Hedging, Information Asymmetry and Financing Cost:
Evidence from Seasoned Equity Offering Announcements

Wei Shao

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Abstract

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This paper examines the effect of hedging on reducing the degree of information asymmetry. Our sample covers the period of 1992 to 1997 and includes 318 firms that have conducted a seasoned equity offering during this period. In our sample, 53 firms are recognized as hedgers and 268 firms are recognized as non-hedgers. The effect of hedging on reducing information asymmetry is captured by comparing the abnormal returns and cumulative abnormal returns of hedgers and non-hedgers during their seasoned equity offering announcement period.

Major findings of this paper are as follows. The abnormal returns and cumulative abnormal returns of hedging firms are significantly less negative than those of non-hedging firms. While the stock price run-ups prior to equity offering announcements for hedgers are significantly less than non-hedgers, the results on post-announcement long-term performance are mixed. Cross sectional analysis shows that even after controlling for the price pressure effect and other proxies of information asymmetry, the stock price reaction of hedgers is significantly less negative compared to non-hedgers. Our results provide evidence showing that hedging activities of a firm could be an important tool for shareholders to evaluate the firm's management quality and also reduce their information asymmetry disadvantage. A hedging firm also benefits from the reduction of information asymmetry by incurring lower costs of external financing.

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1. INTRODUCTION

For the last two decades, managers have been taking hedging and risk management policy more seriously than ever. Corporate hedging or risk management refers to the use of financial derivatives, for instance, forwards, futures, options, and swaps, to minimize foreign exchange and interest rate risk, secure profits and reduce the volatility of firm value. Nevertheless, all of these financial derivatives are costly. It is certain that hedging firms benefit from their hedging activities, and the benefits from hedging should be greater than the costs. Scholars believe that there are many less obvious reasons for a firm to undertake hedging activities.

In this paper, we investigate how hedging activities reduce the degree of information asymmetry by studying the different market reactions to seasoned equity offering announcements of hedging and non-hedging firms. The so-called information asymmetry exists because managers have superior knowledge about their firm's management and operations than shareholders. (Miller and Rock, 1985; Myers and Majluf, 1984) Extant evidence concludes that a high degree of information asymmetry has a negative impact on firm value. However, only in recent years, scholars have started to focus their studies on managers' motivations for undertaking hedging policies and how that affects the information environment surrounding their firms.

DeMarzo and Duffie (1995) explore the incentives of managers to undertake hedging activities. They demonstrate that due to the risk-averse characteristics of managers, they are motivated to disclose hedging information on the basis of their career concerns. Breeden and Viswanathan (1998) suggest that, unlike inferior managers, good managers undertake hedging policy to show their capability of managing their firms. DaDalt, Gay and Nam (1999) further demonstrate that through hedging, managers will reduce the future cash flow volatilities thereby reducing the noise in earnings contributed by the macroeconomic factors such as exchange rates and interest rates. As a result, earnings become more reliable indicators that shareholders can use to predict the quality of management. In short, all these studies conclude that hedging reduces information asymmetry.

The purpose of this paper is to investigate the effect of hedging on the reduction of information asymmetry through an empirical analysis. The incentive for undertaking our study is that, although the hypothesis that hedging reduces information asymmetry has been advanced theoretically, scholars have had difficulties examining the existence of less information asymmetry caused by hedging using empirical data. One limitation of empirically studying the impact of hedging comes from the fact that, even though after 1990, the Financial Accounting Standards Board (FASB) requires US public firms to disclose hedging information in their accounting reports, firms can still decide to either fully disclose or partially disclose their hedging activities. Therefore, it is almost impossible for scholars to find all the information they need. This limitation forces scholars to choose alternative methods to examine the theory on corporate hedging.

Financial theory suggests that less information asymmetry leads to lower external financing costs. The existence of information asymmetry between investors and managers leads to negative market reactions on the announcements of seasoned equity offerings (Miller and Rock, 1985; Myers and Majluf, 1984). Investors believe current market price exceeds managers' assessments of the true price when the offering of common stock is announced (Mikkelson and Partch, 1986). Under the circumstance where the degree of information asymmetry is low, investors should be more informed about the true value of the firm and they would see the new offered equity as less overvalued. As a result, market's reactions should be less negative. Thus, if hedging reduces information asymmetry, hedging firms should have lower costs to finance their needs through seasoned equity offerings. Thus, holding all else constant, in response to the announcement of seasoned equity offerings, the abnormal returns and cumulative abnormal returns of hedgers should be less negative than those of non-hedgers.

Our sample covers the period of 1992 to 1997, and includes 318 firms that conducted seasoned equity offerings during this period. In our sample, 53 firms are identified as hedgers and 268 firms as non-hedgers. By comparing the mean abnormal return and mean cumulative abnormal return of hedgers and non-hedgers, we find significantly less negative stock price reactions for hedgers compared to non-hedgers. This result strongly supports our hypothesis and the argument that hedging reduces information asymmetry cost.

The most distinctive aspect of our paper is that we offer a unique methodology to examine the theory that hedging reduces information asymmetry cost. Moreover, our paper implies that hedging activities of a firm are important indicators for shareholders to evaluate the firm's management quality and, therefore, reduce the degree of information asymmetry. In return, hedging firms benefit from the lower information asymmetry as the result of their hedging activities, and face lower financing costs when they issue seasoned equity offerings.

The rest of this paper is organized as follows. We review related literature on the theory of hedging, information asymmetry and seasoned equity offerings in Section 2. In Section 3, we address the hypothesis of this paper. Section 4 describes our data, and Section 5 outlines the event study research methodology. In Section 6, we report our findings, including the event study results of hedgers versus non-hedgers, long-term analysis, and the cross sectional tests. Section 7 concludes this paper.

2. LITERATURE REVIEW

2. 1. Overviews of Related Studies on Corporate Hedging

The most obvious purpose and direct effect of financial hedging and risk management is simply to reduce future cash flow volatility and to secure unearned revenue. Nevertheless, there are many less obvious benefits that persuade managers to undertake hedging activities. These include the convexity of tax schedule (Smith and Stulz, 1985; Zimmerman, 1998), the greater capacity to service debt (Michael and Ross, 1996; and Gobert, 2001), the reduction in expected financial distress and other agency costs (Smith and Stulz, 1985), the reduction of costly external financing (Froot, Scharftein, and Stein, 1993), and managerial risk aversion (Smith and Stulz, 1985).

2. 1a. Hedging and Debt Capacity

According to the famous MM theory developed by Modigliani and Miller (1958, 1963), the tradeoff between equity and debt matters when corporate tax exists. In the United States and most of western countries, interest is paid out of before-tax earnings while dividends are paid out of after-tax earnings. Therefore, debt is tax-advantaged at the corporate level. As a result, when a firm has to choose between issuing debt and offering equity to finance new projects, debt financing will increase the firm value because of its tax-deductibility. On the other hand, the ability to service debt is different for each firm and over-extended debt will lead to an increase in bankruptcy cost. Above all, the ability to service debt (debt capacity) becomes a key factor that helps maximizes firm value by choosing the optimal debt ratios.

Many scholars believe hedging can increase a firm's debt capacity. Hedging firms can use hedging instruments (financial derivatives) to reduce future cash flow volatility and, therefore, reduce bankruptcy risk. Thus, hedging firms will be able to serve more debt (Michael and Ross, 1996; and Gobert, 2001). Moreover, financial hedging instruments could modify the straight debt payout pattern in order to better match financing cash flows with asset cash flows. This also allows hedging firms to service more debt (Damodaran, 1999). As a result, hedging firms have larger tax benefits from their greater debt capacity and, therefore, increase their firm values. In addition, more debt could alleviate agency problems in the firm and reduce the conflicts of interest between managers and shareholders. (Gobert, 2001)

2. 1b. Taxes, Transaction Cost of Bankruptcy, and Managerial Risk Aversion

Smith and Stulz (1985) demonstrate that a "value-maximizing" firm may hedge for three reasons: (1) Taxes, (2) Costs of financial distress, and (3) Managerial risk aversion.

First, they argue that if the effective marginal tax rates on corporations are an increasing function of the corporation's pre-tax value, then the post-tax value of the firm is a concave function of its pre-tax value. Because of the convexity of tax schedules, a more volatile earnings stream leads to higher expected taxes. Thus, if hedging reduces the variability of pre-tax firm values, the expected corporate tax liability is reduced and the expected post-tax value of the firm is increased.

Second, Smith and Stulz (1985) argue that if hedging reduces the volatility of a firm's future cash flows, it will lead to a lower bankruptcy cost. Therefore, under the same risk level, hedging firms could take advantage of their lower bankruptcy costs to service more debt. Thus, this decrease in expected bankruptcy costs benefits shareholders.

Third, Smith and Stulz (1985) argue that corporate hedging is an outgrowth of the risk aversion of managers. Managers are risk averse and concerned about their own wealth. Therefore, if managers hold a relatively large portion of their wealth in the firm's stock, it will definitely be an optimal strategy for managers to undertake a hedging policy so that they could be better off through the reduced variance of total firm value.

2. 1c. Internal Financing versus External Financing

Froot, Scharfstein, and Stein (1993) focus on the impact of hedging on the firm's underinvestment problem. They demonstrate that hedging adds firm value to the extent that it helps ensure that a corporation has sufficient internal funds available to take advantage of attractive investment opportunities. External sources of financing are more costly to corporations than internally generated funds. Thus, by reducing the dispersions of cash flows, hedging can reduce a firm's underinvestment problem and increase the likelihood that the firm can fund projects through less expensive internally generated funds. In this study, we show that the underinvestment problem is mitigated even if external financing is needed since it is less costly for hedging firms to raise the required capital compared to non-hedging firms.

2. 1d. Empirical Findings - A Puzzle

Although hedging increases a hedging firms' debt capacity and firm value, empirical studies show both positive and negative support for this theoretical hypothesis. For example, Mian (1996) finds no evidence to support the hypothesis that hedging firm have a higher market-to-book ratios or that hedging is correlated with the leverage ratio. Tufano (1996) finds little empirical support for the predictive power of theories that view risk management as a means to maximize shareholder value in the North American Gold Mining Industry. On the other hand, Allayannis and Weston (2001) recently find some evidence consistent with the hypothesis that hedging causes an increase in firm value. In short, although the question of whether hedging adds firm value has been addressed from a theoretical perspective, empirical research shows mixed support for the theory. This leaves room for further empirical work on the motivation for hedging. However, as we have mentioned in an earlier section of this paper, due to the difficulty of obtaining sufficient information from a company's annual reports, empirical studies on hedging still face many limitations.

2. 2. Hedging and Information Asymmetry – A Breakthrough

Many recent studies emphasize the effect of hedging on the information environment surrounding the firm. In a perfect market setting with full information, hedging at the firm level is irrelevant since shareholders may undertake this activity on their own. In practice, however, analysts, shareholders and others frequently rely on estimates of earnings and cash flows as inputs for valuation models. Therefore, the so-called information asymmetry between shareholders and managers appears to exist.

2. 2a. Demarzo and Duffie (1995)

DeMarzo and Duffie (1995) explore the information effect of financial hedging while incorporating managers' risk aversion characteristics. They demonstrate that financial hedging improves the informativeness of corporate profits (earnings) as a signal of management ability and project quality by eliminating extraneous noise. Additionally, they demonstrate that the informative effect of hedging depends on the accounting information made available by the firm. In particular, under full disclosure, hedging positions have real effects primarily to the extent that they act as a signal and reveal private information known to the manager. Alternatively, if hedging positions are not fully disclosed (i.e., firms report only aggregate earnings), hedging will have a more direct impact on the risk of the firm's profits and on managers' wages.

In their study, DeMarzo and Duffie (1995) raise the issue that the use of financial hedging by managers is motivated by their career concerns. Shareholders learn about the quality of the firm's management and investment projects from observations of the firm's performance. This learning process links the firm's current profits with a manager's reputation. In other words, lower volatility in current profits will enhance a manager's reputation as well as his/her future wages. Therefore, by hedging pricing fluctuations, managers can alter the risk of the firm's current profits, which in return affects the risk of their future wages. Thus, managers' concern regarding their future income becomes an incentive for hedging.

2. 2b. Breeden and Viswanathan (1998)

Breeden and Viswanathan (1998) present an asymmetric information model of hedging. Hedging is undertaken by higher ability managers who wish to "lock-in" the higher profits resulting from their higher abilities. They agree with DeMarzo and Duffie (1995) that managers are risk averse and care about their reputations. Good managers will try to make their quality transparent to the market through their hedging policy. They will also voluntarily disclose their hedging policy in the balance sheet. Thus, hedging is an attempt to improve the informativeness of the learning process by more capable managers.

One important empirical implication of their model is that, firms hedge their risks only when they are sufficiently different from other similar firms in their abilities with respect to the risk where the manager or the firm does not have any special advantage. On the other hand, when the difference in ability between superior managers and inferior managers is low, an equilibrium will occur and no hedging will be undertaken by both kinds of managers.

They believe that the unique contribution of their model is to identify the costs and benefits of hedging. They argue that, besides the benefits (the greater informativeness of the learning process) from hedging, hedging is also associated with various costs (e.g. the implicit cost of hedging, the reduced equity option value or the reduced FDIC insurance option value). This benefit and cost trade-off is important in arguing that higher ability managers should undertake hedging only when the benefits exceed the costs. Thus, lower ability managers should not undertake hedging policies since their ability to cover the high cost of hedging is limited. In addition, the lower ability manager faces an increasingly higher cost as the probability of going bankrupt increases, which leads to him to prefer to not hedge.

2. 2c. DaDalt, Gay and Nam (1999)

DaDalt, Gay and Nam (1999) argue that through hedging, managers would reduce future cash flow volatility and, therefore, reduce the noise in earnings contributed by macroeconomic factors such as exchange rates and interest rates. Specifically, "noise" in this context refers to factors contributing to earnings that are believed to be outside of managerial control. As a result, earnings become a more reliable indicator that shareholders can use to predict the quality of management. Thus, shareholders benefit from hedging by becoming more informed on the firm's real future earnings and management quality. Moreover, hedging firms also benefit from lower information asymmetry. One example of this would be that, in situations where the firm must still draw upon external financing, a lower level of information asymmetry increases the likelihood that the firm will obtain funds at a lower cost.

DaDalt, Gay and Nam (1999) also investigate the effect of derivatives usage on information asymmetry. Drawing upon the analyst forecast literature, they utilize alternative measures to proxy for asymmetric information regarding a firm's earnings, including the accuracy and dispersion of analyst earnings forecasts. They find an inverse relationship between a firm's derivatives use and information asymmetry. In addition, they demonstrate that their measures of asymmetric information decrease (increase) across time as firms change status from being non-hedgers (hedgers) to hedgers (non-hedgers).

2. 2d. Hedging Reduces Information Asymmetry – A Summary

As the brains of corporations, managers are the ones who make management decisions including decisions regarding hedging policy. Therefore, learning managers' incentives to hedge may explain how hedging policy is really conducted.

The fact that hedging reduces the degree of information asymmetry can be understood from two aspects. First, a reason for good managers to have an incentive to hedge is to ensure that their superior abilities are quickly discovered by the markets. When the cost of hedging is high, inferior managers will just do the opposite and choose not to hedge. Second, regardless of the purpose, hedging will reduce future cash flow volatility, and thus reduce the noise in measures such as earnings. Both of these aspects increase the efficiency of the learning process of outside shareholders and, therefore, reduce the degree of information asymmetry. An implication of this argument is that the hedging activities of a firm could be an important indicator for outside shareholders to learn about the firm's management quality.

2. 3. Information Asymmetry in Seasoned Equity Offerings

The negative market reactions to seasoned equity offerings (SEOs) announcement have been extensively documented in the finance literature. Among a number of hypotheses that might explain this phenomenon, the adverse selection model of Myers and Majluf (1984) is one of the most prominent.

Information asymmetry exists because information about the firm's earning prospects, investment opportunities or assets-in-place is unevenly distributed between the firm's managers and investors (Miller and Rock, 1985; Myers and Majluf, 1984). The adverse selection model suggests that managers have private information about the firm that is not available to existing shareholders. Managers prefer to issue equity when their shares are overpriced; for example, when they have private information indicating that cash flows are going to fall in the future. On the contrary, managers who believe that the market undervalues their stock may prefer to abandon valuable projects rather than financing the projects by issuing underpriced shares. As a result, in terms of the performance of firms conducting seasoned equity offerings, one should find both negative abnormal stock price performance for the firm around the announcement of the offer and a decline in firm operating performance subsequent to the offer.

Because of the existence of information asymmetry, during seasoned equity offering announcements, investors consider the market price to exceed managers' assessment of share price, regardless of the characteristics of the offering (Mikkelson and Partch, 1986). In other words, investors see seasoned equity offerings as managers trying to sell overvalued stocks.

The degree of information asymmetry can be measured by examining the stock price appreciation/depreciation during seasoned equity offering announcements. In general, the lower the degree of information asymmetry between managers and investors, the less negative the market reactions, which translates into lower financing costs. Negative cumulative abnormal returns during seasoned equity offering announcements have been found in many studies (Loughran and Ritter, 1997; Mikkelson and Partch, 1986; Asquith and Mullins, 1986).

An important difference between equity offerings and debt offerings is that, since equity is the residual claim, it is much more sensitive than debt to changes in firm value (Rajan and Zingales, 1998). However, despite equity offering announcements being viewed by the market as bad news, new equity is still a very important source of financing for new projects or funds for general corporate purposes.

3. HYPOTHESIS

We develop our hypothesis by incorporating the theory of hedging into the theory of seasoned equity offerings. As described in the previous section, managers undertaking hedging activities will increase the efficiency of the learning process of outside shareholders and, therefore, reduce the degree of information asymmetry. The degree of information asymmetry between managers and shareholders could be captured as the stock price depreciation during the seasoned equity offering announcements, which could be quantitatively measured as the abnormal returns (ARs) and cumulative abnormal return (CARs). When information on hedging is included, two firms that are identical except for their hedging policy (one is hedger, while the other is a non-hedger) are considered. For seasoned equity offerings, the difference in the stock price depreciation (abnormal returns or cumulative abnormal returns) between those two firms should be statistically different. Thus, the null hypothesis in this study is stated as follows:

Holding all else constant, in response to the announcements of seasoned equity offerings (SEOs), the abnormal returns and cumulative abnormal returns of hedgers will be less negative than the abnormal returns and cumulative abnormal returns of non-hedgers.

Although hedging firms benefit from their hedging activities in many ways such as having higher debt capacity (Michael and Ross, 1996; and Gobert, 2001) and more efficient internal financing (Froot, Scharfstein, and Stein, 1993), they can still face a situation where they have to issue equity to fund their investment needs.

Despite the existence of the cost to finance through an equity offering, when a hedging firm decides to issue new equity, they will benefit from their hedging activities through lower information asymmetry costs.

4. DATA

Original data in this paper comes from the following sources: (1) data on hedging activities on US publicly traded companies from the "Users of Derivatives Database" developed by Swaps Monitor Publications Inc.; (2) data on seasoned equity offerings from SDC (Securities Data Company) database with the equity offering announcement day identified from the Wall Street Journal Index and Lexis-Nexis; and (3) company balance sheet and stock price data from COMPUSTAT and CRSP databases, respectively.

4. 1. The Users of Derivatives Database

Following earlier studies (e.g. Dolde, 1995), we identify hedging firms (or hedgers) by simply identifying whether firms had ever used forwards, futures, swaps, or options to manage foreign exchange or interest rate risk. As mentioned earlier, it is very difficult to obtain sufficient hedging data from companies' annual reports. Fortunately, "The Users of Derivatives Database (Interest Rate and Currency Edition)", constructed by a New York based company – *Swaps Monitor Publications*, contains information on 3478 companies that were users of interest rate and currency derivatives during 1992 to 1997.

As described in the database, *Swaps Monitor Publications* collected the information from public sources, principally from annual reports but also from filings with regular agencies, on derivatives users during the period from 1992 to 1997. In the process of constructing the database, they have attempted to include as much detail as possible regarding the use of derivatives by US companies. The database includes all firms that have been users of derivatives. A total of 3478 companies are included in the database that have been users of derivatives.

The database contains information on notional values of interest rate and currency derivatives disclosed in companies' annual report. For example, some variables are: interest swaps, currency swaps, total futures and options, total interest and currency derivatives. Some companies only disclose that they have off-balance sheet instruments outstanding without quoting the exact notional amount.

We identify hedging firms by looking at whether the firm has off-balance sheet instruments outstanding in its annual reports by examining the Users of Derivatives Database. If a company in the database reports the notional amount of interest and currency derivatives or states that the firm uses derivatives but the notional amounts are not mentioned, we classify the firm as a hedger. Thus, a hedger is a firm that uses either interest rate derivatives, currency derivatives or both.

4. 2. Seasoned Equity Offerings and Announcement Dates

The complete list of firms that conducted seasoned equity offerings during 1992 to 1997 was downloaded from the section "Global New Issues" of the SDC (Securities Data Company) database. The SDC database is a financial database provided by *Thomson Financial Securities Data Corporation (TFSD).* The Global New Issues section of the SDC database contains all necessary company and issuing information on seasoned equity offerings (SEOs) as well as other corporate issues (e.g., Debt, Convertible Debt, and Preferred Equity). For example, some variables in the SDC database are: the name of the company, filing date, issuing date, and the type and amount of offering.

From the SDC database, 3875 secondary equity offerings were identified for the period 1992 to 1997. Unfortunately, the SDC database does not provide information on the announcement dates of these offerings. Therefore, we collected the announcement dates of these offerings from two sources: The Wall Street Journal Index and the Lexis-Nexis Database. Generally, the announcement day of an equity offering is defined as the day when the news of the planned offering is first reported in major newspapers and thus becomes public information. In this study, the announcement date is the day when the news of the planned new equity offering is first published in the Wall Street Journal and/or other major newspapers included in the Lexis-Nexis Database.

Our first source of equity offering announcement dates is the Wall Street Journal Index. As introduced in its User's Guide, The Wall Street Journal Index provides abstracts and comprehensive indexing of all articles in the 3-Star Eastern Edition of the Wall Street Journal. We collect equity offering announcement dates by examining the Corporate Issue of the Wall Street Journal Index under the name of each of those 3875 firms to check whether the Wall Street Journal had reported the equity offering announcement. Our second source of equity offering announcement dates is one of world's biggest news search engines – the Lexis-Nexis database. Lexis-Nexis is an electronic database, which allows us to search for the announcements by typing in key words. Within Lexis-Nexis, "Major Newspapers" in the US such as the Wall Street Journal, New York Times, Financial Times, and Washington Post are searched. We search the announcement dates by using key words such as "Company Name and (secondary offering* or equity offering* or stock offering* or offering*)".

During the process of collecting announcement dates data, we only selected those announcements where only one equity offering occurred for the company within one year. We also omitted announcements that were contaminated, for instance, there was/were news announcements other than the equity offering announcement on the same day. Rights offering announcements were also deleted from the sample. A final sample of 450 seasoned equity offering announcements were collected for the period 1992 to 1997.

4. 3. Database Development

– Merging Hedging Data and Equity Announcement Data

First, companies that conducted seasoned equity offering announcements and whose stock return data are available on the CRSP database are included for event study analysis. Among the 450 announcements, 407 companies/announcements are found in the CRSP database.

Second, we match the companies that are recognized as hedgers in the Users of Derivatives Database with the 450 companies that have conducted seasoned equity offering announcements between 1992 and 1997. Through this matching process, we are able to identify which equity offering company is a hedger and which is a non-hedger. Furthermore, we do this matching process on a yearly basis. In other words, companies that conducted seasoned equity offering announcements in any year between 1992 and 1997 will only be matched with those companies in The Users of Derivatives Database that are believed to be hedgers in the same year.

Our final matching involves the companies that conducted seasoned equity offering announcements and the COMPUSTAT database. The reason we match the equity offering companies with the COMPUSTAT database is because COMPUSTAT contains company specific balance sheet and income statement information for US public traded companies. Company specific data is collected for the cross sectional analysis.

Because each database uses a different data-sorting method, the only way to match companies in these sources is matching by the name of the company. The matching process is done manually due to the variations in the recording of company names in different databases. Finally, we omit companies that are financial institutions or utilities (companies with SIC Code starting with 6 and 49) in our final sample, because these companies have their unique features in equity offerings.

4. 4. Final Event Study Sample

Table 1 shows a summary of our final Event Study Sample. Our final sample (The Event Study Sample) consists of 334 seasoned equity offering announcements in the 1992-1997 period. 318 unique companies made these 334 announcements. Among the 318 companies, 53 companies were hedgers and 268 companies were non-hedgers. In other words, among the 334 announcements made by the 318 companies, 56 announcements were made by hedgers and 278 announcements were made by non-hedgers.

Table 2 outlines several variables that might explain the differences between hedging firms and non-hedging firms with regard to their equity offerings and information asymmetry features. As reported in Table 2, compared to non-hedgers, hedgers have significantly larger offering amounts. However, hedgers have a significantly lower proportion of offering amount compared to the market value of equity before offering. One possible explanation could be that non-hedgers have a high degree of information asymmetry so they try to sell more of their overvalued equity.

TABLE 1 : Summary of Final Event Study Sample

Panel 1

Year	**92**	**93**	**94**	**95**	**96**	**97**	**Sum**
Number of Users of Derivatives (In that Year)	892	1054	1889	1839	1489	724	7887
Total SEO (Seasoned Equity Offerings)	510	743	484	622	774	742	3875
Total SEO Announcements	110	107	46	71	69	47	450

Panel 2

Year	**92**	**93**	**94**	**95**	**96**	**97**	**Sum**
Total Sample (With Fin. Ins. And Uti.)	97	98	40	63	67	42	407
Hedgers (With Financial Ins. And Uti.)	29	15	11	4	7	5	71
Non-hedgers (With Financial Ins. And Uti.)	68	83	29	59	60	37	336

Panel 3

Year	**92**	**93**	**94**	**95**	**96**	**97**	**Sum**
Final Event Study Sample	68	76	37	55	63	35	334*
Hedgers	20	12	10	4	7	3	56
Non-hedgers	48	64	27	51	56	32	278

Note: Final Event Study Sample does not include financial institutions and utility companies.

*** The 334 announcements were made by 318 unique firms (53 firms were hedgers and 268 firms were non-hedgers)**

TABLE II : Data Description: Hedgers Vs. Non-hedgers

Panel.1: New Equity's Price Pressure Variables

Independent Variables	Hedgers				Non-hedgers				P(T<=t) two-tailed
	Mean	Median	Maximum Minimum	Sample	Mean	Median	Maximum Minimum	Sample	Means are equal
Offering Amount	216.83	132.85	1435.70 2.50	56	74.53	45.70	799.50 3.20	273	0.0005
Offering Amount/ MVE Before	0.25	0.19	1.65 0.02	46	0.36	0.26	4.03 0.02	197	0.0251

Panel.2: Information Asymmetry Variables

Independent Variables	Hedgers				Non-hedgers				P(T<=t) two-tailed
	Mean	Median	Maximum Minimum	Sample	Mean	Median	Maximum Minimum	Sample	Means are equal
Total Assets	4210.73	1135.41	60766.00 4.66	47	315.18	72.38	8070.10 1.23	214	0.0112
Sales	4045.75	977.29	67156.00 4.87	47	359.92	84.55	9142.90 0.00	214	0.0184
MVE+BVD	1920.01	673.80	20662.00 2.14	47	187.41	76.70	3693.78 -2741.40	214	0.0020
Leverage	2.27	1.49	12.40 0.28	46	0.96	0.60	10.79 0.05	197	0.0003
M/B	1.58	1.94	15.21 -3.27	45	3.71	3.19	25.65 -13.67	197	0.0766
R&D/Sales	0.04	0.03	0.20 0.00	23	0.29	0.04	4.03 0.00	133	0.0000
Tangible Assets/ Total Assets	0.91	0.97	1.00 0.26	36	0.91	1.00	1.00 0.21	165	0.9673
Unsystematic Risk	0.93	0.94	1.00 0.80	56	0.95	0.96	1.02 0.64	272	0.0407

Note: The t-test (Two-Sample Assuming Unequal Variances) is included to examine whether means between hedgers and non-hedgers are significantly different. All the firm specific variables data are collected from the Compustat Database on a fiscal year basis. (a). Offering Amount: dollar amount of seasoned equity offerings (in millions of dollars). (b). Offering Amount/MVE Before: the portion of the seasoned equity offering amount in the Market Value of Equity before the offerings. (c). Total Assets: current assets plus net property, plant, and equipment plus other current assets (in millions of dollars). (d). Sales: gross sales reduced by cash discounts, trade discounts, and returned sales and allowances for which credit is given to customers (in millions of dollars). (e). MVE+BVD: Market Value of Equity plus Book Value of Debt (in millions of dollars). (f). Leverage: long-term debt divided by total assets. (g). M/B: market value of equity divided by the book value of equity. (h). R&D/Sales: the portion of research and development expense in total net sales. (i). Tangible Assets/Total Assets: portion of tangible assets in total assets. (j) Unsystematic Risk: If the abnormal return of a firm follows the formula as $R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$, then, the unsystematic risk of that firm is calculated as the variance of ε_j (σ_{q}^{2}), divided by the variance of R_j(σ_j^2).

Consistent with existing finance literature, the scale economy factors in our sample show that hedgers are bigger firms than non-hedgers. For example, hedgers have greater amounts of total assets and sales compared to non-hedgers. This is also consistent with our hypothesis because managers in larger firms tend to have superior knowledge and abilities than managers in small firms, so that they have the incentives to undertake hedging activities to show their abilities.

Hedging firms also have significantly higher leverage compared to non-hedgers. This evidence is consistent with existing finance literature that hedgers have the ability to service more debt than non-hedgers. Table 2 also shows that hedgers have lower unsystematic risk than non-hedgers. This is also consistent with existing finance literature that hedging firms reduce the firm specific risk for shareholders compared to non-hedgers through their hedging activities.

We observe a significant differences in the market to book ratio between hedgers and non-hedgers. This is consistent with our hypothesis, since hedgers have a lower degree of information asymmetry, their market to book ratio is expected to be lower than that of non-hedgers. We do not observe a significant difference in the ratio of tangible assets to total assets between hedgers and non-hedgers. Surprisingly, the R&D (Research and development expense) ratio of hedgers is significantly lower than non-hedgers. This is not consistent with the hedging theory, since higher R&D suggests greater growth opportunities, and firms with more growth options in their investment opportunity set are more likely to undertake a hedging program (Nance, Smith and Smithson, 1993). One possible explanation is that non-hedging firms are smaller than hedging firms and small firms tend to have greater growth opportunities.

One possible explanation as to why a majority of the firms are non-hedgers in our sample is that, non-hedgers have a high degree of information asymmetry so that their stock prices are more overvalued than hedgers and, therefore, non-hedgers are more likely to conduct seasoned equity offerings to sell their overvalued stocks. On the other hand, with a lower degree of information asymmetry, hedgers' stock price is more likely to be correctly valued and as such they are less likely to conduct seasoned equity offerings. Another possible explanation is that, because hedging activities increase hedging firm's debt capacity, hedging firms will choose to issue debt instead of selling equity. Only when hedging firms have enough of a tax-advantage from its existing debt, will they finance new projects through seasoned equity offerings.

5. METHODOLOGY

An Event Study Methodology is used to examine our hypothesis. First, we calculate the abnormal returns (ARs) and cumulative abnormal returns (CARs) of our sample firms during equity offering announcements using the market model event study methodology. Next, we construct both parametric and nonparametric tests to examine whether the ARs and CARs between the two groups, hedgers and non-hedgers, are significantly different from each other. Then, we study the difference of the stock price run-up (pre-offering performance) and long-term stock price movement after the announcements (post-offering performance) between hedgers and non-hedgers. Finally, we run cross sectional regressions to test whether the CARs can be explained by information asymmetry variables.

5. 1. Event Study – Calculating ARs and CARs using Market Model

5.1a. Abnormal Returns and Cumulative Abnormal Returns with Market Model

The software "Eventus" is used to calculate abnormal returns (ARs) and cumulative abnormal returns (CARs) using the event study methodology with the "The Market Model (MM)". The market model has been extensively used in past event studies. For example, Brown and Warner (1985) report that the simple methodology based on the market model is both well specified and relatively powerful under a wide variety of conditions.

The market model assumes that returns are generated according to the following specification:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$$

Where, R_{jt} is the rate of return of the common stock of the j^{th} firm on day t; R_{mt} is the rate of return of a market index on day t; ε_{jt} is a random variable that, by construction, must have an expected value of zero, and is assumed to be uncorrelated with R_{mt}, uncorrelated with $R_{kt,k \neq j}$, not autocorrelated and homoscedastic. β_j is a parameter that measures the sensitivity of the R_{jt} to the market index.

Define the *abnormal return* for the common stock of j^{th} firm on day t as:

$$A_{jt} = R_{jt} - (\hat{a}_j + \hat{\beta}_j R_{mt})$$

Where, the coefficients $\hat{\alpha}_j$ and $\hat{\beta}_j$ are ordinary least squares estimates of α_j and β_j.

Over an interval of two or more trading days beginning with day T_1, and ending with T_2, the *cumulative abnormal return* is

$$CAR_{T_1T_2} = \frac{1}{N} \sum_{j=1}^{N} \sum_{t=T_1}^{T_2} A_{jt}$$

5. 1b. Event Day, Event Period, Estimation Period, and Reference Portfolio

We specify several key inputs in the market model to calculate abnormal returns. First, we specify the "event day (day 0)" as the seasoned equity announcement day for each company in our final event study sample. Second, we specify the "event period" as the 21-day period from the 10th day before the event day to the 10th day after the event day. Third, we specify the "estimation period" in three ways: 63 days (three months) before the event period, 126 days (half a year) before the event period, and 252 days (one year) before the event period. In this context, the days refer to trading days only. Finally, we specify two reference portfolio methods: The equally-weighted reference portfolio and the value-weighted reference portfolio.

We emphasis here that we calculate abnormal returns using three estimation periods and two reference portfolios separately in order to enhance the robustness of our event study analysis. We will report all the event study test results, however, we will focus our analysis on the method that the 126-day estimation period and the equally-weighed reference portfolio is used.

5. 1c. Parametric and Nonparametric Tests: hedgers vs. non-hedgers

Abnormal returns of hedgers and non-hedgers are estimated separately for further analysis. We calculate the abnormal return on each day of the 21-day event period and the mean cumulative abnormal return on 13 event windows in the event period. The 13 event windows are: window (-10, +10), window (-10, +2), window (-5, +5), window (-5, -2), window (-4, +4), window (-4, -1), window (-2, +2), window (-1, +1), window (-1, 0), window (0, +1), window (0, +5), window (+2, +10), and window (0, +10).

Next, we apply both parametric and nonparametric tests to analyze abnormal returns and cumulative abnormal returns of the group of hedgers and non-hedgers. In the parametric test, we examine whether the mean abnormal returns and mean cumulative abnormal returns of hedgers and non-hedgers are significantly different from 0. The Standardized Cross-Sectional (SCS) Z Test is applied in this process. Then, in the nonparametric test, we examine whether the median cumulative abnormal returns of hedgers and non-hedgers are significantly different from 0. The Generalized Sign Z Test, Sign Test and Wilcoxon Signed Rank Test are applied in this process.

Finally, the key analysis in our methodology is the parametric test and nonparametric test on whether the mean cumulative abnormal returns and median cumulative abnormal returns between these two groups are significantly different from each other. First, the parametric test is the t-statistics test to examine whether the mean cumulative abnormal returns between hedgers and non-hedgers are equal. Then, to avoid the bias that might be caused by non-normality, we conduct nonparametric test known as the Wilcoxon Scores Rank Sums Test to examine whether the median cumulative abnormal returns between hedgers and non-hedgers are equal.

5. 2. Long-term Analysis: hedgers vs. non-hedgers

Many empirical studies show that the stock price of seasoned equity offering firms displays a run-up pattern before equity offering announcements. For example, Myers and Majluf (1985), Asquith and Mullins (1985), and Korajczyk, Lucas and McDonald (1992) all find a significant stock price run-up before seasoned equity offering announcements. This stock price run-up before equity offering announcement suggests the existence of information asymmetry between managers and investors. In their adverse selection model, Myers and Majluf (1985) argue that equity offering firms should time equity issues to minimize the negative stock price effect. Firms tend to issue equity following a rise in stock price, and this is when the equity issue price reduction tends to be small. Korajczyk, Lucas and McDonald (1992) argue that managers with high quality firm assets should issue equity when investors become informed. On the other hand, firms with low asset quality always issue immediately, since they gain nothing by delay and risk losing the profitable project.

If hedging activities reduce the degree of information asymmetry, timing the equity issue is not an important issue to hedging firms, simply because they face lower adverse selection cost. Moreover, because investors are more informed about hedging firm's true value, managers of hedging firms won't expect their degree of overvaluation to be as high as non-hedging firms. Thus, hedging firms should have less stock price run-ups before equity offerings.

Many empirical studies also show that the post-announcement long-term performance of seasoned equity offering firms is poor (Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995). Teoh, Welch and Wong (1998) demonstrate that equity issuers who adjust discretionary current accruals to report higher net income prior to the offering have lower post-issue long-run abnormal returns and net income. Moreover, Jegadeesh (2000) shows that equity offering firms significantly underperform all of his benchmarks over five years following issues. One possible explanation is that the market did not revalue the equity offering firm appropriately, and the stock is still substantially overvalued when issuing occurs (Loughran and Ritter, 1995; Jegadeesh, 2000). When hedging comes into the picture, because of the lower information asymmetry, investors could adjust their evaluations for hedging firms better, therefore, the degree of overvaluation of hedging firms after equity issues should be lower than that of non-hedging firms. Thus, we expect to see that hedging firms outperform non-hedging firms in the long-term after equity offerings.

The studies on pre-announcement performance (stock price run-up) and post-announcement performance (long-term returns) of hedging firms versus non-hedging firms add power to our investigation that hedging reduces information asymmetry. The run-ups and post-announcement long-term returns are measured as the cumulative abnormal returns using the market adjust model plus buy-and-hold method.

Market adjusted returns are computed by subtracting the observed return on the market index for day t, R_{mt}, from the rate of return of the common stock of the j^{th} firm on day t:

$$A_{jt} = R_{jt} - R_{mt}$$

The definition of the cumulative abnormal return follows those for market model cumulative abnormal return. Eventus computes buy-and-hold abnormal returns by compounding successive daily raw returns and market index returns, then adjusting the raw returns according to the abnormal return method used.

The market model methodology in long-term event study analysis will provide a biased result because the beta used in market model is not consistent in multiple periods. On the other hand, the market adjustment model avoids this bias caused by the inconsistency of beta in multiple periods. In long-term analysis, the buy-and-hold method produces a more appropriate result than the simple cumulative abnormal return method (Barber and Lyon, 1997). As in the case of the event study analysis, the equally-weighted and value-weighted reference portfolio method are both used in the long run analysis too. We also test the stock price run-ups or post-announcement long-term returns for several windows including those of 3 month, 6 month, 1 year and 2 years (only for the analysis of long-term performance after issues).

5. 3. Cross Sectional Analysis

According to the seasoned equity offerings literature, the negative market reaction to the equity offering announcement might come from two sources – namely: the price-pressure and the information asymmetry between managers and investors. Price-pressure exists because the demand and the supply of the company's equity becomes imbalanced as a result of the new equity offer. If stock prices are fully elastic, then this effect will not exist. However, in reality, stock prices are not fully elastic and, therefore, the oversupplied equity versus the demand in the market will drive the stock price down. For example, Asquith and Mullins (1986) find evidence that is consistent both with the hypothesis that equity issues are viewed by investors as negative signals and with the hypothesis that there is a downward demand for firm shares. On the other hand, Mikkelson and Partch (1986) find that the changes in share price during securities offerings are unrelated to characteristics of offerings such as the net amount of new financing and relative offering size.

In cross sectional analysis, we extend our event study methodology to investigate whether the stock price effects at the announcement are related to (1) price pressure variables, such as, the ratio of offering amount to the market value of equity before new offering, (2) information asymmetry variables such as, total assets, leverage ratio, market to book ratio, unsystematic risk, and (3) hedging activities. We use a dummy variable in our cross-section regression to see whether the cumulative abnormal returns capture the effect of hedging policy after controlling for other proxies of information asymmetry and price pressure effects.

6. EVENT STUDY RESULTS

6. 1. Results on ARs and CARs in event study windows

6. 1a. Hedgers vs. Non-Hedgers: Evidence on Abnormal Returns

Table 3 outlines the summary of the mean abnormal returns of hedgers and non-hedgers on each day of the 21-day event period under the 126-days estimation period and equally-weighted reference portfolio method. The t-statistic, which examines the difference in mean abnormal return between hedgers and non-hedgers. shows that the mean abnormal return of hedgers is significantly less negative than non-hedgers on day –1 (at the 10% level) and day 1 (at the 5% level). Although the t-statistic does not shows a significant difference between the two groups on day 0, the generalized sign Z test show that hedgers don't have significant negative abnormal returns on day 0 while the non-hedgers have significant negative abnormal returns on day 0 at the 10 % significance level. Surprisingly, the mean abnormal return of hedgers on day 1 is significantly positive at the 1 % level. The t-statistic also shows significant negative abnormal returns for hedgers on day –10 and day 7. Over all, the event study results on abnormal returns show that hedgers have significantly less negative abnormal returns than non-hedgers on days –1 and 1 around equity offering announcements.

TABLE 3 : Abnormal Returns
Summary of Event Study Results
Abnormal Returns for each day in event window
Estimation Period = 126 days
Reference Portfolio = Equal Weighted

	Hedgers				Non-Hedgers				P (t-test)
Days	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	two-tailed Means are equal
-10	0.86%	2.09*	1.36	31/25	-0.29%	-0.90	-1.19	113/160	0.0124
-9	0.33%	0.78	0.55	28/28	0.02%	-0.34	0.51	127/146	0.4336
-8	0.12%	0.62	-0.25	25/31	-0.04%	0.58	-0.10	122/151	0.6354
-7	0.56%	1.34	1.62	32/24	-0.04%	0.37	0.88	130/142	0.1710
-6	0.43%	0.99	0.82	29/27	0.01%	0.08	1.00	131/142	0.3158
-5	-0.25%	-0.17	-0.25	25/31	0.03%	0.23	0.63	128/145	0.4326
-4	-0.25%	-0.40	-0.25	25/31	-0.67%	-3.42***	-3.14**	97/176	0.1546
-3	0.18%	1.21	1.09	30/26	-0.36%	-2.36*	-1.63	109/163	0.1269
-2	-0.47%	-1.40	-0.79	23/33	-0.42%	-1.92$	-0.46	119/154	0.8989
-1	**-1.30%**	**-2.97****	**-2.67****	**16/40**	**-2.06%**	**-8.48*****	**-6.91*****	**66/207**	**0.0985**
0	**-0.81%**	**-1.69$**	**-0.79**	**23/33**	**-0.59%**	**-2.76****	**-1.68$**	**109/164**	**0.6986**
1	**1.05%**	**2.29***	**2.70****	**36/20**	**-0.02%**	**-0.14**	**0.27**	**125/148**	**0.0496**
2	0.16%	0.41	-1.06	22/34	-0.36%	-1.52	-0.71	117/156	0.1768
3	-0.03%	-0.21	-0.79	23/33	-0.08%	-0.44	-0.58	118/155	0.9057
4	0.20%	1.37	1.36	31/25	-0.17%	-0.20	0.15	124/149	0.3019
5	0.38%	1.07	1.36	31/25	-0.09%	-0.69	-0.46	119/154	0.2496
6	0.48%	1.66$	1.62	32/24	-0.11%	-0.67	-0.83	116/157	0.1217
7	0.31%	1.10	1.62	32/24	-0.47%	-1.90$	-2.29*	104/169	0.0227
8	-0.89%	-3.01**	-3.20**	14/42	-0.32%	-1.53	-0.46	119/154	0.1939
9	-0.02%	-0.47	-1.06	22/34	0.04%	0.14	0.15	124/149	0.8884
10	-0.18%	-1.72$	-0.52	24/32	-0.22%	-1.30	-0.71	117/156	0.8930

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

6. 1b. Hedgers vs. Non-Hedgers: Evidence on Cumulative Abnormal Returns

The event study results on cumulative abnormal returns show a similar picture as the results on abnormal returns. Table 4 outlines the event study results of mean cumulative abnormal returns of hedgers and non-hedgers for the 13 event study windows with 126-days estimation period and equally-weighted reference portfolio methods. In the three-day window (-1, 1), the mean cumulative abnormal return of hedgers is -1.06% compared to –2.67% for non-hedgers. The SCS Z and Generalized Sign Z further demonstrate that the negative mean cumulative abnormal return for hedgers in window (-1,1) is less significant than non-hedgers. The t-statistic, which examines whether the mean cumulative abnormal return between these two groups are equal also show hedgers have significantly less negative mean cumulative abnormal returns for the window (-1,1) than non-hedgers at the less than 5% level.

Table 5 shows the nonparametric test on the median cumulative abnormal return between hedgers and non-hedgers. Consistent with the results on mean cumulative abnormal returns, for the window (-1, 1), the median cumulative abnormal return of hedgers is –1.18% compared to –2.95% for non-hedgers. The Sign Test and Wilcoxon Signed Rank Test both show that the negative median cumulative abnormal return of hedgers is less significant than non-hedgers. The Wilcoxon Scores Rank Sums Test shows that the difference in median cumulative abnormal return for the window (-1,1) between these two groups is significant at the less 5% confidence level.

TABLE 4 : Cumulative Abnormal Returns - Parametric Test
Summary of Event Study Results
Estimation Period = 126 days
Reference Portfolio = Equal Weighted
T-Test Statistics for means are equal is included

	Hedgers				Non-Hedgers				
Event Study Windows	Mean Cumulative Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Cumulative Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	P-Value (Ho-means are equal)
(-10,+10)	0.84%	0.46	0.02	26/30	-6.19%	-6.92***	-4.72***	84/189	0.0000
(-10,-2)	1.49%	1.89$	1.89$	33/23	-1.75%	-2.54*	-2.17*	105/168	0.0029
(-5,+5)	-1.15%	-0.62	0.28	27/29	-4.77%	-8.48***	-6.67***	68/205	0.0038
(-5,-2)	-0.80%	-0.41	-0.25	25/31	-1.41%	-3.81***	-2.53*	102/171	0.4079
(-4,+4)	-1.27%	-1.01	-1.06	22/34	-4.72%	-8.44***	-5.33***	79/194	0.0009
(-4,-1)	-1.85%	-2.82**	-2.13*	18/38	-3.50%	-8.66***	-5.82***	75/198	0.0148
(-2,+2)	-1.37%	-1.98*	-2.40*	17/39	-3.45%	-7.94***	-5.33***	79/194	0.0230
(-1,+1)	**-1.06%**	**-1.79$**	**-2.13***	**18/38**	**-2.67%**	**-7.32*** **	**-6.18*** **	**72/201**	**0.0353**
(-1,0)	-2.12%	-3.28**	-4.01***	11/45	-2.65%	-7.86***	-6.55***	69/204	0.4324
(0,+1)	0.24%	0.31	0.55	28/28	-0.61%	-2.36*	-2.29*	104/169	0.2454
(0,+5)	0.95%	1.02	0.55	28/28	-1.30%	-3.11**	-1.44	111/162	0.0269
(+2,+10)	0.41%	0.04	-0.25	25/31	-1.78%	-2.82**	-2.17*	105/168	0.0600
(0,+10)	0.65%	0.20	0.02	26/30	-2.39%	-3.97***	-2.65**	101/172	0.0200

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 5 : Cumulative Abnormal Returns - Nonparametric Tests
Summary of Event Study Results
Estimation Period = 126 days
Reference Portfolio = Equal Weighted
Nonparametric test (Wilcoxon Rank Sum Test) for medians are equal is included

Event Study Windows	Hedgers: Median Cumulative Abnormal Return	Hedgers: Sign Test	Hedgers: Wilcoxon Signed Rank	Non-Hedgers: Median Cumulative Abnormal Return	Non-Hedgers: Sign Test	Non-Hedgers: Wilcoxon Signed Rank	Wilcoxon Scores (Rank Sums)
(-10,+10)	-0.50%	0.6889	0.7352	-6.67%	<.0001	<.0001	0.0001
(-10,-2)	1.37%	0.2288	0.0765	-2.37%	0.0002	0.0008	0.0038
(-5,+5)	-0.93%	0.8939	0.2640	-4.83%	<.0001	<.0001	0.0006
(-5,-2)	-0.12%	0.5044	0.2968	-1.60%	<.0001	<.0001	0.2779
(-4,+4)	-1.64%	0.1409	0.0437	-5.16%	<.0001	<.0001	0.0006
(-4,-1)	-1.45%	0.0105	0.0010	-3.53%	<.0001	<.0001	0.0334
(-2,+2)	-1.56%	0.0046	0.0140	-3.31%	<.0001	<.0001	0.0227
(-1,+1)	**-1.18%**	**0.0105**	**0.0154**	**-2.95%**	**<.0001**	**<.0001**	**0.0257**
(-1,0)	-2.04%	<.0001	<.0001	-2.90%	<.0001	<.0001	0.1603
(0,+1)	-0.01%	1.0000	0.9423	-0.94%	0.0001	0.0057	0.1544
(0,+5)	0.01%	1.0000	0.4531	-1.03%	0.0024	0.0005	0.0402
(+2,+10)	-0.93%	0.5044	0.7474	-1.86%	0.0002	0.0004	0.1120
(0,+10)	-0.90%	0.6889	0.6061	-3.20%	<.0001	<.0001	0.0117

Note:
The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

Unfortunately, both parametric and nonparametric tests do not show any significant difference between hedgers and non-hedgers for the window (-1,0) and window (0,1). However, for longer windows, we observe significantly less negative cumulative abnormal returns for hedgers compared to non-hedgers. For example, both the parametric and nonparametric test show significant difference between hedgers and non-hedgers for the window (-2,2), window (-5,5), and window (-10.10) at close to and less than 1% significance levels. Over all, we conclude that both parametric and nonparametric tests show strong support for our hypothesis that the cumulative abnormal returns of hedgers are significantly less negative than non-hedgers for seasoned equity issues in our sample.

6. 1c. Evidence with alternative estimation periods and reference portfolios.

In the last section, we have described our event study results with the 126-day estimation period and the equally-weighted reference portfolio. In order to add robustness to our event study analysis, we also conduct event studies with 63-day and 252-day estimation periods, as well as with the value-weighted reference portfolio. These event study results are reported in Appendix A (Table 11 to 25). Analysis with alternative estimation periods and reference portfolio show similar results as tests with a 126-day estimation period and an equally-weighted reference portfolio.

For example, with the 126-day estimation period but with the value-weighted reference portfolio, we observe that the event study results are very similar to those results under an equally-weighted reference portfolio. The positive mean abnormal return for hedgers for day 1 is significant at the 1% level with both reference portfolios. In addition, the parametric and nonparametric tests also show that the mean cumulative abnormal return of hedgers is significantly less negative than non-hedgers for the window (-1,1) at the 5% level when the value-weighted reference portfolio is used.

Similarly, the results with the 63-day estimation period and 252-day estimation period are consistent with the results for the 126-day estimation period. In fact, some results with a 252-day estimation period are even more significant than the results with a 126-day estimation period. For example, with the equally-weighted reference portfolio, nonparametric tests show that the difference in median cumulative abnormal return for the window (-1,1) between hedgers and non-hedgers is significant at close to the 1% significance level with the 252-day estimation period, compared to close to a 3% significance level with the 126-day estimation period.

Thus, our conclusion that hedgers have significantly less negative abnormal returns and cumulative abnormal returns are robust to variations in the estimation period and reference portfolio used.

6. 1d. Hedgers vs. Non-Hedgers: Summary

Over all, our event study results show that the mean abnormal return for hedgers is significantly less negative than non-hedgers for day –1 and day 1. Similarly, both parametric and nonparametric tests show that the mean cumulative abnormal return of hedgers for the three-day window (-1,1) is significantly less negative than the mean cumulative abnormal return for non-hedgers. This difference in the mean cumulative abnormal returns between hedgers and non-hedgers are bigger and more significant for the longer windows, for instance, window (-10, 10).

When we use different estimation periods and reference portfolio methods, the results remain the same. Therefore, these results strongly support our hypothesis that both abnormal returns and cumulative abnormal returns of hedgers are significantly less negative than those of non-hedgers during the seasoned equity offering announcement period, which suggests that the degree of information asymmetry of hedgers is lower than non-hedgers.

6. 2. Results Of Long-Term Analysis

As described in the section on methodology, our hypothesis implies that the pre-announcement stock price run-up of hedgers should be less than non-hedgers and the post-announcement long-term returns of hedgers should be better than non-hedgers. Tables 6 and 7 report the stock price run-up analysis results while Tables 8 and 9 report the post-announcement long-term performance analysis results.

6. 2a. Evidence on Stock Price Run-ups Before Equity Offering Announcements

From Table 6 and 7, we observe that, with an equally-weighted reference portfolio, the mean 126-day pre-announcement stock price run-up of hedgers is 11.64% compared to 27.42% for non-hedgers. Both parametric and nonparametric tests conclude that the 126-day run-up of hedgers is not significant while the 126-day run-up of non-hedgers is significant at less than 1% level. In addition, both parametric and nonparametric tests show that the difference in 126-day stock price run-up between hedgers and non-hedgers is significant at less than the 10% level with the equally-weighted reference portfolio.

TABLE 6 : Stock Run-up - Parametric Test
Summary of stock Run-up before announcement day
T-Test Statistics for means are equal is included

P.1 : Reference Portfolio = Equal Weighted

RUN-UP Period	Hedgers				Non-Hedgers				P-Value (Ho-Variances are equal)
	Mean RUN-UP	SCS Z	Generalized Sign Z	Positive/ Negative	Mean RUN-UP	SCS Z	Generalized Sign Z	Positive/ Negative	
63 days	8.01%	0.96	2.32*	34/22	16.30%	8.51***	5.22***	167/98	0.0682
126 days	**11.64%**	**0.56**	**0.88**	**28/26**	**27.42%**	**9.73*****	**6.09*****	**155/82**	**0.0288**
252 days	6.25%	-1.54	-1.99*	16/33	34.71%	6.55***	3.25**	111/84	0.1314

P.2 : Reference Portfolio = Value Weighted

RUN-UP Period	Hedgers				Non-Hedgers				P-Value (Ho-Variances are equal)
	Mean RUN-UP	SCS Z	Generalized Sign Z	Positive/ Negative	Mean RUN-UP	SCS Z	Generalized Sign Z	Positive/ Negative	
63 days	16.27%	4.58***	4.21***	43/13	23.51%	12.99***	8.61***	202/63	0.1078
126 days	**27.84%**	**4.81*****	**4.16*****	**42/12**	**40.81%**	**16.31*****	**9.19*****	**186/51**	**0.0761**
252 days	43.16%	3.67***	2.02*	31/18	63.99%	15.31***	8.19***	152/43	0.2597

Note:
(1) The symbols $,*,**, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.
(2) RUN-UPs are calculated as the abnormal returns of window (-73, -10),(-136, -10),(-262,-10) using Market-Adjusted Model and Buy-and-Hold Method

TABLE 7 : Stock Run-up - Nonparametric Test
Summary of stock RUN-UP before announcement day
Wilcoxon Scores (Rank Sums) Test Statistics for medians are equal is included

P.1 : Reference Portfolio = Equal Weighted

RUN-UP Period	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median RUN-UP	Sign Test	Wilcoxon Signed Rank	Median RUN-UP	Sign Test	Wilcoxon Signed Rank	
63 days	4.02%	0.1409	0.1105	7.71%	<.0001	<.0001	0.2318
126 days	**3.29%**	**0.8919**	**0.1254**	**13.72%**	**<.0001**	**<.0001**	**0.0855**
252 days	-25.22%	0.0213	0.0367	13.38%	0.0623	0.0003	0.0016

P.2 : Reference Portfolio = Value Weighted

RUN-UP Period	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median RUN-UP	Sign Test	Wilcoxon Signed Rank	Median RUN-UP	Sign Test	Wilcoxon Signed Rank	
63 days	12.86%	<.0001	<.0001	14.95%	<.0001	<.0001	0.4333
126 days	**18.99%**	**<.0001**	**<.0001**	**25.66%**	**<.0001**	**<.0001**	**0.2563**
252 days	9.10%	0.0854	0.0035	41.38%	<.0001	<.0001	0.0086

Note:
(1) The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**
(2) RUN-UPs are calculated as the abnormal returns of window (-73, -10),(-136, -10),(-262,-10) using Market-Adjusted Model and Buy-and-Hold Method

The results for the 63-day pre-announcement run-up are consistent with the results for the 126-day run-up. Surprisingly, we do not observe a positive median 252-day run-up for the pre-announcement period for hedgers. The parametric and nonparametric tests both show that the pre-announcement stock run-up of hedgers are significantly less than those of non-hedgers. With the value-weighted reference portfolio, the parametric test show that the 63-day and 126 day stock price run-ups of hedgers are significantly less than non-hedgers. On the other hand, nonparametric test show that the 252-day stock run-up of hedgers are significant less than non-hedgers. Despite the fact that the results with value-weighted reference portfolio are less clear than the results with equally-weighted reference portfolio, we still find evidence that the stock price run-ups for hedgers are significantly less compared to non-hedgers.

6. 2b. Evidence on Post-Announcement Long-term Performance

The results from Tables 8 and 9, with the equally-weighted reference portfolio method, show significant differences between hedgers and non-hedgers for the 252-day post-announcement performance (long-term returns) at close to the 10% level. We do not observe significant differences between hedgers and non-hedgers for the 63-day, 126-day, and 504-day post-announcement long-term performance.

TABLE 8 : Post-Announcement Long-term Returns - Parametric Test
Summary of long-term stock price performance after the announcement day
T-Test Statistics for means are equal is included

P.1 : Reference Portfolio = Equal Weighted

Long-term Period	Hedgers				Non-Hedgers				P-Value (Ho-Variances are equal)
	Mean Long-Term Reaction	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Long-Term Reaction	SCS Z	Generalized Sign Z	Positive/ Negative	
63 days	-3.21%	-2.86**	-3.40***	13/43	-5.80%	-2.98**	-2.67**	107/166	0.7227
126 days	-13.97%	-3.26**	-3.40***	13/43	-16.41%	-5.98***	-6.31***	77/196	0.5814
252 days	**-24.83%**	**-3.01****	**-3.13****	**14/42**	**-35.79%**	**-7.90*****	**-8.01*****	**63/210**	**0.0929**
504 days	-71.82%	-4.67***	-5.01***	7:49	-68.24%	-9.58***	-10.07***	46/227	0.7444

P.2 : Reference Portfolio = Value Weighted

Long-term Period	Hedgers				Non-Hedgers				P-Value (Ho-Variances are equal)
	Mean Long-Term Reaction	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Long-Term Reaction	SCS Z	Generalized Sign Z	Positive/ Negative	
63 days	1.45%	-1.05	-1.77$	21/35	-1.37%	-0.20	-1.44	125/148	0.7040
126 days	-2.87%	-0.10	-1.77$	21/35	-6.88%	-1.48	-3.13**	111/162	0.3553
252 days	**1.43%**	**0.36**	**0.63**	**30/26**	**-15.18%**	**-2.41***	**-5.19*****	**94/179**	**0.0083**
504 days	-14.02%	-1.05	-1.51	22/34	-28.42%	-4.02***	-7.01***	79/194	0.1860

Note:
(1) $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**
(2) Post-announcement Long-term returns are calculated as the abnormal returns of window (10, 73), (10, 136), (10, 262), (10, 514)using Market-Adjusted Model and Buy-and-hold method

TABLE 9 : Post-Announcement Long-term Returns - Nonparametric Test
Summary of long-term stock price performance after the announcement day
Wilcoxon Scores (Rank Sums) test statistics on medians are equal is included

P.1 : Reference Portfolio = Equal Weighted

Long-term Period	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median Long-term Reaction	Sign Test	Wilcoxon Signed Rank	Median Long-term Reaction	Sign Test	Wilcoxon Signed Rank	
63 days	-9.87%	<.0001	<.0001	-7.48%	0.0004	<.0001	0.4195
126 days	-17.76%	<.0001	<.0001	-18.84%	<.0001	<.0001	0.5899
252 days	**-34.23%**	**0.0002**	**<.0001**	**-38.37%**	**<.0001**	**<.0001**	**0.1210**
504 days	-87.20%	<.0001	<.0001	-89.89%	<.0001	<.0001	0.3976

P.2 : Reference Portfolio = Value Weighted

Long-term Period	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median Long-term Reaction	Sign Test	Wilcoxon Signed Rank	Median Long-term Reaction	Sign Test	Wilcoxon Signed Rank	
63 days	-4.10%	0.0814	0.0243	-2.55%	0.1829	0.1325	0.4652
126 days	-9.27%	0.0814	0.1834	-8.16%	0.0024	<.0001	0.3764
252 days	**1.84%**	**0.6889**	**0.8912**	**-15.82%**	**<.0001**	**<.0001**	**0.0084**
504 days	-12.74%	0.1409	0.0672	-50.11%	<.0001	<.0001	0.0094

Note:
(1) $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**
(2) Post-announcement Long-term returns are calculated as the abnormal returns of window (10, 73), (10, 136), (10, 262), (10, 514)using Market-Adjusted Model and Buy-and-hold method

With the value-weighted reference portfolio, we observe that post-announcement long-term performance of hedgers are less negative than non-hedgers. The parametric and nonparametric test results show a significant difference between hedgers and non-hedgers in their 252-day post-announcement long-term performance at close to the 1% level. Only the parametric test results show a significant difference between hedgers and non-hedgers in their 504-day post-announcement long-term performance, which is significant at the 1% level. We do not observe significant differences between hedgers and non-hedgers in the 63-day and 126-day post-announcement long-term performance intervals.

In general, the results on post-announcement long-term performance are mixed. We find that hedgers outperform non-hedgers over a 252-day period after the equity offering announcement. However, we do not observe a significant differences between hedgers and non-hedgers in other testing periods. One possible explanation for these findings could be that hedging firms conducting seasoned equity offerings are exposed to lower risks so that they earn lower returns, which has an impact on our analysis on post-announcement long-term performance.

6. 3. Evidence on Cross Sectional Tests

Given the statistical difference in firm size between the two groups (hedgers are bigger firms compared to non-hedgers), the results could be driven by differences in firm size. In the cross sectional analysis, after controlling for leverage, firm size and firm-specific variables, we examine whether the differences in cumulative abnormal returns around the announcement between these two groups are driven by hedging activities. A total of 30 regressions are undertaken with the cumulative abnormal return in window (-1,1), window (-5,5) and window (-10, 10) (with equally-weighted reference portfolio) as the dependent variable separately. The independent variables include price pressure variables and information asymmetry variables. In addition, regressions are undertaken for hedgers and non-hedgers together, hedgers only and non-hedgers only, separately.

With the cumulative abnormal return in window (-1,1) as the dependent variable, the cross-sectional regressions of stock price reactions for the whole sample indicate that the dummy variable for hedging and the relative offering amount are the most important determinants. From the results depicted in Panel One of Table 10, we observe that the cumulative abnormal return for the window (-1,1) in our sample are significantly positively related to the hedging dummy variable (1 for hedgers, 0 for non-hedgers) and negatively related to the offering amount as a proportion of market value of equity before the offering. The negative coefficient (parameter estimate) of the relative offering amount is consistent with existing literature that suggests that price-pressure leads to negative market reactions. The positive coefficient of hedging dummy variables is consistent with our earlier findings, that hedgers have less cumulative abnormal returns than non-hedgers. Unfortunately, none of the other independent variables in the cross-sectional regressions are found to be significant.

From Panel Two of Table 10, we observe that the cumulative abnormal return for the window (-1,1) of hedgers are significantly positively related to the offering amount as a proportion of market value of equity before the offering and negatively related to the leverage and market to book ratio. The negative coefficients of leverage and market to book ratio support our hypothesis that greater information asymmetry leads to bigger financing cost in seasoned equity offerings. For a hedging firm, the greater amount of long-term debt it has and the greater the ratio of its market value to book value, the more negative the market reaction to its seasoned equity offering announcement. The positive coefficient for the relative offering amount variable shows a very interesting picture. One possible explanation could be that it is more likely for investors to see the seasoned equity offering of hedging firms as they try to finance profitable projects than to sell overvalued stock and, therefore, the higher amount of offering signals more profitable projects for hedging firms.

From Panel Three of Table 10, we observe that the mean cumulative abnormal return for the window (-1,1) of non-hedgers are significantly negatively related to the offering amount as a proportion of market value of equity before the offering, which is consistent with the existing literature. Unfortunately, we do not observe any significance for information asymmetry proxies.

Panel Four, Five and Six report the regression results with the cumulative abnormal return in window (-5,5) as the dependent variable. These results are very similar to those results in Panel One, Two and Three. In Panel Five of Table 10, we also find that the cumulative abnormal return in window (-5,5) for hedgers is positively related to the offering amount as a proportion of market value of equity before the offering, which is consistent with the results using the cumulative abnormal return in window (-1,1) as the dependent variable.

The results with the cumulative abnormal return in window (-10,10) as the dependent variable show a less clear picture compared with the results using the cumulative abnormal return in window (-1,1) and window (-5,5) as the dependent variable do. For example, in Panel Seven, we do not observe any significance for the dummy for hedging variable. This might be caused by the fact that market reactions may be different in longer windows compared to shorter windows. From Panel Eight and Nine of Table 10, we observe that for hedgers, the cumulative abnormal return in window (-10,10) is not significantly related to the relative offering amount, while for non-hedgers, the cumulative abnormal return in window (-10,10) is significantly negatively related to the relative offering amount.

In general, our cross-sectional analysis results imply that the negative market reactions to seasoned equity offering announcement are driven by price pressure and information asymmetry differently for hedgers compared to non-hedgers. Specifically, for hedgers, the price pressure effect seems to disappear, which might be because of the fact that investors see their stock as not overvalued. Even after controlling for the price pressure effect and other proxies of information asymmetry, the stock price reaction of hedgers is significantly less negative compared to non-hedgers. The difference between the two groups cannot, therefore, be attributed only to price pressure. Hedging activities contribute to reducing the information asymmetry for firms thereby lowering their overall financing costs.

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-1, 1)

Panel One: Cross Sectional Regression with hedgers and non-hedgers together

Regression	#1	#2	#3	#4
P>F	0.3371	0.6575	0.1899	0.8797
R-Square	0.0338	0.0177	0.0139	0.0051

Independent Variables	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)
Intercept	-0.06836	-0.07883	-0.0324	-0.06683
	(0.3874)	(0.3207)	(0.0310)	(0.3878)
Dummy for hedging	0.0221	---	---	---
	(0.0523)	---	---	---
Log (Offering Amount)	0.00573	0.0072	0.0065	---
	(0.6293)	(0.5474)	(0.4155)	---
Offering Amount/MVE Before	-0.01792	-0.01822	-0.01556	---
	(0.0995)	**(0.0959)**	(0.1281)	---
Log (Total Assets)	-0.00428	-0.00045	---	0.00444
	(0.5457)	(0.9471)	---	(0.3643)
Leverage	0.00026	0.00541	---	0.00209
	(0.9869)	(0.7311)	---	(0.8936)
M/B	-0.00019	-0.00016	---	-0.00009
	(0.6215)	(0.6828)	---	(0.8265)
Unsystematic Risk	0.04590	0.04876	---	0.03184
	(0.5521)	(0.5301)	---	(0.6789)

Note: For the dummy for hedging variable, 1 stands for hedgers and 0 stands for non-hedgers. Due to the fact that many firms in our sample do not have valid information for R&D and Intangible Assets in the Compustat Database, including R&D/sales and Tangible Assets/Total Assets into our regression significantly reduces the degree of freedom in regression analysis. Therefore, we do not show any cross-sectional regression result for those two variables in TABLE 10.

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-1, 1)

Panel Two: Cross Sectional Regression with hedgers only

Regression	#5	#6	#7
P>F	0.0517	0.0849	0.1159
R-Square	0.2688	0.1084	0.1654

Independent Variables	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)
Intercept	0.00205	0.00697	-0.04819
	(0.9882)	(0.8237)	(0.7346)
Log (Offering Amount)	-0.01647	-0.0127	---
	(0.4562)	(0.3597)	---
Offering Amount/MVE Before	0.06582	0.04949	---
	(0.0261)	**(0.0613)**	---
Log (Total Assets)	0.01103	---	-0.00634
	(0.4949)	---	(0.5083)
Leverage	-0.03648	---	-0.02597
	(0.0523)	---	(0.1602)
M/B	-0.00323	---	-0.00277
	(0.0130)	---	**(0.0341)**
Unsystematic Risk	-0.00890	---	0.07786
	(0.9493)	---	(0.5786)

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-1, 1)

Panel Three: Cross Sectional Regression with non-hedgers only

Regression	**#8**	**#9**	**#10**
P>F	0.5436	0.1328	0.9948
R-Square	0.0264	0.0209	0.0011

Independent Variables	**Coefficient (Pr>|t|)**	**Coefficient (Pr>|t|)**	**Coefficient (Pr>|t|)**
Intercept	-0.05743	-0.03162	-0.03881
	(0.5313)	(0.0763)	(0.6647)
Log (Offering Amount)	0.0122	0.0050	---
	(0.3772)	(0.6245)	---
Offering Amount/MVE Before	-0.02461	-0.02111	---
	(0.0378)	**(0.0565)**	---
Log (Total Assets)	-0.00586	---	0.00125
	(0.4634)	---	(0.8442)
Leverage	0.01445	---	0.00771
	(0.5331)	---	(0.7389)
M/B	-0.00001	---	0.00009
	(0.9778)	---	(0.8278)
Unsystematic Risk	0.02573	---	0.00392
	(0.7730)	---	(0.9649)

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-5, 5)

Panel Four: Cross Sectional Regression with hedgers and non-hedgers together

Regression	#11	#12	#13	#14
P>F	0.0882	0.1344	0.1899	0.8797
R-Square	0.0513	0.0406	0.0139	0.0051

Independent Variables	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)
Intercept	-0.16431	-0.17754	-0.0324	-0.06683
	(0.1827)	(0.1506)	(0.0310)	(0.3878)
Dummy for hedging	0.0287	---	---	---
	(0.1061)	---	---	---
Log (Offering Amount)	-0.00738	-0.0056	0.0065	---
	(0.6877)	(0.7595)	(0.4155)	---
Offering Amount/MVE Before	-0.02033	-0.02068	-0.01556	---
	(0.2171)	(0.2109)	(0.1281)	---
Log (Total Assets)	0.01232	0.01727	---	0.00444
	(0.2628)	(0.1041)	---	(0.3643)
Leverage	-0.00175	0.00495	---	0.00209
	(0.9437)	(0.8396)	---	(0.8936)
M/B	-0.00061	-0.00056	---	-0.00009
	(0.3136)	(0.3514)	---	(0.8265)
Unsystematic Risk	0.11694	0.12056	---	0.03184
	(0.3317)	(0.3186)	---	(0.6789)

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-5, 5)

Panel Five: Cross Sectional Regression with hedgers only

Regression	#15	#16	#17
P>F	0.1155	0.9202	0.2408
R-Square	0.2259	0.0039	0.1254

Independent Variables	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)
Intercept	0.37361	0.00926	0.27055
	(0.1100)	(0.8599)	(0.2496)
Log (Offering Amount)	(0.0693)	-0.0088	
	(0.0625)	**(0.7054)**	
Offering Amount/MVE Before	0.07473	0.00376	---
	(0.1193)	(0.9311)	---
Log (Total Assets)	0.05554	---	0.00887
	(0.0421)	---	(0.5724)
Leverage	-0.05682	---	-0.05070
	(0.0661)	---	**(0.0963)**
M/B	-0.00378	---	-0.00361
	(0.0714)	---	**(0.0886)**
Unsystematic Risk	-0.43218	---	-0.30552
	(0.0670)	---	(0.1880)

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-5, 5)

Panel Six: Cross Sectional Regression with non-hedgers only

Regression	#18	#19	#20
P>F	0.3729	0.3018	0.3851
R-Square	0.0333	0.0122	0.0214

Independent Variables	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)
Intercept	-0.24068	-0.05739	-0.23586
	(0.0924)	(0.0365)	(0.0898)
Log (Offering Amount)	0.0038	0.0093	---
	(0.8594)	(0.5566)	---
Offering Amount/MVE Before	-0.02706	-0.02302	---
	(0.1293)	(0.1687)	---
Log (Total Assets)	0.00736	---	0.01237
	(0.5511)	---	(0.2010)
Leverage	0.02558	---	0.01717
	(0.4776)	---	(0.6296)
M/B	-0.00044	---	-0.00034
	(0.4967)	---	(0.5955)
Unsystematic Risk	0.18518	---	0.16719
	(0.1833)	---	(0.2256)

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-10, 10)

Panel Seven: Cross Sectional Regression with hedgers and non-hedgers together

Regression	#21	#22	#23	#24
P>F	0.02700	0.03130	0.01050	0.02300
R-Square	0.06490	0.05700	0.03710	0.04670

Independent Variables	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)
Intercept	-0.27235	-0.29043	-0.09539	-0.28837
	(0.1627)	(0.1366)	(0.0090)	(0.1298)
Dummy for hedging	0.03918	---	---	---
	(0.1626)	---	---	---
Offering Amount	-0.00337	-0.00098	0.03643	---
	(0.9075)	(0.9730)	**(0.0620)**	---
Offering Amount/MVE Before	-0.04064	-0.04112	-0.05202	---
	(0.1190)	(0.1155)	**(0.0336)**	---
Log (Total Assets)	0.02668	0.03343	---	0.03839
	(0.1259)	**(0.0467)**	---	**(0.0013)**
Leverage	-0.00292	0.00623	---	-0.00277
	(0.9405)	(0.8719)	---	(0.9423)
M/B	0.00083	0.00089	---	0.00102
	(0.3817)	(0.3486)	---	(0.2832)
Unsystematic Risk	0.18198	0.18692	---	0.15862
	(0.3395)	(0.3275)	---	(0.4013)

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-10, 10)

Panel Eight: Cross Sectional Regression with hedgers only

Regression	#25	#26	#27
P>F	0.1412	0.4444	0.0666
R-Square	0.2143	0.0370	0.1931

Independent Variables	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)	Coefficient (Pr>|t|)
Intercept	0.35091	0.06574	0.29610
	(0.2314)	(0.3057)	(0.2950)
Log (Offering Amount)	-0.02716	-0.0321	---
	(0.5550)	(0.2586)	---
Offering Amount/MVE Before	0.05619	0.02103	---
	(0.3490)	(0.6909)	---
Log (Total Assets)	-0.00287	---	-0.02469
	(0.9319)	---	(0.1963)
Leverage	-0.10345	---	-0.09599
	(0.0096)	---	**(0.0108)**
M/B	-0.00082	---	-0.00052
	(0.7519)	---	(0.8358)
Unsystematic Risk	-0.27717	---	-0.19581
	(0.3447)	---	(0.4803)

TABLE 10 : Cross Sectional Analysis

Dependent Variable = Cumulative Abnormal Return in Window (-10, 10)

Panel Nine: Cross Sectional Regression with non-hedgers only

Regression	**#28**	**#29**	**#30**
P>F	0.0613	0.0298	0.0695
R-Square	-0.0611	0.0354	0.0442

Independent Variables	**Coefficient (Pr>|t|)**	**Coefficient (Pr>|t|)**	**Coefficient (Pr>|t|)**
Intercept	-0.35434	-0.10565	-0.33310
	(0.1235)	(0.0173)	(0.1373)
Log (Offering Amount)	0.0147	0.0384	---
	(0.6670)	(0.1315)	---
Offering Amount/MVE Before	-0.05221	-0.05564	---
	(0.0693)	**(0.0400)**	---
Log (Total Assets)	0.02626	---	0.03838
	(0.1873)	---	**(0.0145)**
Leverage	0.06553	---	0.04911
	(0.2587)	---	(0.3929)
M/B	0.00116	---	0.00135
	(0.2644)	---	(0.1939)
Unsystematic Risk	0.22825	---	0.18853
	(0.3076)	---	(0.3967)

7. SUMMARY AND CONCLUSION

This study investigates how hedging activities reduce the degree of information asymmetry by studying the market reactions to seasoned equity offering announcements of hedging and non-hedging firms. Following earlier studies (e.g., DeMarzo and Duffie, 1995; Breeden and Viswanathan, 1998; DaDalt, Gay and Nam, 1999), we believe hedging activities improve investors' learning process and, therefore, reduce the degree of information asymmetry between managers and investors. Specifically, hedging reduces the degree of information asymmetry in two ways. First, good managers undertake hedging activities to ensure their superior abilities are quickly discovered by the markets. On the contrary, when the cost to hedge is high, inferior managers will not risk to undertake hedging activities. Second, regardless of the motive of managers to undertake hedging activities, hedging reduces the future cash flow volatility and thus reduces the noise in measures such as earnings. As a result, hedging increases the quality of informativeness of earnings as an indicator of firm performance and the efficiency of the learning process of outside shareholders and, therefore, reduces the degree of information asymmetry.

We investigate how hedging reduces the information asymmetry by empirically analyzing stock price movements around seasoned equity offering announcements. We capture the reduced information asymmetry resulting from hedging activities by comparing the difference in stock price depreciation (measured by abnormal returns) between hedging and non-hedging firms around the announcements of seasoned equity offerings.

Our sample covers the period 1992 to 1997 and consists of 318 firms that conducted seasoned equity offerings during this period. In our sample, 53 firms are recognized as hedgers and 268 firms are recognized as non-hedgers. Our results show that hedgers have significantly less negative abnormal returns and cumulative abnormal returns than non-hedgers around the announcement date. Our results are consistent when different estimation periods and reference portfolios are employed in the event study analysis. We also find that the stock price run-ups prior to equity offering announcements of hedgers are significantly less than non-hedgers. However, the results on post-announcement long-term performance analysis are mixed. Given the statistical difference in firm size between hedgers and non-hedgers, there is a possibility that the difference in stock price reaction to the announcement is driven by the difference in firm size between these two groups. Moreover, the cross sectional regression results show that negative market reactions to seasoned equity offering are driven by price pressure and information asymmetry differently for hedgers compared to non-hedgers. Even after controlling for the price pressure effect and other proxies of information asymmetry, the stock price reaction of hedgers is significantly less negative compared to non-hedgers. In general, our event study analysis results strongly support the argument that hedging activities reduce the degree of information asymmetry.

One important implication of this paper is to show that hedging activities is an important indicator for shareholders to evaluate the firm's management quality and, therefore, reduce the degree of information asymmetry. Hedging firms benefit from their hedging activities as they face lower adverse selection costs, thus lowering their costs of external financing. In addition, hedging firms have less incentive to make offerings after a stock price run-up just prior to the announcement. Investors do not see equity issues by hedgers as a manager trying to sell overvalued equity. As a result, hedging reduces the likelihood of underinvestment since they will not miss opportunities to take new profitable projects.

Future research can examine if hedging firms that do not finance through equity offerings benefit from their low degree of information asymmetry by issuing debt. In addition, including additional proxies (such as analyst forecast's accuracy) of information asymmetry would improve the robustness of the analysis.

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Appendix A:

Abnormal Returns and Cumulative Abnormal Returns

with alternative estimation periods and reference portfolios

TABLE 11

To

TABLE 25

TABLE 11 : Abnormal Returns
Summary of Event Study Results
Abnormal Returns for each day in event window
Estimation Period = 63 days
Reference Portfolio = Equal Weighted

	Hedgers				Non-Hedgers				P (t-test)
Days	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	two-tailed Means are equal
-10	0.80%	1.93$	1.40	31/25	-0.32%	-0.98	-1.86$	109/164	0.0130
-9	0.32%	0.93	0.86	29/27	0.02%	-0.224	-0.284	122/151	0.4399
-8	0.10%	0.52	-0.48	24/32	-0.06%	0.514	-0.77	118/155	0.6364
-7	0.48%	1.35	0.86	29/27	-0.08%	0.232	0.688	130/143	0.2062
-6	0.45%	1.01	1.40	31/25	-0.02%	-0.158	0.445	128/145	0.2718
-5	-0.29%	-0.22	-0.48	24/32	0.08%	0.512	0.081	125/148	0.3292
-4	-0.26%	-0.28	-0.48	24/32	-0.68%	-3.31***	-3.69***	94/179	0.1773
-3	0.16%	1.23	1.40	31/25	-0.37%	-2.474*	-1.568	111/161	0.1382
-2	-0.45%	-1.28	-0.48	24/32	-0.41%	-1.825$	-1.013	116/157	0.9226
-1	**-1.28%**	**-2.96****	**-2.09***	**18/38**	**-2.06%**	**-7.84*****	**-6.73*****	**69/204**	**0.0973**
0	**-0.81%**	**-1.58**	**-1.01**	**22/34**	**-0.60%**	**-2.66****	**-2.23***	**106/167**	**0.7157**
1	**0.95%**	**1.99***	**1.94$**	**33/23**	**-0.02%**	**-0.266**	**0.081**	**125/148**	**0.0796**
2	0.12%	0.24	-1.01	22/34	-0.38%	-1.65$	-1.135	115/158	0.1948
3	-0.06%	-0.22	-0.21	25/31	-0.12%	-0.638	-0.405	121/152	0.8807
4	0.16%	1.23	1.13	30/26	-0.18%	-0.296	0.202	126/147	0.3513
5	0.31%	1.21	1.69$	32/24	-0.13%	-0.698	-0.892	117/156	0.3104
6	0.44%	1.56	1.69$	32/24	-0.16%	-0.776	-1.256	114/159	0.1169
7	0.30%	1.13	1.13	30/26	-0.49%	-2.07*	-2.23*	106/167	0.0259
8	-0.97%	-3.34***	-3.43***	13/43	-0.34%	-1.55	-1.135	115/158	0.1487
9	-0.05%	-0.40	-0.48	24/32	0.00%	0.005	-0.041	124/149	0.8929
10	-0.25%	-1.74$	-1.28	21/35	-0.27%	-1.301	-1.256	114/159	0.9422

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 12 : Abnormal Returns
Summary of Event Study Results
Abnormal Returns for each day in event window
Estimation Period = 63 days
Reference Portfolio = Value Weighted

	Hedgers				Non-Hedgers				P (t-test)
Days	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	two-tailed Means are equal
-10	0.75%	1.75$	1.38	31/25	-0.44%	-1.49	-1.92$	109/164	0.0082
-9	0.22%	0.34	0.84	29/27	0.02%	-0.34	0.15	126/147	0.6282
-8	0.00%	0.22	-0.77	23/33	-0.07%	0.45	-0.58	120/153	0.8312
-7	0.36%	1.13	1.38	31/25	-0.05%	0.37	1.00	133/140	0.3663
-6	0.44%	0.96	1.11	30/26	-0.07%	-0.42	0.52	129/144	0.2445
-5	-0.41%	-0.59	-1.03	22/34	0.04%	0.41	0.39	128/145	0.2312
-4	-0.31%	-0.58	-0.50	24/32	-0.82%	-3.82***	-4.35***	89/184	0.1112
-3	0.03%	0.80	1.38	31/25	-0.35%	-2.37*	-1.50	112/160	0.2890
-2	-0.58%	-1.79$	-1.30	21/35	-0.42%	-1.77$	-1.07	116/157	0.6853
-1	**-1.47%**	**-3.33*** **	**-2.91** **	**15/41**	**-2.09%**	**-7.92*** **	**-6.65*** **	**70/203**	**0.1781**
0	**-0.89%**	**-1.95$**	**-0.77**	**23/33**	**-0.68%**	**-2.86** **	**-1.67$**	**111/162**	**0.7080**
1	**0.94%**	**1.92$**	**2.72** **	**36/20**	**-0.07%**	**-0.63**	**-0.21**	**123/150**	**0.0659**
2	-0.07%	-0.48	-1.84$	19/37	-0.42%	-1.73$	-1.55	112/161	0.3688
3	-0.05%	-0.31	-0.77	23/33	-0.11%	-0.63	-0.94	117/156	0.8713
4	0.30%	1.58	1.65$	32/24	-0.24%	-0.58	-0.21	123/150	0.1581
5	0.32%	1.18	1.11	30/26	-0.16%	-0.93	-0.94	117/156	0.2542
6	0.44%	1.53	1.92$	33/23	-0.21%	-1.16	-1.43	113/160	0.0851
7	0.19%	0.58	1.11	30/26	-0.57%	-2.30*	-2.64**	103/170	0.0310
8	-0.85%	-3.30***	-3.98***	11/45	-0.49%	-2.24*	-1.79$	110/163	0.3851
9	-0.14%	-0.65	-0.50	24/32	-0.18%	-1.06	-2.40*	105/168	0.9109
10	-0.27%	-2.08*	-1.03	22/34	-0.24%	-1.35	-1.07	116/157	0.9271

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 13 : Abnormal Returns
Summary of Event Study Results
Abnormal Returns for each day in event window
Estimation Period = 126 days
Reference Portfolio = Value Weighted

	Hedgers				Non-Hedgers				P (t-test)
Days	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	two-tailed Means are equal
-10	0.83%	1.98*	2.18*	34/22	-0.41%	-1.46	-2.08*	106/167	0.0072
-9	0.26%	0.31	-0.23	25/31	0.01%	-0.38	0.11	124/149	0.5514
-8	0.01%	0.24	-1.03	22/34	-0.02%	0.66	0.36	126/147	0.9270
-7	0.41%	1.07	1.91$	33/23	-0.01%	0.52	0.84	130/143	0.3327
-6	0.48%	1.08	1.65$	32/24	-0.04%	-0.21	0.97	131/142	0.2158
-5	-0.36%	-0.47	-1.03	22/34	0.03%	0.23	0.11	124/149	0.2865
-4	-0.29%	-0.55	-0.50	24/32	-0.79%	-3.85***	-4.02***	90/138	0.1008
-3	0.08%	0.94	1.11	30/26	-0.35%	-2.40*	-1.66$	109/163	0.2073
-2	-0.53%	-1.55	-1.57	20/36	-0.41%	-1.80$	-0.37	120/153	0.7589
-1	**-1.41%**	**-3.02****	**-2.38***	**17/39**	**-2.06%**	**-8.49*****	**-6.82*****	**67/206**	**0.1514**
0	**-0.89%**	**-2.00***	**-0.77**	**23/33**	**-0.63%**	**-2.89****	**-1.47**	**111/162**	**0.6471**
1	**0.99%**	**2.10***	**3.26****	**38/18**	**-0.03%**	**-0.25**	**-0.01**	**123/150**	**0.0627**
2	0.01%	-0.15	-2.11*	18/38	-0.37%	-1.54	-0.86	116/157	0.3124
3	-0.01%	-0.20	-0.77	23/33	-0.09%	-0.45	-0.98	115/158	0.8291
4	0.27%	1.56	1.92$	33/23	-0.22%	-0.43	-0.25	121/152	0.1784
5	0.38%	1.07	1.65$	32/24	-0.14%	-0.94	-0.62	118/155	0.1905
6	0.48%	1.59	1.91$	33/23	-0.18%	-1.13	-1.35	112/161	0.0810
7	0.28%	0.81	1.38	31/25	-0.54%	-2.11*	-2.44*	103/170	0.0189
8	-0.83%	-3.04**	-3.18**	14/42	-0.44%	-2.16*	-0.74	117/156	0.3680
9	-0.07%	-0.50	-1.57	20/36	-0.11%	-0.73	-1.59	110/163	0.9246
10	-0.18%	-1.79$	-0.77	23/33	-0.25%	-1.48	-0.86	116/157	0.8067

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 14 : Abnormal Returns
Summary of Event Study Results
Abnormal Returns for each day in event window
Estimation Period = 252 days
Reference Portfolio = Equal Weighted

	Hedgers				Non-Hedgers				P (t-test) two-tailed
Days	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Means are equal
-10	0.92%	2.37*	1.86$	33/23	-0.26%	-1.09	-1.31	112/161	0.0095
-9	0.41%	0.90	0.26	27/29	0.06%	-0.16	0.03	126/150	0.3718
-8	0.14%	0.86	-0.01	26/30	0.00%	0.51	-0.09	122/151	0.6729
-7	0.56%	1.44	1.06	30/26	0.00%	0.64	1.13	132/141	0.1860
-6	0.45%	1.03	1.86$	33/23	0.02%	0.15	0.52	127/146	0.2884
-5	-0.21%	-0.01	-0.55	24/32	0.05%	0.14	0.89	130/143	0.4648
-4	-0.22%	-0.31	-0.28	25/31	-0.61%	-3.23**	-3.25**	96/177	0.1882
-3	0.22%	1.49	2.13*	34/22	-0.33%	-2.10*	-2.23*	104/168	0.1242
-2	-0.47%	-1.24	-1.08	22/34	-0.39%	-1.57	-0.45	119/154	0.8283
-1	**-1.29%**	**-3.18****	**-2.69****	**16/40**	**-2.02%**	**-8.73*****	**-6.66*****	**68/205**	**0.1047**
0	**-0.78%**	**-1.65$**	**-0.55**	**24/32**	**-0.57%**	**-2.70****	**-1.79$**	**108/165**	**0.7105**
1	**1.07%**	**2.26***	**2.94****	**37/19**	**0.01%**	**-0.01**	**-0.09**	**122/151**	**0.0515**
2	0.18%	0.45	-1.35	21/35	-0.32%	-1.40	-0.58	118/155	0.1951
3	-0.01%	-0.07	-0.55	24/32	-0.02%	-0.12	-0.21	121/152	0.9718
4	0.23%	1.63	1.60	32/24	-0.12%	0.16	0.89	130/143	0.3290
5	0.38%	1.20	2.13*	34/22	-0.04%	-0.65	-0.58	118/155	0.2867
6	0.53%	1.83$	2.40*	35/21	-0.07%	-0.45	-0.58	118/155	0.1196
7	0.34%	1.28	2.13*	34/22	-0.42%	-1.70$	-1.79$	108/165	0.0246
8	-0.85%	-2.76**	-2.96**	15/41	-0.27%	-1.24	-0.09	122/151	0.1863
9	0.03%	-0.47	-0.55	24/32	0.07%	0.39	-0.09	122/151	0.9159
10	-0.14%	-1.53	-0.82	23/33	-0.17%	-1.05	-0.33	120/153	0.9115

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 15 : Abnormal Returns
Summary of Event Study Results
Abnormal Returns for each day in event window
Estimation Period = 252 days
Reference Portfolio = Value Weighted

	Hedgers				Non-Hedgers				P (t-test)
Days	Mean Abnormal Return	SCS Z	Generalized Sign Z	Possitive/ Negative	Mean Abnormal Return	SCS Z	Generalized Sign Z	Possitive/ Negative	two-tailed Means are equal
-10	0.89%	2.24*	2.39*	32/21	-0.36%	-1.59	-1.42	110/163	0.0053
-9	0.35%	0.52	-0.02	26/30	0.04%	-0.28	0.28	124/149	0.4419
-8	0.04%	0.41	-0.82	23/33	0.02%	0.61	0.53	126/147	0.9678
-7	0.40%	1.09	1.59	32/24	0.05%	0.91	1.50	134/139	0.4189
-6	0.53%	1.19	1.59	32/24	-0.02%	-0.08	0.77	128/145	0.1929
-5	-0.30%	-0.27	-1.63	20/36	0.06%	0.15	0.28	124/149	0.3376
-4	-0.24%	-0.34	-0.29	25/31	-0.71%	-3.53***	-3.74***	91/182	0.1286
-3	0.13%	1.27	1.05	30/26	-0.32%	-2.10*	-1.86$	106/166	0.1920
-2	-0.50%	-1.25	-1.09	22/34	-0.35%	-1.30	-0.20	120/153	0.7065
-1	**-1.33%**	**-3.05****	**-2.43***	**17/39**	**-2.01%**	**-8.66*****	**-6.66*****	**67/206**	**0.1323**
0	**-0.81%**	**-1.82$**	**-0.82**	**23/33**	**-0.60%**	**-2.83****	**-1.30**	**111/162**	**0.7138**
1	**1.01%**	**2.08***	**3.20****	**38/18**	**0.00%**	**-0.11**	**0.04**	**122/151**	**0.0617**
2	0.05%	-0.09	-1.90$	19/37	-0.34%	-1.47	-0.81	115/158	0.3012
3	0.02%	-0.07	-0.82	23/33	-0.02%	-0.09	-0.33	119/154	0.9141
4	0.26%	1.66$	2.39*	35/21	-0.15%	0.06	0.41	125/148	0.2508
5	0.41%	1.24	2.12*	34/22	-0.10%	-0.93	-0.20	120/153	0.1993
6	0.53%	1.71$	2.12*	34/22	-0.13%	-0.87	-0.57	117/156	0.0877
7	0.32%	0.99	1.05	30/26	-0.48%	-1.89$	-2.15*	104/169	0.0211
8	-0.79%	-2.75**	-2.97**	15/41	-0.38%	-1.80$	-0.45	118/155	0.3570
9	-0.02%	-0.53	-1.36	21/35	-0.06%	-0.42	-1.67$	108/165	0.9403
10	-0.11%	-1.53	-0.29	25/31	-0.20%	-1.21	-0.20	120/153	0.7806

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 16 : Cumulative Abnormal Returns - Parametric Test
Summary of Event Study Results
Estimation Period = 63 days
Reference Portfolio = Equal Weighted
T-Test Statistics for means are equal is included

Event Study Windows	Hedgers: Mean Cumulative Abnormal Return	Hedgers: SCS Z	Hedgers: Generalized Sign Z	Hedgers: Positive/ Negative	Non-Hedgers: Mean Cumulative Abnormal Return	Non-Hedgers: SCS Z	Non-Hedgers: Generalized Sign Z	Non-Hedgers: Positive/ Negative	P-Value (Ho-means are equal)
(-10,+10)	0.18%	0.27	-0.48	24/32	-6.57%	-6.25***	-3.32***	97/176	0.0009
(-10,-2)	1.32%	1.93$	2.47*	35/21	-1.84%	-2.43*	-2.11*	107/166	0.0066
(-5,+5)	-1.44%	-0.65	0.60	28/28	-4.85%	-7.55***	-6.12***	74/199	0.0212
(-5,-2)	-0.83%	-0.36	0.06	26/30	-1.37%	-3.47***	-2.23*	106/167	0.5051
(-4,+4)	-1.46%	-1.08	0.33	27/29	-4.81%	-7.85***	-6.12***	74/199	0.0057
(-4,-1)	-1.82%	-2.55*	-2.09*	18/38	-3.51%	-8.14***	-5.15***	82/191	0.1292
(-2,+2)	-1.47%	-2.01*	-1.28	21/35	-3.46%	-7.33***	-5.27***	81/192	0.0460
(-1,+1)	**-1.15%**	**-1.86$**	**-2.09***	**18/38**	**-2.67%**	**-6.74*** **	**-5.27*** **	**81/192**	**0.0609**
(-1,0)	-2.09%	-3.09**	-3.16**	14/42	-2.66%	-7.18***	-6.48***	71/202	0.4358
(0,+1)	0.13%	0.18	0.33	27/29	-0.62%	-2.35*	-1.86$	109/164	0.3259
(0,+5)	0.66%	0.87	0.60	28/28	-1.43%	-3.26**	-1.499	112/161	0.0631
(+2,+10)	0.00%	-0.08	-0.21	25/31	-2.07%	-3.05**	-1.86$	109/164	0.0927
(0,+10)	0.14%	0.04	0.33	27/29	-2.68%	-4.00***	-2.59**	103/170	0.0488

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 17 : Cumulative Abnormal Returns - *Parametric Test*
Summary of Event Study Results
Estimation Period = 63 days
Reference Portfolio = Value Weighted
T-Test Statistics for means are equal is included

Event Study Windows	Hedgers: Mean Cumulative Abnormal Return	Hedgers: SCS Z	Hedgers: Generalized Sign Z	Hedgers: Positive/ Negative	Non-Hedgers: Mean Cumulative Abnormal Return	Non-Hedgers: SCS Z	Non-Hedgers: Generalized Sign Z	Non-Hedgers: Positive/ Negative	P-Value (Ho-means are equal)
(-10,+10)	-1.06%	-0.86	-1.30	21/35	-7.60%	-7.35***	-4.22***	90/183	0.0007
(-10,-2)	0.50%	0.93	1.92$	33/23	-2.14%	-2.87**	-2.40*	105/168	0.0287
(-5,+5)	-2.20%	-1.64	-1.30	21/35	-5.31%	-8.12***	-6.53***	71/202	0.0331
(-5,-2)	-1.27%	-1.18	-0.77	23/33	-1.54%	-3.73***	-2.77**	102/171	0.7531
(-4,+4)	-2.11%	-1.98*	-1.03	22/34	-5.19%	-8.43***	-6.05***	75/198	0.0131
(-4,-1)	-2.33%	-3.54***	-1.84$	19/37	-3.67%	-8.35***	-5.20***	82/191	0.0760
(-2,+2)	-2.07%	-2.99**	-1.57	20/36	-3.67%	-7.62***	-5.68***	78/795	0.1178
(-1,+1)	**-1.42%**	**-2.52***	**-2.37***	**17/39**	**-2.84%**	**-7.15*****	**-5.44*****	**80/193**	**0.0831**
(-1,0)	-2.36%	-3.62***	-2.91**	15/41	-2.76%	-7.47***	-6.17***	74/199	0.5659
(0,+1)	0.04%	-0.19	0.31	27/29	-0.75%	-2.70**	-1.92$	109/164	0.2986
(0,+5)	0.54%	0.53	-0.23	25/31	-1.68%	-3.78***	-0.822	118/155	0.0410
(+2,+10)	-0.14%	-0.54	-1.03	22/34	-2.62%	-4.13***	-2.16*	107/166	0.0301
(0,+10)	-0.09%	-0.53	-0.50	24/32	-3.37%	-5.20***	-3.62***	95/178	0.0158

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 18 : Cumulative Abnormal Returns - Parametric Test
Summary of Event Study Results
Estimation Period = 126 days
Reference Portfolio = Value Weighted
T-Test Statistics for means are equal is included

Event Study Windows	Hedgers				Non-Hedgers				P-Value (Ho-means are equal)
	Mean Cumulative Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	Mean Cumulative Abnormal Return	SCS Z	Generalized Sign Z	Positive/ Negative	
(-10,+10)	-0.07%	-0.45	-0.50	24/32	-7.03%	-7.89***	-4.27***	88/185	0.0000
(-10,-2)	0.89%	1.16	1.91$	33/23	-1.98%	-2.87**	-2.32*	104/169	0.0092
(-5,+5)	-1.75%	-1.38	-1.03	22/34	-5.05%	-8.86***	-6.09***	73/200	0.0081
(-5,-2)	-1.10%	-0.88	-0.23	25/31	-1.52%	-4.00***	-2.32*	104/169	0.7003
(-4,+4)	-1.77%	-1.64	-1.03	22/34	-4.95%	-8.89***	-5.12***	81/192	0.0032
(-4,-1)	-2.15%	-3.20**	-2.64**	16/40	-3.61%	-8.84***	-5.12***	81/192	0.0353
(-2,+2)	-1.82%	-2.69**	-1.84$	19/37	-3.49%	-8.02***	-5.36***	79/194	0.0746
(-1,+1)	**-1.30%**	**-2.27***	**-2.64****	**16/40**	**-2.72%**	**-7.55*****	**-5.24*****	**80/193**	**0.0667**
(-1,0)	-2.29%	-3.57***	-3.18**	14/42	-2.69%	-8.02***	-5.97***	74/199	0.5568
(0,+1)	0.10%	-0.05	0.31	27/29	-0.66%	-2.52*	-1.59	110/163	0.3018
(0,+5)	0.76%	0.69	-0.77	23/33	-1.47%	-3.48***	-0.86	116/157	0.0243
(+2,+10)	0.34%	-0.23	-1.03	22/34	-2.33%	-3.87***	-2.81**	100/173	0.0161
(0,+10)	0.45%	-0.22	-0.23	25/31	-2.99%	-5.06***	-3.29***	96/177	0.0067

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 19 : Cumulative Abnormal Returns - Parametric Test
Summary of Event Study Results
Estimation Period = 252 days
Reference Portfolio = Equal Weighted
T-Test Statistics for means are equal is included

Event Study Windows	Hedgers Mean Cumulative Abnormal Return	Hedgers SCS Z	Hedgers Generalized Sign Z	Hedgers Positive/ Negative	Non-Hedgers Mean Cumulative Abnormal Return	Non-Hedgers SCS Z	Non-Hedgers Generalized Sign Z	Non-Hedgers Positive/ Negative	P-Value (Ho-means are equal)
(-10,+10)	1.48%	1.02	1.06	30/26	-5.40%	-6.40***	-4.83***	83/190	0.0000
(-10,-2)	1.79%	2.34*	3.20**	38/18	-1.45%	-2.20*	-2.16*	105/168	0.0023
(-5,+5)	-0.91%	-0.40	0.26	27/29	-4.35%	-8.15***	-6.17***	72/201	0.0057
(-5,-2)	-0.69%	-0.12	-0.28	25/31	-1.26%	-3.38***	-2.16*	105/168	0.4510
(-4,+4)	-1.08%	-0.89	-1.62	20/36	-4.36%	-8.04***	-4.59***	85/188	0.0013
(-4,-1)	-1.76%	-2.75**	-1.89$	19/37	-3.34%	-8.64***	-5.32***	79/194	0.0207
(-2,+2)	-1.30%	-2.11*	-1.62	20/36	-3.29%	-7.84***	-4.96***	82/191	0.0277
(-1,+1)	**-1.00%**	**-2.00***	**-1.89$**	**19/37**	**-2.58%**	**-7.46*****	**-6.66*****	**68/205**	**0.0359**
(-1,0)	-2.07%	-3.48***	-3.76***	12/44	-2.59%	-8.04***	-6.54***	69/204	0.4412
(0,+1)	0.28%	0.29	0.26	27/29	-0.56%	-2.24*	-1.79$	108/165	0.2467
(0,+5)	1.07%	1.20	1.06	30/26	-1.06%	-2.58**	-1.06	114/159	0.0314
(+2,+10)	0.69%	0.39	0.26	27/29	-1.37%	-2.11*	-1.31	112/161	0.0754
(0,+10)	0.97%	0.49	0.26	27/29	-1.93%	-3.21**	-2.04*	106/167	0.0248

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 20 : Cumulative Abnormal Returns - Parametric Test
Summary of Event Study Results
Estimation Period = 252 days
Reference Portfolio = Value Weighted
T-Test Statistics for means are equal is included

Event Study Windows	Hedgers Mean Cumulative Abnormal Return	Hedgers SCS Z	Hedgers Generalized Sign Z	Hedgers Positive/ Negative	Non-Hedgers Mean Cumulative Abnormal Return	Non-Hedgers SCS Z	Non-Hedgers Generalized Sign Z	Non-Hedgers Positive/ Negative	P-Value (Ho-means are equal)
(-10,+10)	0.83%	0.29	-0.29	25/31	-6.06%	-7.09***	-4.71***	83/190	0.0000
(-10,-2)	1.29%	1.69$	2.12*	34/22	-1.59%	-2.33*	-1.67$	108/165	0.0092
(-5,+5)	-1.30%	-0.92	-1.36	21/35	-4.54%	-8.39***	-5.20***	79/194	0.0086
(-5,-2)	-0.91%	-0.40	-0.29	25/31	-1.32%	-3.37***	-1.18	112/161	0.6124
(-4,+4)	-1.41%	-1.31	-0.29	25/31	-4.50%	-8.38***	-4.95***	81/192	0.0033
(-4,-1)	-1.94%	-2.78**	-2.16*	18/38	-3.39%	-8.61***	-4.83***	82/191	0.0388
(-2,+2)	-1.58%	-2.58**	-1.36	21/35	-3.30%	-7.88***	-5.20***	79/194	0.0598
(-1,+1)	**-1.13%**	**-2.28***	**-2.16***	**18/38**	**-2.61%**	**-7.66*****	**-6.29*****	**70/203**	**0.0492**
(-1,0)	-2.14%	-3.57***	-3.77***	12/44	-2.61%	-8.17***	-6.17***	71/202	0.4787
(0,+1)	0.20%	0.05	0.25	27/29	-0.60%	-2.39*	-1.42	110/163	0.2709
(0,+5)	0.94%	0.92	0.78	29/27	-1.21%	-2.91**	-0.69	116/157	0.0238
(+2,+10)	0.67%	0.11	-0.29	25/31	-1.86%	-3.04**	-1.91$	106/167	0.0241
(0,+10)	0.87%	0.12	-0.02	26/30	-2.46%	-4.15***	-2.27*	103/170	0.0083

Note: The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 21 : Cumulative Abnormal Returns - Nonparametric Tests
Summary of Event Study Results
Estimation Period = 63 days
Reference Portfolio = Equal Weighted
Nonparametric test (Wilcoxon Rank Sum Test) for medians are equal is included

Event Study Windows	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	
(-10,+10)	-2.47%	0.3497	0.7781	-7.05%	<.0001	<.0001	0.0033
(-10,-2)	1.66%	0.0814	0.0947	-2.11%	0.0004	0.0033	0.0112
(-5,+5)	-0.10%	1.0000	0.3445	-5.15%	<.0001	<.0001	0.0013
(-5,-2)	-0.22%	0.6889	0.4011	-1.27%	0.0003	0.0001	0.3102
(-4,+4)	-0.30%	0.8939	0.1413	-4.84%	<.0001	<.0001	0.0013
(-4,-1)	-1.11%	0.0105	0.0051	-3.24%	<.0001	<.0001	0.0417
(-2,+2)	-0.83%	0.0814	0.0455	-3.27%	<.0001	<.0001	0.0207
(-1,+1)	**-1.17%**	**0.0105**	**0.0275**	**-2.95%**	**<.0001**	**<.0001**	**0.0390**
(-1,0)	-1.82%	0.0002	<.0001	-2.60%	<.0001	<.0001	0.1467
(0,+1)	-0.12%	0.8939	0.9167	-0.87%	0.0010	0.0094	0.2240
(0,+5)	0.00%	1.0000	0.6403	-1.55%	0.0036	0.0002	0.0525
(+2,+10)	-0.31%	0.5044	0.6991	-2.06%	0.0010	0.0002	0.1513
(0,+10)	-0.31%	0.8939	0.8468	-3.30%	<.0001	<.0001	0.0254

Note:
The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 22 : Cumulative Abnormal Returns - Nonparametric Tests
Summary of Event Study Results
Estimation Period = 63 days
Reference Portfolio = Value Weighted
Nonparametric test (Wilcoxon Rank Sum Test) for medians are equal is included

Event Study Windows	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	
(-10,+10)	-3.20%	0.0814	0.2537	-8.04%	<.0001	<.0001	0.0040
(-10,-2)	1.55%	0.2288	0.4057	-2.17%	0.0002	0.0008	0.0305
(-5,+5)	-1.45%	0.0814	0.0724	-5.68%	<.0001	<.0001	0.0021
(-5,-2)	-0.37%	0.2288	0.1753	-1.37%	<.0001	<.0001	0.3596
(-4,+4)	-0.85%	0.1409	0.0313	-5.13%	<.0001	<.0001	0.0021
(-4,-1)	-2.54%	0.0222	0.0002	-3.62%	<.0001	<.0001	0.0747
(-2,+2)	-1.32%	0.044	0.0067	-3.68%	<.0001	<.0001	0.0478
(-1,+1)	**-1.75%**	**0.0046**	**0.0101**	**-3.03%**	**<.0001**	**<.0001**	**0.0773**
(-1,0)	-2.48%	0.0007	<.0001	-2.78%	<.0001	<.0001	0.3113
(0,+1)	-0.09%	0.8939	0.7967	-0.73%	0.001	0.0053	0.2311
(0,+5)	-1.19%	0.5044	0.772	-1.23%	0.0292	<.0001	0.0602
(+2,+10)	-0.55%	0.1409	0.3571	-2.91%	0.0004	<.0001	0.0848
(0,+10)	-1.67%	0.3497	0.7474	-3.90%	<.0001	<.0001	0.0208

Note:
The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 23 : Cumulative Abnormal Returns - Nonparametric Tests
Summary of Event Study Results
Estimation Period = 126 days
Reference Portfolio = Value Weighted
Nonparametric test (Wilcoxon Rank Sum Test) for medians are equal is included

Event Study Windows	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	
(-10,+10)	-1.58%	0.3497	0.7535	-7.55%	<.0001	<.0001	0.0002
(-10,-2)	1.29%	0.2288	0.209	-2.17%	0.0001	0.0005	0.0085
(-5,+5)	-0.95%	0.1409	0.0883	-5.02%	<.0001	<.0001	0.0017
(-5,-2)	-0.31%	0.5044	0.1528	-1.46%	0.0001	<.0001	0.3504
(-4,+4)	-1.11%	0.1409	0.0327	-5.58%	<.0001	<.0001	0.0015
(-4,-1)	-2.39%	0.0018	0.0001	-3.38%	<.0001	<.0001	0.0649
(-2,+2)	-1.72%	0.0222	0.006	-3.71%	<.0001	<.0001	0.0706
(-1,+1)	**-1.70%**	**0.0018**	**0.0085**	**-3.06%**	**<.0001**	**<.0001**	**0.0677**
(-1,0)	-2.31%	0.0002	<.0001	-2.64%	<.0001	<.0001	0.3069
(0,+1)	-0.03%	0.8939	0.8721	-0.85%	0.0016	0.0053	0.1949
(0,+5)	-0.62%	0.2288	0.828	-1.11%	0.0153	0.0002	0.0747
(+2,+10)	-0.79%	0.1409	0.4829	-2.35%	<.0001	<.0001	0.0479
(0,+10)	-1.90%	0.5044	0.9743	-3.45%	<.0001	<.0001	0.0101

Note:
The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 24 : Cumulative Abnormal Returns - Nonparametric Tests
Summary of Event Study Results
Estimation Period = 252 days
Reference Portfolio = Equal Weighted
Nonparametric test (Wilcoxon Rank Sum Test) for medians are equal is included

Event Study Windows	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	
(-10,+10)	0.61%	0.6889	0.4290	-6.65%	<.0001	<.0001	<.0001
(-10,-2)	1.86%	0.0105	0.0210	-1.89%	0.0002	0.0021	0.0015
(-5,+5)	-0.50%	0.8939	0.4338	-4.83%	<.0001	<.0001	0.0008
(-5,-2)	-0.44%	0.5044	0.3656	-1.62%	0.0002	0.0001	0.2918
(-4,+4)	-1.33%	0.0440	0.1069	-5.18%	<.0001	<.0001	0.0006
(-4,-1)	-1.29%	0.0222	0.0025	-3.40%	<.0001	<.0001	0.0467
(-2,+2)	-1.31%	0.0440	0.0428	-3.42%	<.0001	<.0001	0.0166
(-1,+1)	**-1.18%**	**0.0222**	**0.0166**	**-2.91%**	**<.0001**	**<.0001**	**0.0188**
(-1,0)	-1.82%	<.0001	<.0001	-2.74%	<.0001	<.0001	0.1431
(0,+1)	-0.13%	0.8939	0.7474	-0.81%	0.0007	0.0111	0.1270
(0,+5)	0.20%	0.6889	0.3362	-1.02%	0.0076	0.0027	0.0309
(+2,+10)	-0.18%	0.8939	0.8658	-1.33%	0.0036	0.0029	0.1377
(0,+10)	-0.11%	0.8939	0.4290	-2.80%	0.0003	<.0001	0.0094

Note:
The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

TABLE 25 : Cumulative Abnormal Returns - Nonparametric Tests
Summary of Event Study Results
Estimation Period = 252 days
Reference Portfolio = Value Weighted
Nonparametric test (Wilcoxon Rank Sum Test) for medians are equal is included

Event Study Windows	Hedgers			Non-Hedgers			Wilcoxon Scores (Rank Sums)
	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	Median Cumulative Abnormal Return	Sign Test	Wilcoxon Signed Rank	
(-10,+10)	-0.69%	0.5044	0.9487	-6.49%	<.0001	<.0001	<.0001
(-10,-2)	2.02%	0.1409	0.1051	-1.98%	0.0007	0.0018	0.0056
(-5,+5)	-1.21%	0.0814	0.1753	-5.01%	<.0001	<.0001	0.0016
(-5,-2)	-0.26%	0.5044	0.3122	-1.47%	0.0036	<.0001	0.3924
(-4,+4)	-0.68%	0.5044	0.0822	-4.97%	<.0001	<.0001	0.0009
(-4,-1)	-1.51%	0.0105	0.0010	-3.48%	<.0001	<.0001	0.0573
(-2,+2)	-1.46%	0.0814	0.0215	-3.29%	<.0001	<.0001	0.0449
(-1,+1)	**-1.50%**	**0.0105**	**0.0130**	**-2.96%**	**<.0001**	**<.0001**	**0.0437**
(-1,0)	-2.04%	<.0001	<.0001	-2.81%	<.0001	<.0001	0.2254
(0,+1)	-0.23%	0.8939	0.8816	-0.84%	0.0016	0.0096	0.1546
(0,+5)	0.19%	0.8939	0.5242	-0.80%	0.0153	0.0013	0.0396
(+2,+10)	-0.33%	0.5044	0.6931	-1.99%	0.0003	0.0002	0.0719
(0,+10)	-0.71%	0.6889	0.6288	-2.81%	<.0001	<.0001	0.0078

Note:
The symbols $,*,, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 2-tailed test.**

Appendix B:

- How to Use the "Users of Derivatives" Database

In this paper, we use "The Users of Derivatives Database (Interest Rate and Currency Edition", constructed by a New York based company – *Swaps Monitor Publications*, as the source of financial derivatives usage of US companies. The latest edition of "The Users of Derivatives Database (Interest Rate and Currency Edition)" contains information on 3478 companies that were users of interest rate and currency derivatives during 1992 through 1997 (the third quarter).

Swaps Monitor Publications states that the database contains information regarding the incidence and extent of OTC and exchange-traded derivatives usage by corporations, banks, thrifts, insurance companies, government agencies and other entities in the US for fiscal years endings in 1992 through 1997 (the third quarter). The coverage of corporations includes all Fortune 500 and Business Week 1000 firms, all other industrial firms with revenues greater than $500 million or assets greater than $500 million, and other known derivatives users regardless of their size.

As in the description of database, *Swaps Monitor Publications* collected the information from public resources, principally from annual reports but also from filing with regular agencies, on derivatives users during the period from 1992 to 1997. Moreover, in the process of constructing the database, they have attempted to include as much as possible of detailed derivatives discloser that US companies have been providing. The database contains all firms that have been users of derivative during 1992 to 1997.

Numerical amounts

The spreadsheet named "Contract File" in the "Users of Derivatives Database" reports for each firm the notional amount of interest rate and currency derivatives, including swaps, forwards, futures and options. Unfortunately, no outstandings can be shown for companies which use derivatives but which make no disclosure of that fact. All numerical amounts are in millions of dollars. However, because numerical fields cannot distinguish between a number that is truly zero and one that is zero because there is no other information to go into that cell, Swaps Monitor has developed two special designations (negative two and 99999) to represent a true zero. A third special designation (negative one) indicates that the company is a user of the instrument in question, but the extent of its usage is unknown. The three special designations are as follows:

Designation	Meaning
-1	The company is known to be a user of the instrument in question. However, it does not disclose the numerical amount of its usage.
-2	Zero. It is used in the Contracts, Maturities, Volume and Commodities spreadsheets. According to further explanations by *Swaps Monitor Publications*, "-2" means that the company disclosed the usage of this instrument to be 0 or the number is less than $50,000 dollars.
99999	Zero. It is used in the Market spreadsheets.
0	It indicates that the company discloses **no information** in terms of the usage of the instrument.

Summary of the data in the Interest Rate and Currency Edition

The following is a general summary intended to give an overall picture of the Database.

Type	Total in Database	With address	With named financial officer	With named counterparty
Agency	29	29	26	0
Corporate	1,700	1,699	1,637	70
Dealer	31	31	28	0
Financial institution (other)	112	112	103	6
Insurance holding company	54	54	53	6
Insurance company	206	206	195	99
Regional bank holding company	168	168	160	0
Thrift	56	56	50	2
US branch of foreign bank	309	300	0	0
US commercial bank	813	810	0	0
Total	3,478	3,465	2,252	183

Database of Users of Derivatives (list of columns)

Contracts Spreadsheets (Contracts Files)

These spreadsheets list the notional amounts of over-the-counter and exchange-traded interest rate and currency derivatives outstanding at period-end.

Column	Heading	Description
A	Company	Company name.
B	Record No	Unique record number.
C	Code	Industry code: A = Agency B = US commercial bank C = Corporate D = Dealer F = Financial institution (other) H = Insurance holding company I = Insurance company N = US branch of a foreign bank R = Regional bank holding company T = Thrift.
D	Date	Balance sheet date for all numbers in the Contracts Spreadsheets.
E	Int Rate Swaps	Total interest rate swaps. Equals the sum of columns F and G.
F	Risk Man	Of the total interest rate swaps (column E), the amount that are for risk management purposes. Equals the sum of columns H, I, J and K.
G	Non-Risk Man	Of the total interest rate swaps (column E), the amount that are for trading or customer accommodation purposes.

Column	Heading	Description
H	RMIRS Pay-fixed	Of the risk management swaps (column F), the amount that are pay-fixed.
I	RMIRS Receive-fixed	Of the risk management swaps (column F), the amount that are receive-fixed. Equals the sum of columns L and M.
J	RMIRS Basis	Of the risk management swaps (column F), the amount that are basis swaps.
K	RMIRS Others	Of the risk management swaps (column F), the amount that are swaps of other types.
L	Rec-Fix Index-Am	Of the receive-fixed risk management swaps (column I), the amount that are index-amortizing.
M	Rec-Fix Others	Of the receive-fixed risk management swaps (column I), the amount that are not indexamortizing.
N	Int Rate Options	Total interest rate options. Equals the sum of columns O and P, or of Q and T.
O	IRO Purch	Purchased interest rate options.
P	IRO Sales	Sold total interest rate options.
Q	IRO OTC	Total OTC interest rate options. These are defined as caps, floors, collars, corridors, swaptions and options on swap spreads. Equals the sum of columns R and S, or of W, Z and AC.
R	IRO OTC Purch	Of the OTC interest rate options (column Q), the amount that are purchases. Equals the sum of columns X, AA and AD.
S	IRO OTC	Sales Of the OTC interest rate options (column Q), the amount that are sales. Equals the sum of columns Y, AB and AE.
T	IRO	Others Total other interest rate options. These are Defined as all options other than OTC (as defined above). Includes Treasury and other bond options, as well as options on futures. Equals the sum of columns U and V.
U	IRO Oth Purch	Of the other interest rate options (column T), the amount that are purchases.
V	IRO Oth Sales	Of the other interest rate options (column T), the amount that are sales.
W	Caps Tot	Total caps. Equals the sum of columns X and Y.
X	Caps Purch	Purchased caps.
Y	Caps Sales	Sold caps.
Z	Floors Tot	Total floors. Equals the sum of columns AA and AB.
AA	Floors Purch	Purchased floors.
AB	Floors Sales	Sold floors.
AC	Swaptions Tot	Total swaptions. Equals the sum of columns AD and AE.
AD	Swaptions Purch	Purchased swaptions.
AE	Swaptions Sales	Sold swaptions.
AF	Collars	Collars are disaggregated and allocated to both caps and floors. e.g. a $50m purchased collar would add $50m to purchased caps and $50m to sold floors.

Column	Heading	Description
AG	Corridors	Corridors are disaggregated and allocated to both purchased and sold caps. e.g. a $50m corridor would add $50m to purchased caps and $50m to sold caps.
AH	Int Rate Fors & Futs	Interest rate forwards and futures. Equals the sum of columns AI, AJ and AK.
AI	Int Futures	Interest rate futures.
AJ	Int Forwards	Interest rate forwards.
AK	FRAs	Forward rate agreements.
AL	Tot Int Derivs	Total interest rate derivatives. The sum of columns E, N and AH.
AM	Int Rate Currs	The currencies (other than US$) in which the interest rate derivatives are denominated. For a list of the currency abbreviations used in this column, see the description for column AW below.
AN	Curr Swaps	Currency swaps.
AO	Curr & Int Swaps	Total currency and interest rate swaps. The sum of columns E and AN.
AP	Curr Futures	Currency futures.
AQ	Curr Forwards	Currency forwards.
AR	Curr Options Tot	Total currency options, both over-the-counter and exchange-traded. Equals the sum of columns AS and AT.
AS	Curr Op Purch	Purchased currency options.
AT	Curr Op Sales	Sold currency options.
AU	Tot Curr Derivs	Total currency derivatives. The sum of columns AN, AP, AQ and AR.
AV	Tot Int & Curr Derivs	Total interest rate and currency derivatives. The sum of columns AL and AU.
AW	Curr Currs	The currencies (other than US$) in which the currency derivatives are denominated. Argentine pesos ArP Australian dollars A$ Austrian schillings Sch Belgian francs BFr Brazilian cruzeiros BCr Canadian dollars C$ Chilean pesos ChP Columbian pesos CoP Czech Koruna CzK Danish kroner DKr Deutsche marks DM European currency units ECU Finnish markkaa FMk French francs FFr Greek drachmas GrD Hong Kong dollars HK$ Indonesian rupiah IRu Irish punt I£ Israeli shekels NIS Italian lira Lira

Column	Heading	Description
		Japanese yen ¥ Kuwaiti dinars KDi Luxembourg francs LFr Malaysian ringgits MRn Mexican pesos NP Netherlands guilders NLG New Zealand dollars NZ$ Norwegian krone NKr Other Others Polish Zloty PZl Portuguese escudos Esc Pounds sterling £ Saudi riyals SRi Singapore dollars S$ South African rand SAR Spanish pesetas Pta Swedish kroner SKr Swiss francs SFr Taiwanese dollars T$ Thai baht ThB
AX	Assets Total	gross assets at the balance sheet date.