postponed.

The shareholder by purchase of the share does not acquire any interest in the assets 'of the company till after the company is wound up. The position of a shareholder of a company is altogether different from that of a partner of a firm. A company is a juristic entity distinct from the shareholders but the firm is a collective name or an alias for all the partners.”

This decision has been followed by the various High Courts in a catena of cases while holding, in essence, that

(a) *This necessarily leads to the conclusion that, even if the accumulated profits in the hands of the company were derived from agriculture and as agricultural income these profit were exempt from tax, the money received by the shareholder would not retain the same character. In other words, neither a dividend nor a deemed dividend paid out of agricultural income is itself agricultural income (S Kumaraswami vs ITO, Madras High Court).*

(b) *For these reasons I think that the immediate and effective source of the dividend is the statutory contract between the company.....(Raja Bahadur Vishweshwara Singh vs CIT, Patna High Court).*

Apparently, the substratum of Mrs Bacha F Guzdar has been overlooked in JIT's case. However, it needs be emphasized here that Bacha F Guzdar's case relates to "dividend" in contradistinction to "distributed profits" of Section 115O. "Dividends" are profits that have been segregated and severed from the company and dispensed to the shareholders while "distributed profits" as envisaged by Section 115O may still retain their identity within the company – they are segregated from the total profits for distribution (declared) but may not have been severed from the company. In fact, something more needs to be done in relation thereto when they are paid out as "dividend" (or within fourteen days thereof) viz DDT has to be paid by the payer company and then they may be transferred to the recipient shareholders as "dividend" - such tax needs to be paid to the Central Government within 14 days of the dividend declaration, distribution or payment, whichever is earlier. In such a scenario, whether the ratio in Guzdar's case would still hold needs to be settled at the highest level to finally adjudicate upon the constitutionality of Section 115O.

Article 246(1) of the Constitution confers exclusive power to legislate with respect to any matter enumerated in List I (Union list) in the Seventh Schedule upon Parliament and under Article 126(3) the State Legislature has exclusive power to make laws with respect to any of the matters enumerated in List II (State list) in the Seventh Schedule of the Constitution. Article 246(2) of the Constitution, empowers both Parliament and the State Legislature to make laws with respect to any matter enumerated in List III, i.e. Concurrent List, of the Seventh Schedule. Entry 82 of List I (Union List) deals with the subject "taxes on income other than agricultural income". Entry 46 of List II (State List) deals with the subject "taxes on agricultural income". Thus, the State Legislature has exclusive jurisdiction to legislate laws in respect of agricultural income tax and Parliament has the exclusive jurisdiction to legislate laws on matters other than agricultural income tax. How can the ratio of Guzdar's case be extrapolated to enshrine "distributed profits" with the same characteristics as "dividend" – if it is inequitable for equate the payer company's profits with dividends (Guzdar's ratio) - it is, perhaps, more inequitable to equate dividends with distributed (Sec115O) profits since the latter have a completely different point of incidence of tax. The constitutional implications need to be explored by our apex court.

Furthermore, the effective rate of DDT, as of now, is 16.995% after including surcharge and education cess. This rate is a "blanket" rate and is irrespective of the income profile of the dividend recipient. Importantly, as of now, the marginal tax rate is zero for assesseees with taxable income below Rs 1,80,000 and 10% for assesseees with taxable income between Rs 1,80,000 and Rs 5,00,000. Thus, the DDT operates to the prejudice of the small investor. Furthermore, the fact that DDT is levied at a blanket rate makes it violative of the "ability to pay" norm on which most of the direct tax systems of the world are structured.

Besides, DDT is mandated to be a final tax payment in respect of the amount in question and no credit is allowed to the recipient of dividend in respect of DDT deducted by the company on dividends received by him. This makes DDT different from TDS on dividends.

The observations of M Chidambaram, *supra*, are also open to serious debate. The issue of retaining/distributing profits earned by a company, should be entirely based on the existence and identification of alternative investment opportunities wherein the company could deploy its excess funds and thereby earn returns exceeding its cost of capital – introduction of DDT simply serves to distort this rationale. In the absence of such alternative avenues for investment, the company would be well served by distributing its profits to its investment community.

The decision to plough back/distribute its profits should be entirely intrinsic to the company being based on its plans and projections. It defies any kind of rationale to discourage the company from distributing its profits by putting additional tax burden on such profits. The amount of tax liability should not depend on the manner that “a person chooses to organize his affairs” – rather it should fairly and squarely relate to the quantum of profits earned. Claims that such taxation acts as an incentive to the company to reinvest its profit carry little weight, for the shareholders could as well reinvest their dividend receipts if congenial investment climate and opportunity subsists.

A few of the pitfalls of DDT have been elucidated in this article. It is believed that sufficient appreciation would be created in the fraternity to induce the prejudicially affected to prefer a plea to the apex court enabling a convincing and irrefutable determination of the contentious issues (of which, there are many) in this piece of legislation.

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