

# Managing Risk Management\*

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Draft: March 2011

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We survey and analyze risk management goals, policies, and perceptions of risk managers in businesses and organizations around the world. With more than 1,100 responses and a global scope, we ask specific questions about risk management behavior in six risk areas: interest rate, foreign exchange, commodity, energy, credit, and geopolitical risk. We question risk managers about their firm's exposures to these risks areas as well as their financial and operational methods used to in risk management. In addition, we pose specific questions about the interaction between risk management and the firm's investing and financing policies as well as explore the impact of recent and possible changes to derivatives market regulation on the firm's derivative usage. As some questions in the survey are drawn directly from earlier surveys we are able to assess changes in policy and practice over time. Finally, we link the personal characteristics of risk managers to their practices. For example, we are able to determine whether a manager's personal risk aversion is linked to the risk management policy that manager oversees. Overall the results suggest that in the post global financial crisis world, risk management is an important part of corporate activities and that best practice in risk management policy and behavior has become global.

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\*The survey was carried out with support from CFO Publishing, The Global Association of Risk Professionals, the International Swap and Derivatives Association, and the Weiss Center for International Finance at the Wharton School of the University of Pennsylvania.

# Managing Risk Management

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We survey and analyze risk management goals, policies, and perceptions of risk managers in businesses and organizations around the world. With more than 1,100 responses and a global scope, we ask specific questions about risk management behavior in six risk areas: interest rate, foreign exchange, commodity, energy, credit, and geopolitical risk. We question risk managers about their firm's exposures to these risks areas as well as their financial and operational methods used to in risk management. In addition, we pose specific questions about the interaction between risk management and the firm's investing and financing policies as well as explore the impact of recent and possible changes to derivatives market regulation on the firm's derivative usage. As some questions in the survey are drawn directly from earlier surveys we are able to assess changes in policy and practice over time. Finally, we link the personal characteristics of risk managers to their practices. For example, we are able to determine whether a manager's personal risk aversion is linked to the risk management policy that manager oversees. Overall the results suggest that in the post global financial crisis world, risk management is an important part of corporate activities and that best practice in risk management policy and behavior has become global.

**Keywords:** Corporate risk management, Global survey

**JEL Classification:** G32

## 1. Introduction

Unlike other areas of finance, risk management is a practice that is difficult for outsiders to observe. While disclosure about risk management activities has become more prevalent in the past decade, such disclosures tell only part of the story about firm behavior and very little about the underlying thinking of the managers making the risk management decisions within the firm. One of the few ways to understand both risk management practice as well as philosophy within the business community is to survey and interview managers.<sup>1</sup>

This study is designed to provide a benchmark of the state of business risk management in the post global financial crisis world. While part of this survey is modeled loosely on the earlier Wharton survey structures in order to allow for comparisons across similar questions to examine changes in behavior over time, (Bodnar et al, (1995, 1996 and 1998)) this survey is different from past surveys in several important ways. First, it is much more expansive in coverage, both in terms of the risk areas it covers as well as the global expanse of its sample. The survey questions managers about risk in six different areas: interest rate, foreign exchange, energy, commodity, credit and geo-political. In terms of the breadth of the sample, we include both financial and nonfinancial firms, and geographically this survey is one of the first that is truly global in coverage rather than examining just a single country.<sup>2</sup> This allows for an unprecedentedly large response group from which we draw representative conclusions about current risk management practice and philosophy, both for the sample as a whole as well as for key subgroups.

Second, in comparison to many of the earlier surveys that focus only the use of derivatives for managing risk, this survey is more comprehensive, questioning managers about both financial as well as operational methods for managing risk. As we will see, this is an important expansion of investigation as for many of the risk areas examined; it will be operational methods rather than financial methods that are more commonly used by firms to manage these risks.

Third, we link the demographic characteristics of both firms and managers to risk management practices. We use psychometric methods to assess manager risk aversion and link this as well as other manager and firm

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<sup>1</sup> See Appendix 1 for a (non exhaustive) list of past surveys of derivative use and risk management practice

<sup>2</sup> A survey of Deutsche Bank customers risk management policies by Servaes et al (2009) was also global in its sample structure but much smaller in size than this survey .

specific characteristics to the firms' risk management policy. In addition, the survey is able to determine why managers choose not to hedge—something that is impossible to observe with standard empirical methods.

The next section provides a discussion of the survey design, the sample creation and the survey distribution. Section 3 contains the summary of sample demographics, while Section 4 summarizes the responses to the general questions about risks and the firms' risk management programs. Section 5 discusses the responses to questions for the specific risk areas and Section 6 analyzes the link between managerial and firm characteristics and hedging policies. Some concluding remarks are offered in Section 7.

## **2. Survey Design, Sample and Survey Distribution**

Our survey starts off with questions identifying the types of risks the respondent's firm faces and manages. If the firm indicates that they use financial derivatives there is a second section that with detailed questions about their derivatives use and control. If firms do not use derivatives, the survey directs them to questions investigating their non-use of derivatives. The survey follows this "branching" method for all size area of risk management.

The core of our sample is the firms that participate in the Duke Quarterly CFO survey. We also gained the assistance of a few large trade organizations, the International Swaps and Derivatives Association (ISDA) membership and the Global Association of Risk Professionals (GARP). Our initial sample list had over 50,000 email addresses. This group included both private and public firms, non-profit organizations and associations as well as some government owned/controlled entities. The survey is anonymous and, hence, any demographic information comes from our survey—not traditional sources like Compustat.

The survey was put on-line and email requests were sent out the last week of February 2010. Subsequent emails were sent out in March and the survey site was closed at the end of April 2010. In all we received 1,161 responses. Although this translates into a response rate of only about 2%, a large percentage of the original email list consisted of people other than business risk management officers and so were not suitable participants. We screened respondents who accessed the survey website and turned away those who indicated that they were not involved in risk management at their firm or entity or were not at a business related entity (i.e., regulators or trade

associations). Nonetheless, with 1,161 responses, this is, to our knowledge, the largest collection of responses on risk management ever collected.

With our survey consisting of eight sections, some with as many as 10 -12 questions, it would be too burdensome to ask each respondent to fill out the entire survey, especially if they faced risk in each of the six areas. As a result, we designed a randomization structure for the survey participants. All survey participants filled out the general sections on risk management and derivative use or non use and the demographic section. However, if they indicated that they managed risk in more than one of the six areas, we randomized which sections (up to two) that they would have to fill out. To address survey fatigue, we also randomized the order in which the sections were presented.<sup>3</sup>

### **3. Sample Characteristics**

A demographic breakdown of the respondents is given in Table 1. The table shows the breakdown by region (location of headquarters), basic industry by broad sector, size in terms of annual gross sales (in USD), structure of ownership (whether publicly traded, privately owned, government owned or a non-profit) and credit rating (self reported). The sample is very diverse in all dimensions. Casual observation suggests that the response group appears to be tilted towards North American firms, financial firms, large firms, privately held firms and firms with strong credit ratings, relative to overall population. However, given our large sample size we can study various subsamples to assess any impacts on the overall results from any particular subsample of respondents. In many cases, in addition to the overall top-line results, we will try to show interesting differences between financial and non-financial firms as well as North American versus foreign (Rest of the World) firms.

### **4. Summary of Survey Responses for General Sections**

#### ***4.1 Section with General Risk Management Questions***

The first section was designed to identify the risks the firms face and manage as well as learn some features of a given firms' overall risk management program. We began by asking firms about whether they face "material" risk

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<sup>3</sup> There is no evidence that the order of the presentation of the sections affected the responses.

in each of the six following areas: interest rate (IR) , foreign exchange (FX) , energy (EN), commodity (CM), credit (CR) and geo-political (GP).<sup>4</sup> Figure 1a shows that a majority of respondents report facing material risk in three of the six areas , IR (71% of respondents), FX (63%), and CR (56%). EN, CM and GP were material risks for one-third or less of the respondents. Figure 1B shows the results of this question for two sets of subgroups: financial versus non-financial and North American versus foreign (Non- North American). Financial firms were notably more likely to indicate material risk in IR (91%), FX (85%), and CR (85%), while relatively fewer non-financial firms indicated material risk in IR and FX (58% for each) and CR (40%). Slightly more non-financial firms indicated material risk to EN (35%) and CM (39%) than for the full sample. Geographically, while similar percentages of North American firms and foreign firms felt material risk to interest rates (64%), the big difference is in FX where fewer North American firms reported facing material risk (43%) compared to the foreign firms (69%). North American firms reported slightly higher percentages of material risk in the other areas except for CR where more foreign firms (57%) felt material risk compared to North American firms (44%).

For the firms facing material risk in a given area, we asked them to indicate whether they actively manage this risk either through derivatives/other financial contracts or through the operational structure or decisions. Figure 2 shows the percentage of firms facing material risk in each area that actively manage the risk in each manner. Interestingly, operational risk management is used by more firms in all of the risk areas except for FX, where the use of derivatives and financial contracts is more common. While derivatives/financial contracts are used by more than half of the firms in only three risk areas, operational risk management is used by at least two-thirds of the firms in all of the risk areas. This suggests that risk management is more often done via operational changes than through financial contracts.

For the subgroups, financial firms reported broadly similar results with CM in addition to FX risk being more commonly managed with derivatives /financial contacts than operations (CM = 82% vs. 72%, FX = 82% vs. 64%). For non-financial firms operational risk management is far more common than financial risk management in all areas, with IR and FX being the only risks managed with derivatives / financial contracts by more than half of the firms while 70% or more of the firms facing risks actively managed them through operations. Across the

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<sup>4</sup> We provided no definition of “material” risk, so firms made this assessment themselves.

board, the non-financial firms are less likely than the financial firms to be using derivatives/financial contracts to manage their material risks. Geographically, no differential patterns emerged as operational risk management was more common than derivatives/financial contracts in all areas except FX.

Combining these two sets of responses, we determine the percentage of firms that indicate that they face a material risk but do not indicate that they actively managed this risk. The survey responses suggest that in most risk areas a relatively small percentage of firms indicate that they face a material risk do not (or did not tell us) that they actively managed that risk. For FX risk, only 9% of firms indicate facing material FX risk do not indicate any active risk management responses. This proportion trends up slowly and then balloons to 24% for GP risk. Notwithstanding, the vast majority of firms facing a material risk have some sort of active risk management strategy.

The next question measures the perception of how the level of risk in these areas is evolving. We ask the respondents to indicate their perceptions of how the level of risk in the areas that they face material risk has changed relative to 2006 (prior to the global financial crisis). Table 2 shows the responses. A majority of firms in each risk category indicate that they perceive the level of risk as of the survey time (Spring 2010) to have increased relative to 2006. Credit risk was perceived as having increased by the largest percentage of firms; not a surprise given its role in the global financial crisis. On the other end of the spectrum, IR risk stood out with more than 20% of respondents indicating that they perceived it had decreased relative to 2006. Financial firms were more likely to have perceived risk increases in IR, FX and CR, while non-financial firms report increases in EN and CM. There was little difference in responses based on geographical breakdown.

The natural follow-up question asks the respondents about the change in the degree or intensity of their firm's risk management activity over the same period. Not surprisingly, the responses are very similar, as most firms responded to the perception of increased levels of risk with increases in the degree of risk management activity. Only a small percentage of firms indicate that they reduced the intensity of their risk management activity (in any of the areas) relative to 2006.

The final question on change was what impact the global financial crisis had on their firm's overall approach to risk management. The overwhelming majority of respondents, 81%, indicate that the crisis caused

them to pay more attention to risk management issues. This percentage was slightly higher for financial firms and for foreign firms. Almost all of the rest indicated that it had no impact on their risk management activities.

In order to gauge which risk is the most important to these respondents we ask them to rank the top three risks they face in order of importance. As displayed in Table 3a, in terms of the number of most important votes, the top spot goes to CR with 26% of respondents indicating it is the most important risk they face. Interest rate risk is a close second with 25% of the top spot votes and FX is third 20% of the top votes. The other three risks all score low in top spot votes, with 15% or less of the firms ranking them as the most important risk.

This ranking of most important risk differs across the subgroups. Table 3b reveals that for financial firms only two risks rank as highly important. Not surprisingly these are CR with 46% and IR with 37% of the top spot votes; no other risk received 10% of the top spot votes from the financial firms. On the other hand, for the non-financial firms, FX risk has the most top spot votes (26%) with CM (19%) and IR (18%) next in line. As for the geographic breakdown, more North American firms rank IR as the most important risk (29%) while foreign firms showed more concern with CR (31%) and FX (24%).

We get a very different story in terms of importance when we consider the ranking of most important risk as a percentage of just the firms indicating material risk in that area. Table 3a also shows the rankings for most important risk conditional on just the firms facing material risk in that area. For the full sample, CR still comes out on top, with 51% of firms facing credit risk indicating that CR is their most important risk, but the next highest percentage goes to CM (44%) followed by IR (38%) and EN (37%). Clearly in these risk areas which are faced by a smaller subset of firms, the firms are more likely to see that particular risks are their most important risk. This pattern continues over into the subsample analysis as displayed in Table 3b. Credit risk (57%) and IR (42%) are still most prevalent for financial firms under this measure, a majority of non-financial firms facing CM risk (54%) considered it their most important risk, followed closely by FX (48%) and EN (44%). Credit risk is also the top concern among those facing this risk among the North American firms (56%), while for the foreign firms, nearly half with energy risk exposure (41%) rated it their most important risk. In all cases, GP risk has the lowest percentage of firms indicating it was the most important risk facing the firm. Thus although CR, IR and FX are the most prevalent risks in the sample, in terms of concern, the CM and EN risks are equally if not more concerning to the smaller set of firms that face material risk in these areas.

Beyond indentifying important risks, we also want to try to understand the firms' purpose behind their risk management program. In managing risk, each firm presumably has some set of goals or identifiable benefits in mind that they are hoping to achieve through their risk management efforts. To gain some insight into what these goals are, we provide 13 possible objectives for a risk management program drawn from theoretical and practical sources, and ask the respondents to rate the importance of each goal, as well as identify the most important goal with regard to their firm's risk management policy.<sup>5</sup> The responses for the full sample are provided in Panel A of Table 4. The goals that frequently rate as very important are "avoid large losses from unexpected price movements" with 50% of the respondents "increase firm value" with 41%, followed closely by "increase expected future cash flows" and "shareholders expect us to manage risk" with 39% and 38%, respectively. In terms of goals that frequently rate as "not important" are "increase the amount we can borrow" and "reduce cost of equity" with 23% and 22%, respectively, followed by "decrease the volatility of share price" and with 18%, and "reduce the cost of debt" with 13% . No other goal received more than 10% "not important" votes.

In terms of the being rated as the most important goal of the firm's risk management policy, the largest percentage of firms, 18%, indicate that this is "avoid large loss from unexpected price movement", essentially highlighting the primary role of risk management as an insurance function. Other goals that rate 10% or higher in the most important category are "increase expected future cash flow" (15%), "increase firm value" (14%), "ability to pursue investment opportunities even in difficult times" (11%) and "increase reported earnings predictability" (10%).

In terms of the subgroups, financial firms rank "avoid large losses from unexpected price movements" as most important (24%) while non-financial firms go with "increase expected cash flows" as the most important goal (20%). The other interesting distinction in this breakdown is a notably higher rating as most important for "ability to pursue investments even in difficult times" by the financial firms and a greater emphasis on "reduce operating cash flow volatility" as most important by non-financial firms. The differences are less notable in the North American and foreign firm breakdown. Foreign firms have a higher percentage rating "avoid large loss from unexpected price movement" as most important than North American firms, while the opposite is true for

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<sup>5</sup> The rating scale was "Very Important", "important", "Somewhat important", and "Not Important"

“increase expected future cash flow” and “improve corporate decision making environment”. This suggests that North American firms are focused on the general benefits of volatility reduction more so than the insurance impact against losses from an unexpected price change. Panel B of Table 4 shows the results of the most important votes for the various goals/objectives methods by subgroups. The patterns are reasonably similar to the overall results, with the exceptions that financial firms are more keyed into “avoiding losses from unexpected price movements” while non-financials are more into “increasing expected future cash flows”. Geographically the differences in votes are quite minor.

We move onto a set of questions about the firm’s risk management program structure. The first question is whether the firm has a formal documented risk management policy. Of the 1,110 responses, 65% of the firms indicate that they do have a formal documented risk management policy, while 35% indicate that they did not. These proportions are driven largely by financial firms of whom 87% have a formal documented policy and foreign firms of whom 73% have a formal documented risk management policy. Surprisingly, 47% of non-financial and 44% of North American firms report not having a formal documented policy regarding their firms risk management activities.<sup>6</sup>

Another important issue with respect to a risk management policy is how frequently results are reported to and reviewed by oversight bodies within the firm. We asked the respondents whether their firm has a regular schedule for reviewing and reporting its risk management strategy. Seventy-two percent indicate a regular schedule, of which 90% are firms that had indicated above that they have a formal documented risk management policy. In terms of the frequency of this reporting, the most commonly reported frequency is quarterly (43%), followed by monthly (27%) and annually (13%). Results on subgroups are generally similar. Financial firms have a significantly higher percentage of firms with a regular reporting schedule and there is a slight shift towards more frequent reporting periods.

Academics have developed a variety of economic explanations for why firms should manage risk. One set of these relate to the hedging for the purpose of avoiding market imperfections in the financial markets related to

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<sup>6</sup> This contrasts with the 79% of US non-financial firms that indicated having a formal documented policy regarding the use of derivatives from the Wharton risk management survey done in late 1997/early 1998. (Bodnar et al, 1998).

financing investments or obtaining liquidity. To investigate the extent to which practitioners think in a similar way we ask a few specific questions about whether risk management is done with any thought towards funding investments or the access to liquidity. The first question asks whether risk management decisions are made to enhance the firm's ability to fund attractive investment opportunities. Forty-six percent indicated that it is and 54% indicated that it is not, suggesting that a majority of firms do not focus on any link between risk management and future financing challenges. Only for financial firms did a majority (57%) indicate that such a link was important. In a follow up question, of the 46% of the full sample indicating that risk management did involve some thought to the firm's ability to fund future investment opportunities, 49% indicate that risk management helped better match the availability of internal funding sources to the need for funds to make investments, while 27% indicate that risk management helped better match their access to external funding sources to the need for funds to make investments, and the remaining 24% indicate that the risk management helped reducing the cost of the external funding for investments. These proportions do not differ substantially across the subgroups.

It is well known that a good substitute for active risk mitigation is access to a large pool of liquid assets. As such we ask firms whether the size of their surplus cash holdings or access to guaranteed lines of credit influence the breadth or intensity of their risk management activities. Once again, the majority of firms (56%) said that their cash positions or access to lines of credit have no impact on their risk management policy. Interestingly, of the firms that did indicate an effect, a follow up question indicates that both greater surplus cash holdings and access to guaranteed lines of credit result in an *increase* in breadth or intensity of risk management activities for a larger number of firms than result in a decrease. Again, these results are quite uniform over the subgroups.

In two final academic-driven questions on general risk management, we ask the firms for their view on the breakdown of the risk reduction from their risk management activities between idiosyncratic risk (risk which is firm specific and uncorrelated with priced risk factors), and systematic risk (risk which is common across assets and carries with it a risk premium in terms of expected return). Interestingly, the average breakdown is that the risk reduction is 58% systematic risk and 42% idiosyncratic risk. Surprisingly these averages did not vary much across the subgroups. This is interesting as with the exception of CR, most of the risks that firms are managing have exposures that are relatively firm- specific and do not have significant risk premium in terms of the hedging costs. The other academic question relates to the assumptions firms most commonly make about the future price

distribution when assessing future outcome risk from an exposure (e.g., as part of a Value at Risk exercise or a spreadsheet simulation). We offered a series of likely responses. The responses are displayed in Table 5. The most common response is use of a simple normal distribution with a mean and variance based upon historical data (28%). This is troubling as we know the tail issues are a critical issue in risk management. Equally worrisome is that assuming a normal distribution with the mean and variance taken from some other source was the selection of another 21% of respondents. Nineteen percent of the respondents indicate that they modify a normal distribution to worry about fat tails, while another 16% used a non-normal distribution with fatter tails and potential skewness. Finally, 13% let the data define an arbitrary distribution and 3% do something akin to a combination of these methods. So despite what the recent financial crisis taught us about simple distributional assumptions, nearly 50% of the respondents indicate that they basically use a normal distribution when doing simulations involving future financial prices.

To end this section on general risk management activity and transition into the next section on use of financial derivatives, the survey asks firms whether they use financial derivatives (specifically forwards, futures, options, and/or swaps) in their risk management program. Panel A of Table 6 shows the results for the full sample. For the full sample, 64% of the respondents indicate that they used financial derivatives in their risk management program.

Since this is probably the most commonly asked question in risk management surveys, we consider a variety of cross tabulations of this result with our firm demographics. Panel B of Table 6 shows the cross tabulation of the responses by geographic location of headquarters and economic sector, with the non-financial sector also broken down into primary product, manufacturing and service sectors. Financial sector firms report derivative usage as part of their risk management strategy in much higher proportions (78%) than the non-financial firms (56%). This is not surprising given that a good portion of financial firms are likely in the business of dealing in financial derivatives both for their own risk management as well as part of their business. Geographically, foreign firms report derivative usage at a 10% higher proportion than the North American firms (68% vs. 58%). These results are consistent with findings of previous surveys. Derivative usage in European countries has typically been much higher than in the United States (see, e.g., Bodnar and Gebhardt (1999) and Bodnar, de Jong and Macrae (2003)). In the cross tabulations, prevalence of financial derivative use is highest amongst foreign financial firms at

81% and lowest amongst the North American non-financial firms at 56%. This latter number compares closely with the findings in Bodnar et al. (1998) which reports that derivative usage amongst US non-financial firms in the 1990's varied between 35 – 50%. Slightly more than a decade later, the derivatives usage rate for nonfinancial – North American firms in our sample is 54%.

The pattern of usage across the non-financial sectors is also consistent with the earlier survey findings.<sup>7</sup> Usage is most prevalent in the primary products sector (basic materials, utilities, transportation) with 71% of firms, followed by the manufacturing sector with derivative usage by 67% of firms, and the service sector firms reporting only a minority of firms (46%) using derivatives as part of their risk management strategy. The differences in these results on a regional basis are relatively minor. The only exception is that the proportion of foreign service-sector firms using derivatives is nearly 10% higher than the percentage of North American service-sector firms using derivatives.

In Panel C of Table 6, the usage of financial derivatives is broken down by firm size, measured in USD sales. The results reveal a perfectly monotonic relation between the six firm size groups and the percentage of firms in each group that use financial derivatives. Amongst the smallest firms, those with sales of less than USD25M, only 35% used financial derivatives, with the percentage growing consistently as we move up the size groupings. Amongst the firms in the largest size grouping, those with sales of more than USD5B, 85% indicate that they use financial derivatives. This finding matches the common finding in previous studies in that firm size is positively related to the likelihood of using derivatives.

In the last two panels of Table 6 we show the proportion of firms indicating derivatives use by ownership form of the business (Panel D) and credit rating (Panel E). As for ownership structure, we ask respondents to classify their firms into one of four classes of ownership: publicly traded, private, government owned, or non-profit. The results suggest that this is an important characteristic in explaining whether the firm uses derivatives. It turns out that use of derivative use is most prevalent amongst the publicly traded firms at 78%, with government owned firms next at 70%. Privately held firms are notably less likely to use derivatives with only 53% indicating use while non-profits report the lowest proportion of use at 43%. As for credit rating, of the 917 firms that provided

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<sup>7</sup> See, e.g., Bodnar et al (1996)

this information, there is an interesting relation between the derivative use and credit rating. All of the firms with ratings BB and above use derivatives in greater frequency than the sample as a whole. Interestingly the heaviest percentage users are the bottom two groups in this category, BBB and BB at 73% and 76%, respectively. Firms rated less than BB as well as those that indicate they are not rated are less likely to use derivatives at 57% and 47%, respectively.

The survey concludes the first section with a question only for those that indicated that they did not use financial derivatives in their risk management program. Non-users are asked to rank the top three reasons they did not use financial derivatives from a pre-selected list. Table 7 displays these results. Three of the eight choices provided garnered most of the responses for the top reason. The most important reason with 34% of the most important votes is that the “firm’s exposure to the financial price risk was not sufficient to warrant using derivatives”. This is followed with 31% of the top votes by the equally rational “exposures are more effectively managed by other means”. The other top vote getter, with 25% is the individual cost-benefit assessment by the firms that “costs of establishing and maintaining a derivatives program exceed the expected benefits”. Among the firms that selected “other”, as the most important reason for not using derivatives, the reasons provided most commonly relates to lack of a local market for derivatives, legal restrictions against holding derivatives, or a lack of expertise with derivatives. The choices that relate to outside perception or issues with pricing, accounting or disclosure requirements appear to be much less of a deterrent to firms using derivatives in their risk management program. Results by sector and geographic area are again quite comparable.

#### **4.2 Section with Questions on the Use of Financial Derivatives**

Having identified the firms that use derivatives in their risk management program the next section of the survey asks this group specific questions about their derivatives usage and control policy. The first question we look at this section is what concerns firms have about their derivative usage. This question is based closely on a similar question asked in the Wharton surveys more than a decade ago so we can explore how the answers have evolved over time. The survey provided seven areas of concern regarding the use of derivatives and asked the firms to rate them as being either a high concern, a moderate concern, a low concern, or no concern. The responses to this question are displayed in Panel A Table 8.

The results suggest that “market risk (risk of unforeseen changes in the value of derivatives)” and “counterparty credit risk related to derivatives” are the two issues with the largest percentage of firms indicating high concern at 49% and 31 respectively. Interestingly all of the issues are rated as a moderate concern by between 30 and 40% of the respondents with monitoring and evaluating hedge results getting the highest moderate concern rating of 41%. At the low end of the concern spectrum, more firm identified “reaction by analysts or investors”, “disclosure requirements” and “accounting treatment” as the areas of either low or no concern. The last column of Panel A shows a weighted average level of concern score for each issue related to derivative use. The score is based upon a scale of a 4 being high concern and a 1 being no concern. Clearly “market risk of derivative values” is the area of concern with the highest overall score thus being the most pressing concern related to derivatives usage for these firms. The score for “reaction by analysts or investors” is the lowest suggesting that this is the least important concern related to derivative usage for these firms.

Panel B of Table 8 shows the score for each area of concern by the two different subgroupings. While the rankings of concerns across these groups are similar to the full sample, the scores for the financial firms are notably higher than for the non-financial firms, suggesting a higher average level of concern about these issues associated with derivative usage for financial firms than non-financial firms. Similarly the North American firms have a lower score for each concern in comparison to the foreign firms.

Because this question is identical to one asked in the 1998 Wharton survey of US non-financial firms, it is interesting to compare the results for similar groups. The Wharton 1998 survey showed a plot of US non-financial firms indicating higher or low levels of concern for each of these areas related to derivative use. In Figure 3 we produce a similar plot for our sample using only the North American non-financial firms as a comparable sample and show this plot against the plot reported in the Wharton 1998 survey report as a comparison of how levels concern about these issues associated with derivative use have changes over time. Two things jump out from Figure 3. First the percentage of firms reporting high concern about any of these areas today is lower than in 1998 and in most cases the percentage of firms reporting low concern is higher than in 1998. This suggests that the overall level of concern about derivative issues is lower today than in 1998. Second, in 1998 accounting treatment as was monitoring and evaluating hedges were big concern (with more high concern votes than low concern votes).

Another question in this section is whether the global financial crisis of 2008/09 with its underpinnings of collateralized debt obligations and credit default swaps had any impact on their firm's use of financial derivatives. Overall the impact was quite minimal. Of 624 respondents, 27% indicated that the crisis caused them to decrease their usage, while 23% said that it caused them to increase their usage. The rest of the firms (50%) indicated that it had no effect on their use. There was little difference across sub groups: financial firms were more likely to indicate that it caused them to decrease usage (35%) relative to increase usage (28%) while non-financials were evenly split at 20% increase and 20% decrease. Geographically a majority of foreign firms were more affected but with decreases (36%) outpacing increases (29%), while North American firms were again slightly more likely to decrease than increase (24% vs. 20%). Overall, it appears that the crisis did not have a significant impact on firm derivative usage.

We next move on to ask some questions related to the oversight and control of derivatives positions within the firm. We asked both about the frequency with which the financial derivatives contracts were valued and the source of the valuation information. In addition we asked to whom within the firm the information about derivative positions is reported. As shown in Table 9, the most common frequency for valuation of derivative positions is daily and monthly. These two horizons are driven almost completely by the industrial sector of the firm. Financial firms predominantly (63%) value their positions daily, while the most common horizon for non-financial firms is monthly (42%). About 11% of the firms report having no fixed schedule for valuation of financial derivatives, again with this skewed more towards non-financial than financial firms. There is relatively less difference in response patterns on a geographic basis, with foreign firms tending towards more frequent valuation.

When asked to identify the main source of information for valuation (or re-valuation) of their derivative positions, 38% of the firms indicated they used the original derivatives dealer, 33% indicated that they did the valuation themselves internally while 27% indicated that they used some other deal than the originating dealer. Only 2% of the firms indicated that their main source of information for re-valuing derivative positions was some other source, and these tended to be some other outside source such as Bloomberg or some other market data provider or an outside custodian.

The other question in this set is to whom within the firm is information about the derivatives activity reported. The survey offered the choices of the senior management of the firm, the Board of Directors, or some

other group, and allowed for multiple choices if appropriate. For the full sample, of the 579 responders, 81% indicate they report activity about their financial derivatives positions to the senior management, with 50% reporting only to the senior management and 29% also reporting to the Board of Directors. While 46% indicated that they report to the Board of Directors 13% did so exclusively. Only 6% of respondents indicated reporting on financial derivative activity to some other party or parties.

The final set of questions in this section relate to the firms' actual or potential reaction in terms of derivative usage to some regulatory rules that have occurred or are being considered in light of the recent financial crisis. Currently, both the FASB standards in the US and the IFRP standards globally mandate that the firm carry out periodic tests on the effectiveness of their derivative position as hedges of the underlying exposure. We asked the firms if such tests have results in any impact on the amount their companies use financial derivatives. For the vast majority (76%) of the 596 respondents these mandated tests have had no impact on the firms' use of financial derivatives. However, 16% of the responding firms indicated that they had reduced their use of financial derivative contracts as a result of these hedging effective tests. When we pressed these firms who decreased derivative usage to indicate the impact on risk management, about 60 % indicated that the end result of the reduction in the use of derivatives was an overall decrease in hedging activity while 40% indicated that it results in their using more non-financial hedging methods. The pattern of responses to the entire question is very similar across the sector and geographic subgroups. Overall these results suggest that the mandated hedging effectiveness tests had only a mildly negative impact on overall risk management with only about 10% (60% of 16%) of firms reducing their overall hedging activity as a result.

The other two questions relative to possible changes in derivative market rules that may come about as a result of regulatory changes imposed upon the derivatives market as a result of post-financial crisis legislation. One of these possible changes is restrictions on customized over-the-counter derivatives and a move to all standardized, exchange-traded contracts. As displayed in Panel A of Table 10, a majority (54%) of the 604 respondents indicated that a restriction on OTC derivatives with replacement by standardized exchange-traded contracts would result in no change in their derivative usage. While a small percentage (10%) indicated that such a move would increase their use of derivatives, the more interesting result is that 32% of firms indicated that such a regulatory change would reduce their use of derivatives with 3% (19 firms) indicating that such a change would

cause them to discontinue use of derivatives entirely. In looking at the sub groups, financial firms showed a greater propensity to react to such a policy change with both a higher proportion indicating increased (15%) and decreased (43%) usage of derivatives in response. Non-financial firms were more relaxed, with 66% indicating that such a policy change would not impact their derivative usage and just 24% indicating that they would decrease derivative usage. Geographically, the North American firms were less reactive than the foreign firms. There was very little variability across any of the subgroups in the percentage of firms that would discontinue their derivative use entirely in response to a restriction on OTC instruments.

Panel B of Table 10 shows the responses to the second policy question: If your firm were required to post cash collateral or to post more collateral than has traditionally been required against all over-the-counter derivatives, what would be your most likely response? Firms appear to be much more sensitive to this issue in terms of its impact on their derivative use. For the full set of respondents, 52% indicated that having to post collateral on OTC instruments or post more collateral that traditionally has been required would result in a decrease in derivative usage. In addition, 7% indicated that such a move would cause them to discontinue derivative use entirely. Only 35% indicated that such a policy would have no effect on their usage. So in comparison to a policy of restricting OTC instruments in favor of exchange-traded instruments, far more firms indicates that they would react negatively (be decreasing or quitting derivative use) to a policy of imposing or increasing cash collateral on OTC instruments.<sup>8</sup> Interestingly, when looking at the results by subgroups, the negative reaction is more intense in the non-financial firms (64% reacting with decrease or discontinuation of derivatives) than the financial firms (53%), and also more intense amongst North American firms (64%) than foreign firms (56%). Hopefully regulators will consider this issue carefully as imposing such a rule could reduce the degree to which firms actually manage their risks.

## **5. Summary of Responses for Management of Specific Risk Areas**

In the remainder of the survey we asked sets of specific questions about the management of areas of risk the firm indicated they faced. For these sections, in order to reduce survey fatigue for firms that faced more than

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<sup>8</sup> As we shall see later, this may be related to the fact that a majority of firms prefer OTC instruments to exchange traded ones.

two risks, respondents were randomized as to which risk section they were asked to respond, so the sample sizes for these sections are smaller than the number of firms that indicated that they faced that risk.

### **5.1 Interest Rate Risk Management**

The first risk area whose management we investigated is interest rate risk. The firms that were eligible to respond to the questions in this section were those that had indicated that they faced material interest rate risk in the earlier section. In principle all of the firms responding to these questions faced interest rate risk. In total there were 666 firms that saw the questions in this section.

To begin we wanted to get an idea of how large firms believed their risk to interest rates to be and how effective they believed their management program to be in reducing this risk. To do this we asked a series of questions requiring the respondents to estimate the size and direction of the impact of a sudden 100 basis point rise in interest rates on their firm's value both with and without their current interest rate risk management strategy.<sup>9</sup> Table 11 shows the results of these questions. The first column of numbers shows the distribution of responses for the impact of the 100 basis point increase in interest rates on firm value assuming that the firms had no risk management program in place. Of the 410 responses, 54% indicated that the sudden interest rate increase would have a negative impact on firm value. The average estimate of this negative impact was -13.9%. In contrast, only 5% of the firms indicated that they believed the interest rate risk would increase their firm value. The average estimate of the increase was 15.4%.<sup>10</sup> Surprisingly, 41% of the respondents indicated that the sudden rise in interest rates would have no impact on firm value, even without any risk management policy in place.

To gain some insight into the impact of the firm's IR risk management strategy, we also asked firms to estimate the change in firm value resulting from the sudden interest rate rise given their current IR risk management program. These results are displayed in the top row of Table 11. The first result to note is that some

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<sup>9</sup> Note the focus on the impact on firm's value is intended as a generalization of all of the impacts of the risk (or its elimination of the firm. This requires the respondents to estimate the impact of risks and risk management (net of cost) on firm value. It is possible that non traded firms do not think about exposure with respect to firm value and are biased towards answering no change in value to this question. Tabulations, not shown, do not support this claim as the ratio of unhedged positive, no change and negative responses to the interest rate rise are roughly similar for publicly traded firms versus non-traded firms.

<sup>10</sup> These are supposedly firms that are positively exposed to interest rate fluctuations as evidenced by the negative change in firm value response due to hedging. .

firms hedging programs appear to be to be effective at eliminating the exposure as now 61% of the firms that respond indicate that the interest rate change would have no impact on firm value. With hedging, only 30% of the firms still indicate that they would experience a decrease in firm value, with the average decrease being -9.5%. With their IR risk management programs, a somewhat larger 9% of respondents indicate the interest rate rise would lead to an increase in firm value, with the average increase being 10.9%.

To estimate the impact of the firm's IR risk management program, we examine the conditional responses of the firms that replied to both questions and measure the average change in the impact of the interest rate rise on firm value. These tabulations are shown in the bold box in the lower right corner of Table 11. In addition to showing the number of firms with the conditional value responses, the cells show the average of the difference in this impact of the 100 basis point rise in interest rates on firm value between the case with the firms' risk management program and the case where the risk is not managed at all (hedged impact minus unhedged impact).

So for example, consider the center column of the bottom row which shows 67 and [9.1%]. These numbers mean that 67 firms indicated that the interest rate rise would decrease firm value with no risk management program and would result in no change in firm value with its risk management program. The 9.1% number means that for these 67 firms the average expected impact of the interest rate rise on firm value with hedging is 9.1% more positive (less negative) than without hedging (in this case hedging reduced the impact of the interest rate rise on firm value from an average of -9.1% to zero for these firms). Looking at the lower right cell in the conditional table suggests that for the firms that claim to be negatively affected by the interest rate rise without any risk management program the majority are still negatively affected with even their risk management program, though the negative impact on these 104 firms is 7.7% less than with no hedging. In addition to the 67 firms that feel that they completely hedge their underlying downside exposure to the interest rate rise, there are 17 firms that believe that their IR risk management program actually results in their firm switching to where it gains from the interest rate rise. For these firms the hedging policy changes the impact of the depreciation on firm value by over 20%. Of the 20 firms that were positively affected by the interest rate rise, even after allowing for their hedging program, 16 of these firms indicate that they would still be positively impacted, though the average impact on firm value is 2.1% smaller than without their hedging programs. Overall, the table appears to

support the view that firms' interest rate risk management programs are reducing the impact on firm value of sudden changes in interest rates.

To investigate what kinds of exposure firms are managing with interest rate derivatives, we asked firms to indicate how frequently they used IR derivatives to accomplish certain interest rate risk management activities. We selected four common purposes for interest rate derivative transactions and asked them to indicate if they did these transactions "frequently", "sometimes", or "seldom/never". Table 12 displays the sum total percentages of "frequent" and "sometimes" responses for the full set of 502 firms that responded to the questions as well as their breakdown into financial and non-financial subgroups. The table reveals that for all respondents, entering contracts to swap from floating to fixed interest rates was the most common IR derivative activity with 58% indicating they do so frequently or sometimes. The other activities: swap from fixed rate to floating rate, fix in advance the rate or spread on new debt, and reduce or lock in a rate based upon a market view were done frequently or sometimes by about 45% of the respondents. The breakdown of the sample into financial and non-financial firms shows several interesting distinctions. First of all, financial firms are much more likely to use IR derivative frequently or sometime to do almost all of these activities than non-financial firms. Second, financial firms are most likely to swap from fixed for floating rate than non-financial firms (68% vs. 25%), consistent with their activity of extending fixed rate loans to non-financial customers and then deal with the interest rate risk by swapping into a floating rate.

The next question was to identify which interest rate contracts/positions the firms are using to manage their interest rate risk. We provided seven different IR derivative contracts and one operational activity commonly used to manage IR risk and asked the respondents to indicate if they used any of these to manage their interest rate risk. We also asked them to indicate their most used contract or activity. Again, Table 13 shows the responses to these questions for all 514 respondents as well as the financial and non-financial firm breakdown. Not surprisingly, the interest rate swap received the largest percentage of firms indicating usage at 67%. A distant second were forward rate agreements with 45% of firms indicating use, and then another large drop to 32% of firms varying the maturity of debt as a risk management technique and 30% indicating use of interest rate futures and 26% indicating use of option combinations (i.e. caps and collars, etc.). Less than 20% of respondents indicated use of interest rate swaptions (18%), exchange traded IR options (14%) and OTC IR options (13%). In terms of most

common, the column displays the percentage of firms indicating use of a position/activity that voted it as their number one most commonly used method.<sup>11</sup> The ranking of top methods is very similar to the overall usage ranking.

In looking at the distinction between financial and non-financial firms, financial firms were much more apt to use swaps and interest rate futures than non-financial firms. However, non-financial firms were much more diverse in their choices for most-used as evidenced by the higher percentages down this column as compared to the financial firms most-used column. This pattern of top choice in conjunction with the lower percentages in the use column, suggest that non-financial firms are more likely to have picked a particular method for managing IR risk and stick to it as their most used method.

Given the broad nature of our sample, an interesting question to ask derivative users is about their mix of over-the-counter and exchange traded instruments in the firm's derivatives portfolio. Table 14 shows responses when the respondents were asked to indicate their mix. For all 498 respondents, 35% use only OTC IR instruments with another 25% using mostly OTC instruments. A mere 12% indicated that they had a roughly equal mix between the two while only 13% indicated that they used only exchange-traded instruments. Results for the sub groups were relatively similar, though non-financial were much more likely to be with OTC only or exchange-traded only while financial firms were more likely to use some combination of the two. Interestingly North American firms were more than twice as likely to use exchange-traded only derivatives as compared to foreign firms (19% vs. 8%). With regard to the OTC interest rate instruments, we also asked whether they were generic or bespoke. Across the board, it was about an 80-20 split: 80% of the OTC instruments were generic (i.e., plain vanilla) and about 20% of the OTC instrument were bespoke (i.e., custom made).

With regard to measuring the success of the firm's interest rate risk management policy, we asked firms about the benchmark used for evaluating their risk management performance. We offered five possibilities, three involving a cost of funds measure and one a volatility measure along with an "other" option as well as a chance to indicate they do not use a benchmark. The results are displayed in Table 15. The most common choice (43% of firms) was to compare their cost of funds relative to a benchmark (such as LIBOR). The next most common choice

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<sup>11</sup> To determine the percentage of total respondents that ranked a particular method as their number one choice, simply multiply the use percentage and the ranked most used percentage.

(for all columns except for the financial firms) was that the firm did not use a benchmark, which leads one to wonder how the firms evaluate IR risk management. The cost of funds relative to a target portfolio (specific fixed to floating ratio) was third while the duration targeting and volatility of interest expense were least commonly used. Results were basically similar across the subgroups though foreign firms were greater users of the target (fixed/floating) portfolio while financial firms were more likely to use a duration target portfolio.

The final questions were whether the shape of the home currency's yield curve impacts the size or amount of the firm's interest rate hedge positions and how important the firm's forecast/outlook for interest rate is for the extent the firm hedges IR risk. As displayed in Panel A of Table 16, 57% of the 553 respondents indicated that the shape of the yield curve does impact their interest rate hedging. These firms were predominantly financial firms or foreign firms, as less than 50% of the non-financial and North American firms indicated that the shape of the yield curve affected their IR hedge positions. Panel B of Table 16 shows a similar story for the importance of a market view on interest rates for IR hedging decisions. Of the 4 possible responses, the table shows the percentage of firms indicating very important and important versus the percentage of firms indicating somewhat important or not important. For the 561 firms responding, 60% indicated that their market view on interest rates was very important (18%) or important (42%) for the extent to which they hedge or manage IR risk. Looking at the breakdown across subgroups again we see that financial firms are much more likely to have their forecast of interest rates influence their IR hedging than non-financial firms. As with the yield curve, foreign firms again showed a slightly greater tendency to take their market view into account relative to North American firms.

## **5.2 Foreign Currency Risk Management**

This section was viewed by the set of firms that indicated that they faced material FX risk and that they managed that risk by either financial or operations means. Of this group, 540 firms responded to at least one question in this section.

We begin the FX section with the same type of question as we began the IR section. To get an idea of how large firms believe their risk to foreign currency interest rate changes to be and how effective their management program as in reducing this risk, we asked the same series of questions as before asking the firms to estimate the size and direction of the impact of 10% decline in the value of their home currency (relative to all other currencies)

on their firm's value both with and without their current foreign currency risk management strategy. Table 17 shows the results of these questions in the same fashion as Table 11 did for IR risk. The first column of numbers shows the distribution of responses for the impact of the 10% decline in the value of the home currency on firm value if they did not manage or hedge their FX exposure. Of the 345 responses, a surprising 45% indicated that the home currency depreciation would reduce the value of their unhedged firm, suggesting that they these firms have an inherently short foreign currency exposure. The average estimate of the value impact for these firms is -11.9% from the 10% home currency depreciation, suggesting a relatively large FX exposure. Another 15% of the respondents indicated that the home currency depreciation would increase the value of their unhedged firm suggesting along foreign currency exposure. The average estimate of this increase was 9.8%. Interestingly, 40% of the firms indicated that even without their risk management program the impact of the exchange rate change on firm value would be essentially no change. This could be because they actually have a very small exposure or that they have different exposures to various currencies that offset one another so the overall effect of a 10% depreciation of the home currency is close to zero.<sup>12</sup>

To assess the impact of the firm's FX risk management strategy, we also asked firms to estimate the change in firm value resulting from a 10% home currency depreciation given their current FX risk management programs. These results are displayed in the top row of Table 17. Again we note that that some firms' FX hedging programs appear to be to be effective at eliminating the exposure as now 50% of the responding firms indicate that the home currency depreciation would have no impact on firm value with their FX risk management program. Even with their hedging program, 31% of the firms still indicate that they would experience a decrease in firm value, with the average decrease being -7.7%. On the other hand, the presence of the FX hedging program raises the percentage of firms that would experience an increase in firm value due to the home currency depreciation from 15% to 18%, with the average increase for these firms being 7.9%.

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<sup>12</sup> These proportional are essentially defining the firm's perception of the size and sign of its foreign currency exposure with respect to firm value. It is possible that non-publically traded firms do not think about exposure with respect to firm value and are biased towards answering no change in value to this question. Tests, not shown, do not support this claim as the ratio of unhedged positive, no change and negative responses to the 10% home currency depreciation are roughly similar for publicly traded firms versus private firms.

To estimate the average value impact of the FX risk management programs, we examine the conditional responses of the firms that replied to both questions and measure the average change in impact of the home currency depreciation on firm value. These tabulations are shown in the bold box in the lower right corner of Table 17. In addition to the number of firms with the conditional value responses, the cells show the average of the difference of the impact of the 10% home currency depreciation on firm value between the case where the risk is managed and the case where the risk is not managed (hedged impact minus unhedged impact).

Consider the center column of the bottom row which shows 32 and [6.5%]. These numbers mean that 32 firms indicated that the home currency depreciation would decrease firm value with no risk management program and indicated that the home currency depreciation would result in no change in firm value with its risk management program. The 6.5% number means that the impact on firm value with hedging was 6.5% more positive than without hedging (in this case hedging reduced the impact of the depreciation on firm value from an average of -6.5% to zero for these firms). Overall, the conditional section of the table suggests that for the firms that claim to be negatively affected by a home currency depreciation without any risk management program the majority are still negatively affected with their risk management program, though the negative impact on these 104 firms is 5.9% less than with no hedging. In addition to the 32 firms that feel that they completely hedge their underlying downside exposure to the home currency depreciation, there are 10 firms that believe that their FX risk management program actually results in their firm switching to where it gains from the 10% home currency depreciation. For these firms the hedging program changes the impact of the depreciation on firm value by over 15%. For the 51 firms that believe that the home currency depreciation is inherently good for firm value, only 6 of these firms believe that their hedging program makes their firm value unaffected by the depreciation. For these firms the impact of the hedging is to reduce the impact on the depreciation on firm value by an average of -5.0%. The vast majority of positively exposed firms remain positively exposed even with their risk management program, though the FX risk management program reduces the impact of the depreciation by 2.5%. Again, the table appears to support the view that firms' FX risk management programs are reducing the impact of FX fluctuations on firm value.

We next moved to looking at FX derivative usage, both in terms of what firms are using FX derivatives for and which FX derivatives they are using. Table 18, shows the percentage of respondents that indicated that within

the past three years they have “frequently” or “sometimes” used FX derivatives to manage various different sources of FX risk. For the 459 firms that responded, with the exception of anticipated transaction in more than one year, all of the other sources of risk have a majority of firms indicating that they frequently or sometimes have used FX derivatives in the past three years to manage these risks. The highest percentage of (76%) firms indicated recorded commitments (i.e., booked transaction such as receivables and payables). This is consistent with most prior studies looking at FX risk management in that simple transaction exposure is the most commonly hedged FX exposure (see .e.g., Bodnar et al (1999)). Also popular for FX derivative usage is anticipated transaction with in the year, identified by 70% of firms. Obviously the one-year horizon plays some important role as the anticipated transactions in more than one year had the lowest percentage of votes (48%).

Looking at the responses by subgroups, there are a few interesting features. Financial firms are more likely to use derivatives to hedge anticipated transaction in more than one year compared to non-financial firms, while foreign firms are much more likely to use derivatives to hedge contractual commitments (unbooked contracts) as compared to North American firms. The North American firms are most likely to be using derivatives on a regular basis to hedge foreign repatriations.

A related question regarding the FX risk areas that has been asked in previous surveys is what percentage of the exposure in each area does the firm hedge. Past surveys have found that these percentages seldom higher on average than 50%<sup>13</sup>. The results for our firms are shown in Figure 4. With 138 firms responding, the results here are similar to previous finding. Only for recorded commitments is the percentage of exposure hedged greater than 50%.<sup>14</sup> Other than this the average percent of these other exposures that gets hedges is around 45%, with the exception of anticipated exposures in more than one year where the average amount hedged is just over one quarter of the size of the exposure. Obviously complete hedging is not a high priority for these firms. It would appear that hedging is done to reduce the exposure to a low enough level where it can be comfortable tolerated by the firm.

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<sup>13</sup> See e.g., Bodnar *et al* (1999)

<sup>14</sup> The percentage excludes firms that entered zero percent and did not indicate that they used derivatives for this risk source in the previous question.

Table 19 shows the results of the question asking firms which types of FX contracts and or positions they use to manage their FX risk. The survey offered nine possible forms of derivative contracts and other FX positions and asked the firm to indicate all that apply to their risk management program. Panel A of Table 18 shows the percentage of firms that indicate they use each choice, and Panel B shows the percentage for users of each choice that rank that choice as the number 1 most used contract or position in their FX risk management program. In terms of percentage of firms using, by far and away the winner is the simple FX forward contract. 64% of firms indicate that they use forward contracts in their FX risk management program. Only three other contracts /positions were selected by more than 30% of the firms, these are cross currency swaps (38%), futures contracts (32%), and money market deposits/loans (31%). The only other choice that had more than a 20% response rate was foreign currency debt financing at 27%. All the other choices, exchange-traded options, option combinations, OTC options and non deliverable forwards had usage rates of 17% or less.

In terms of subgroups the results suggest that forwards top every group's list as the most used instrument in FX risk management. Beyond this, financial firms are generally users of more contracts/positions instruments than non-financial firms and substantially more financial firms use cross currency swaps, futures contracts and OTC options than do non-financial firms. Geographically the differences are less substantial, but foreign firms are more likely to be users of money market hedges, OTC options and non deliverable forwards as compared to North American firms.

In Panel B of Table 19 we see the percentage of users of each FX contract or position that rated it as their most commonly used instrument. Once again, the forward contract is the big winner. 75% of the users indicated it as their most common contract. Other contracts or positions that were frequently rates as number one by their users include foreign currency debt financing (42% of users), money market hedging (37%) and cross currency swaps (31%). Interestingly, even 7 of the 64 users of non deliverable forwards (11%) rated this instrument as their most commonly used contract for FX risk management. Conditionally, the results are again relatively similar to the overall results. Forwards are the top choice for all subgroups, especially so for non-financial firms and North American firms. Among the other methods, it appears that for non-financial firms and North American firms, although usage of other methods is relatively small, users of many of these methods are much more likely to rate them as their most commonly used method in contrast to the financial and foreign firms. Non-financial users of

money market hedges, exchange rate options and option combinations rate these as their most commonly used method as compared in much higher percentages than financial users. The same is true of North American users of money market hedges, cross currency swaps, futures contracts, exchange traded options and non deliverable forwards in comparison to foreign users.

Academics like to divide the economic exposure firms face from exchange rate changes into two different forms: one from existing transactions, called transaction exposure, and the other from the ability to generate new transactions in the future, called operating exposure. As we saw in the very first section, firms manage risks both through the use of financial contracts and operational structure and decisions. To investigate the use of operational structure or decisions to manage FX risk, we begin by asking firms to tell us how they perceive their firm's exposure to exchange rate changes in terms of the breakdown of the total exposure between transaction exposure and operating exposure. The 340 firms that responded to this question break down the exposure on average as 60% transaction exposure and 40% operating exposure. There is very little variation in this ratio across subgroups, though financial firms see slightly more of their exposure as transactional (63%) rather than operating and North American firms see the split as more balanced (56% transaction and 44% operating).

To investigate operational structure and decisions to manage FX risk more fully, we asked firms to indicate what percentage of their total FX exposure they thought they were managing with operational structures and decisions as compared to what percentage of total FX risk they thought they were managing with financial contracts and derivatives. We then asked them to indicate usage across a set of operational methods for managing FX risk. The results of this question are displayed in Table 20. In all, 332 respondents provided usage answers. The results in Panel A of Table 20 give the breakdown of the average percent of total FX risk managed via operational methods versus financial instruments. For all respondents, on average they believed that they managed 31% of their FX risk with operational methods, with 4% indicating that they managed 100% of their FX risk operationally. In contrast, firms believed that they on average managed 37% of their total FX risk with financial instruments and derivatives, with 7% of firms indicating that they managed 100% of the total FX risk this way. There is some variation in these numbers across the sectoral or geographic subgroups. Non-financial firms are more tilted towards operational hedging over financial hedging of total FX exposure (35% vs. 29%) while financial firms are more tilted towards financial hedging over operational hedging (49% vs. 28%). Geographically North American

firms are roughly equally balanced at 31% of total FX exposure hedged with both operational and financial methods, while foreign firms tend to hedge more with financial methods than operational methods (41% vs. 33%).

In terms of the operational methods firms used to manage FX risk, Panel B of Table 20 ranks them from most commonly used to least commonly used. Pricing strategies is the most common method, used by 55% of all responding firms, followed closely by the use of foreign currency debt (45% of respondents). Two less common methods used by a quarter and a fifth of the firms is to use product strategies, (altering product mix) and shifting the location of production. Two other offered choices that received 15% and 8% usage votes were increasing productivity and promotional strategies (altering promotional spending or targeting the spending in certain locations). Nine percent of firms choose “other” and listed their methods, which included most frequently increasing geographic diversification, and better matching of the currencies of revenues and costs. In terms of subgroups, non-financial firms were more likely to use pricing strategies, consider shifting production location and push on increasing productivity as operational ways to deal with FX risk as compared to financial firms, who much preferred use of foreign currency debt and altering product strategies. Geographically differences in usage of operational methods are quite minor with the exception of a greater use of shifting production location by North American firms.

To finish up the foreign currency hedging section we asked some similar question to those at the end of the interest rate risk management section. Namely, what is the mix of over-the-counter versus exchange traded instruments in your FX derivative portfolio? The responses are summarized in Table 21. More so than with IR derivatives, the FX derivatives used by our respondents are even more tilted towards the over-the-counter variety. Nearly 40% used only OTC instruments while with another 23% using mostly OTC instrument. Only 12% indicated that they used only exchange-traded instruments. When slicing the responses into subgroups, non-financial are even more tilted towards OTC only with 47% of firms but also have a large groups that are committed to exchange –traded instruments (16%). Similarly, North American firms are slightly more dedicated to one extreme or the other of the OTC exchange–traded spectrum than are foreign firms.

The last questions we asked were about how macroeconomic conditions influence FX hedging strategy and the influence of the firms market view on its hedging program. For macro influences on the exchange rate we focus on the firm’s home country’s current account balance and the domestic national government budget

balance. Figure 5 displays the response rates for firm that indicated these macroeconomic variables do affect their hedging strategy in terms of the amount hedged or the timing of the hedges. For both measures, less than one third of the 452 responding firms indicate that these measures influence their FX hedging strategy. The rate of influence is slightly higher for financial firms and foreign firms. Interesting for North American firms which are predominantly US where both of these measures are in significant imbalance, only a quarter of the firms indicate that they have any influence on FX hedging behavior.

As for the market view question, again we asked firms about the importance of their market view of exchange rates in the FX hedging decisions. The results of this question are shown in Table 22. Only 45% of the 561 responding firms indicated that their market view on exchange rates was very important or important to their FX hedging decisions with the complement of 55% indicating that it is only somewhat important or not important. This result is a reversal of the 60%- 40% split in favor of a market view on interest rates being important to IR hedging strategy. There are also some significant differences across the subgroups. Financial firms line up 60%– 40% against their market view on exchange rates being important for their hedging strategy while non-financials are equally split, 50% -50% on the issue. Geographically, there is obviously some difference of opinion on the importance of a market forecast. North American firms line up 58%-42% in favor of their market view being very important or important while foreign firms are lined up 39%-61% in favor of the market view being only somewhat or not important. Interestingly this last result contrasts with the foreign firm’s result for the importance of an interest rate view in which 64% indicated it was important and only 36% said it was not important. Perhaps managers at foreign firms have different assessment of their ability for forecast exchange rates relative to interest rates.

### **5.3 Commodity and Energy Risk Management**

This section as seen by a subset of firms that indicated that they managed with commodity or energy risk. We combined these two risks as the management of them is often done in a similar way and in order to keep the survey from becoming too long for the respondents to answer fully. A total of 240 respondents answered at least one question in this section.

To get a handle on how important commodity and energy risks are for the firms that participated in this section, we started with a question asking how many commodity and energy risks did the firm evaluate and how

many did they manage. A summary of the responses are given in Table 23. Of the 119 firms that faced commodity risk, 51% of these firms indicated that they evaluated 2 or more sources of commodity risks while of the 140 firms that faced energy risk, 44% evaluated 2 or more sources of energy risk. So about half of the firms exposed to commodity or energy risk are worrying about more than one source of commodity or energy risk.

Given the potential specific impacts of energy or commodity risk on specific parts of a firm, we asked firms to indicate which group within the firm was responsible for managing these risks. Interestingly, for 47% of the 214 firms that responded to this question the risks were managed by the purchasing department while for only 29% of firms is the hedging handled by treasury. In the other 23% of the firms the hedging is either done by a combination of purchasing and treasury or with the oversight of some other senior group within the firm.

The main question for commodity and energy risk management is to ascertain the contracts and other methods firms use to manage these risks. In Table 24 we display the results of the question asking firms to indicate their use of eight different instruments and methods for managing commodity and energy risks. According to the table, for all 193 respondents to the question, forward contracts the most commonly used method with 39% of firms indicating use. The next most used method for commodity and energy risk management are futures contracts (34%) and fixed pricing contracts (34%). Less commonly used methods are swaps (17%), OTC options (13%) and option combinations (e.g., collars caps) (12%). The least commonly used methods are exchange-traded options (9%) and debt contracts with embedded (commodity or energy) options (2%). When each firm was asked to vote for most used method, the rankings come out relatively the same. Forwards are the most important method for 61% of the firms that use forwards. Fixed price contract are considered the most important method by 57% of the firms that use this method while futures contracts are rated as most important by 54% of their users. Interestingly, even the less commonly used methods are rated as most important by roughly 25% of their users suggesting that firms have a wide variety of favorite methods for managing these risks.

Given the small number of financial firms that answered questions in this section (28), it does not make sense to look at a financial – non-financial firms, so Table 24 we look only at the geographic breakdown of North American vs. foreign firms. As we have often seen previously there are not major differences in the results between North American and foreign firms. North American firms have a greater propensity to use fixed pricing contracts and option combinations, while foreign firms have a greater propensity to use forward contracts. In

terms of most favored methods, the same three methods fill the top ranked slots, though the order of the top three is reversed between the two sub groups.

As with the other risk areas, we ask about the mix of financial contracts between OTC instruments and exchange-traded instruments. These results are displayed in Table 25. As with the FX derivatives, a majority of firms are primarily using OTC instruments. 41% of the 150 responding firms indicate that they use only OTC derivative instruments, while 14% indicate they use of only exchange-traded instruments. Geographically, although also majority OTC, North American firms show a slight tilt towards exchange traded instruments when compared to foreign firms.

Finally, we asked about the level of discretion allowed in the firms' commodity and energy hedging approach. Firms were asked to categorize their commodity and/or energy risk management policy as either discretionary, non-discretionary or some combination of discretion and rules—referred to as a variable policy in the survey.

The results of this question are displayed in Table 26. Of the 182 responses, 31% indicate that their risk management approach for commodity and energy risks is discretionary, while 37% indicate that their approach is non-discretionary. A variable policy best describes the approach for 25% of the firms while another 7% indicated some other approach.

These results show some interesting differences when we break down the results geographically. North American firms are less likely to have a discretionary policy than foreign firms (26% to 37%). Nearly 46% of the North American firms indicate that their approach is non discretionary compared to just 27% of foreign firms.

#### **5.4 Credit Risk Management**

Due to the global financial crisis on 2008 – 2009, credit risk has become a hot topic. We saw earlier that credit risk was one of the most important risks faced by firms responding to our survey. In this section we ask some basic questions about the credit risk firms face and the instrument or methods they used to manage it. Again by design, not all firms that faced credit risk were directed to answer questions in this section. There were 245 firms that saw this section and answered at least part of one question.

The first question was to learn about the forms of credit risk that these firms faced. We set out a list of seven forms of credit risk and asked the respondents to indicate whether they faced each form of credit risk. The results of this questioning are displayed in Table 27. The most commonly faced form of credit risk is the standard risk on trade credits or accounts receivables from customers. This form of credit risk was faced by 67% of the 231 respondents. On the investment side, credit risk on corporate bonds in an investment portfolio was next most commonly faced risk 39% of firms followed closely by long term contracts with customers denoted by 38% of the firms and counterparties on financial derivatives with 36% of the respondents. The remaining three forms of credit risk, long term contracts with suppliers, loan guarantees and loans to vendors were cited by less than 25% of the respondents.

Not surprisingly there was substantial difference in the results across financial and non-financial firms. Financial firms showed more involvement with investment based credit risks. Of the 120 financial firms, 66% faced credit risk from corporate bond investments and 54% on counterparties on financial derivatives. Of the 108 non-financial firms, 91% faced credit risk from trade credit and account receivable. Their other major sources were long terms contracts with supplies (35%) and long term contracts with customers (32%). Geographically the differences were not so sharp. Generally more foreign firms indicated that they faced more forms of credit risk than the North American firms. Of the 132 foreign firms, 4% cited long term contracts with customers compared to only 27% of the 99 North American firms. Also 27% of the foreign firms mentioned loan guarantees in contrast to only 14% of North American firms.

The next question was to ask what methods or contracts the firms used for managing these credit risks. Again we offered seven choices of methods or contracts. In total 212 firms responded to this question and the results are displayed in Table 28. Interesting standard operating methods dominated over financial contracts for managing credit risk. The most common method, chosen by 65% of the respondents was simply to impose a minimum credit rating for their counterparties. Also popular was to impose strict caps on exposure to any single counterparty, (61%) and simply require the use of collateral (56%). The use of loan guarantees (cosigning of loans by another creditworthy party) was used by 29% of respondents and led all of the financial contract options offers, including credit default swaps, credit insurance and total return swaps, all with less than 20% usage.

Within the subgroups there are some large differences in use of various methods. The 120 financial firms are much more likely than the 92 non-financial firms to impose minimum credit ratings (75% vs. 52%), require collateral (78% vs., 27%) and use credit default swaps (28% vs. 4%) and total return swaps (16% vs. 1%). However, the non-financial are more likely to use credit insurance than the financial firms (24% vs. 13%). Once again geographically the differences are not so significant. Overall, the 124 foreign firms appear to use a greater number of methods per firm than the 88 North American firms. In particular, the minimum credit rating and credit insurance are more popular with foreign firms than with US firms.

Not just because it turned out to be the most commonly used methods of dealing with credit risk, but primarily because it has been asked in previous surveys, we asked a specific question about the minimum credit rating for a counterparty in a derivative transaction. As had been done historically we asked it both for short term contracts (maturity within 12 months) and long term contracts (maturity of more than 12 months). The responses for the 128 firms that had such a policy are displayed in Figure 6. The results display is a triangular shaped pattern peaking at 40% of firms having a minimum credit rating of A for contracts of less than 12 months and 31% of firms having a minimum credit rating of A for contracts with a maturity of more than 12 months. Not surprisingly, the distribution for the minimum credit rating is shifted up slightly towards AA and AAA for the longer maturity contracts. Despite the importance of this method of dealing with credit risk, it is surprising that 88 firms (41% of the respondents) responded to this question that they do not have a set policy on a minimum credit rating for a derivative contract counterparty.

In sub group analysis what is amazing is the variation in the percentage of firms with no set policy on minimum credit rating for counterparties. Among the 116 financial firms that responded to the question, only 19% indicated having no policy. However, for the 100 non-financial firms that responded, a whopping 66% indicate no set policy on a minimum credit rating for counterparties. This disparity continues over to the geographical breakdown. Of the 92 North American firms that responded, 54% had no set policy while only 31% of the 124 foreign firms indicated that they had no set policy. One might expect that in light of the credit issues of the past few years, more firms would consider developing such a policy to help manage credit risk.

## 5.5 Geopolitical Risk Management

The final area specific set of questions are on geopolitical risk. Once again, to reduce survey fatigue, not all firms that indicated they faced geopolitical risk were directed to this section. In all, we had 236 firms directed to and answer at least one question in this section.

Geopolitical risk management has not generally been studied past survey of corporate risk management. So to get some idea of how make geopolitical risk management decisions we started with asking for what circumstances they consider geopolitical risk. We chose to focus the question around investment size and location. The first version of the question we ask whether the firm evaluates geopolitical risk for investments over a certain minimum size for any size, and in the second version we ask whether the firms evaluate geopolitical risk for investments in select foreign countries, all foreign countries and/or home. The results of this questioning for the full set of 193 respondents as well as the standard subgroups are shown in Figure 7 and Figure 8.

With respect to investment size, From Figure 7 it appears that a majority of firms (58%) evaluate political risk only for investment over some minimum size. This result is consistent across subgroups except for North American firms where it is slightly more common for these firms to evaluate geopolitical risk for investments of any size. As for the location of the investment, Figure 8 suggests that the most common response is for firms to evaluate geopolitical risk only for investments in select foreign countries (43%). This is followed by the other extreme whereby firms evaluate investments for geopolitical risk in all foreign countries as well as in the home market. This was the response of 25% of the respondents. The choices of all foreign countries and select foreign countries and home were each the choice of just 16% of the respondents. Interestingly if we cross tabulate these questions it turns out that 52 firms (24%) evaluate geopolitical risk only for investments over a certain size and in select foreign countries while only 25 respondents (13%) evaluate geopolitical risk for investments of any size and in all markets.

By subgroups, financial firms were more likely to use less discretion, with 20% indicating all foreign countries and 27% all locations including the home country. Non-financial firms were much more apt to use discretion with 52% indicating evaluation for only select foreign countries. North American firms showed the least discretion with 20% and 29% in the all foreign countries and all foreign plus the home country categories, respectively.

Many people have argued that the events of September 11, 2001, changed the market's perceptions about the possibility of geopolitical risks and heightened the awareness of this risk within the business community. To see if this event has had any impact on how firms think about geopolitical risk we asked firms to indicate the events of 9/11 changed the role of geopolitical risk management at their firm. The results are supportive of the common view. Of the 215 firms that responded to this question, only 2 indicated that the events of September 11th resulted in less emphasis on geopolitical risk in their firm. A substantial 43% of the respondents indicated that these events had not changed the emphasis within their firm on geopolitical risk management. However, 46% indicated that these events had resulted in more emphasis on geopolitical risk with a further 8% of indicating that they had resulted in "much more" emphasis on geopolitical risk within their firm. These results varied very little across the sectoral and geographic subgroups.

To learn about the popularity of methods firms were using to manage geopolitical risk, we offered a broad list with 14 methods of dealing with geopolitical risk and asked firms to indicate whether they used any of these methods. The results of this question are displayed in Panel A of Table 29. Of the 210 firms that responded to this question, the most commonly used method to manage geopolitical risk was simply to "avoid investments in certain countries". This was chosen by 50% of the respondents. Two other methods were used by 40% or more of the firms, these were "increasing research before new investments", and "diversifying investments across more countries". Both of these are standard operating approached methods to reduce risk. Two other methods were used by 26% of the respondents, "lower the company profile in the risky country" and "increase the hurdle rate on projects in the risky country". The remaining seven suggested methods were used by between 15% and 19% of the firms. These included increasing use of currency or commodity hedging, increase use of political risk analysts, increase in the use of security personnel, alerting supply chain management, diversifying investment across more industries, use of political risk insurance and enhancing public relations in the risky region. That all 14 methods had at least 15% of the firms indicate some usage, suggests that firms are using multiple approaches to deal with geopolitical risk.

In terms of the subgroups, financial firms are much more likely than non-financial firms to manage geopolitical risks by diversification of their investment either across countries (59% vs. 25%) or industries (27% vs. 8%), as well as make increased use of political risk analysts (26% vs. 12%). On the flip side, non-financial firms are

much more likely than financial firms to manage geopolitical risks by increasing use of partners or consortia (44% vs. 25%), make increased use of security personnel (23% vs. 7%) and alter their supply chain management (27% vs. 1%). Geographically, the difference in usage rates across the two regions is not substantial. The North American firms are more likely than foreign firms to make increased use of partners or consortia (41% vs. 31%), increase use of security personnel (22% vs. 11%) and alter supply chain management (24% vs. 9%). Foreign firms are more likely than North American firms to make greater use of diversification of investments across countries (45% vs. 32%) and political risk insurance (20% vs. 10%).

Panel B of Table 29 shows the ranking of the methods based upon the percentage of users of each method than voted that method as their most commonly used technique for managing geopolitical risk. Thus these percentages tell the relative popularity of a method. Absolute popularity would require multiplying these percentages with the percentages in Panel A. Given this measurement technique, interestingly political risk insurance, although used by only 15 of firms, ranked as the most important method by 66% of these users. The simple approach of avoiding investment in risky countries is the most popular choice for 47% of its users, while its corollary of just decreasing the size of the investment in risky countries is most popular with 31% of its users. The only other method to be voted most popular choice by more than 30% of its users is increased currency/commodity hedging ranks most important at 33%.

Despite showing the popularity figures in terms of votes as a percentage of firms using that method rather than as percentage of all respondents, the most popular methods for geopolitical risk management would only change order. In terms of the methods getting the largest number of most important votes, the top three methods, all getting votes from 10% or more of respondents, are: avoiding investments in certain countries (23% of all respondents), decrease size of investment in risky country (11%), and political risk insurance (10%).

Broken down into subgroups, the differences in the most popular method were relatively minor. Political risk insurance remains the relatively most popular method by its users with 64% plus of its users in each subgroup indicating it as their most popular method. The only choice that was notable more popular with financial firms than

the general population was increased currency /commodity hedging,<sup>15</sup> while for non-financial firms it was diversifying across more industries. Geographically North American firms were more likely to rank increased use of political risk analysts as their top choice than the general population while foreign firms were much fonder of increased currency/commodity hedging.

One difficulty with geopolitical risk is that there is not a general consensus on how to take it into account when doing valuation of projects facing this risk. To see what methods these firms used, we asked them to indicate usage of various methods of incorporating geopolitical risk in to a valuation decision for an investment. We offer 4 prescribed methods, 1) adding a risk premium to the required rate of return, 2) using risk-adjusted expected cash flows, 3) using scenario/simulation analysis, and 4) pricing in political risk insurance costs. The results of this questioning are shown in Table 30. For the 206 firms that responded to this question, 57% used the simple approach of adding a risk premium to the required rate of return. The second most commonly used method was scenario/simulation analysis selected by 36% of the firms. Risk adjusted expected cash flows was selected by 28% of the firms while only 15% selected pricing in political risk insurance. This could be because only 15% of the sample indicated that they used political risk insurance, but pricing in the costs to account for the risk in valuation does not require that the firm need to actually be using political risk insurance.<sup>16</sup>

The responses to this question are relatively the same across the subgroups. Financial firms are more likely to use multiple methods, and do scenario /simulation analysis proportionally more often than non-financials. Geographically, the foreign firms tend to be more likely to price in political risk insurance than North American firms.

To end the discussion with political risk insurance, our last question in this section was a very straight forward, do you hold any political risk insurance contracts? For the 218 respondents, 18% indicated that they held at least one such contract. Conditionally the ryes response rate varied only slightly: for financial firms it was 18% and for non-financial firms it was 15%. For North American firms it was 13% and for foreign firms it was 19%.

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<sup>15</sup> The financial firms sample displays a 100% result for Alter supply chain management in Panel B of table 30. This is because only one financial firm indicated use of this method and they ranked it as their most commonly used method. Thus its popularity in this case is idiosyncratic to this one particular firm.

<sup>16</sup> This conclusion is supported by comparing the subgroup analysis where pricing in political risk premiums is selected by 18% of financial firms while in Panel A of Table 10 we see that only 13% of financial firms actually use political risk insurance.

## **6. Conditional Analysis based on Manager and Firm Characteristics**

[to be completed]

## **7. Conclusion**

The results of this survey provide a broad understanding of the current state of corporate risk management around the world. Exposure to the six areas of risk we study in this survey, interest rate, foreign exchange, commodity, energy, credit and geopolitical is quite prevalent, especially for interest rate, credit risk and foreign exchange risk. The vast majority of firms that face material risk in these areas are managing this risk in some form, more so with operational hedges than via financial hedging. Financial derivatives are used by only 64% of the firms in the sample.

Beyond just derivative usage, the survey highlights the wide variety of goals and policies associated with firms risk management programs. While concern issues associated with derivatives usage continues, the degree of concern, especially about regulatory and accounting issues seems to have decreased relative to the 1990s. However, respondents do indicate that possible regulatory changes may have some affect on their overall level of risk management

For specific forms of financial risk, such as interest rate, foreign exchange, and commodity, firms generally use a mix of financial and operational methods to manage their risk; if they use financial derivatives, they tend to favor over the counter instruments relative to exchange traded ones. In choosing amongst financial instruments firms overwhelmingly prefer basic instruments, with forward contracts generally being the most popular derivative instrument. Interestingly, the popularity of options and option combinations appears to have decreased relative to the evidence in some earlier surveys.

The survey also provides insight into new types of risk not generally covered in previous surveys. Credit risk, which was the most important risk area for a majority of respondents, is basically handled via operational methods. Geopolitical risk is also a concern, though for fewer firms, and the approach to its evaluation and methods of dealing with it tend to vary even more widely than for other sources of risk.

Overall, our analysis suggests that risk management is an important part of corporate activities. Most firms focus on the sources of risks that are most significant to them and manage these risks through operations,

with about two thirds also using financial derivatives as part of the risk management program. We document substantial and predictable differences in behavior between financial and non-financial firms; however, in most cases, the differences on the basis of geographic location are relatively minor. This is in contrast to studies from the 1990s and suggests that best practice risk management policy and behavior has become global.

## Annex 1 –Previous surveys

Authors	Year	Country	Focus of the study / tools of risk management
Block and Gallagher .	1986	United States	Interest rate risk management..
Dolde	1993	United States	Exchange and interest rate risk management tools
Bodnar, Hayt, Marston, and Smithson .	1995	United States	Study about derivatives use to define the evolution of derivatives usage in the time.
Bodnar, Hayt, and Marston.	1996	United States	Study about derivatives use to define the evolution of derivatives usage in the time.
Berkman and Bradbury .	1996	New Zealand	Study about derivatives use
Hakkarainen, Kasanen and Puttonen	1997	Finland	Study about interest rate risk management tools. Particularly, comparison with other country
Berkman, Bradbury and Magan.	1997	New Zealand	Study about derivatives use and comparison with American studies
Bodnar, Hayt, and Marston	1998	United States	Study about derivatives use to define the evolution of derivatives usage in the time.
Alkebäck and Hagelin	1999	Sweden	Study about derivatives use and comparison with U.S. and New Zealand study.
Bodnar and Gebhardt	1999	Germany	Study about derivatives use in risk management activity
Jalilvand	1999	Canada	Study about derivatives use and comparison with U.S. and New Zealand study.
Fatemi and Glaum .	2000	Germany	Study about risk managers' activity. Particularly, financial and non-financial risk management.
Mallin, Ow-Yong, and Reynolds	2001	United Kingdom	Study about derivatives use and comparison with Bodnar, Hayt and Marston (1995).
Bodnar,-de Jong, and Macrae	2003	Netherlands	Study about derivatives use conditioned by institutional rule, comparison with Bodnar et al (1998)
El-Masry.	2006	United Kingdom	Study about derivatives use in risk management
Servaes, Tameyo, and Tufano P.	2009	Global	Study about risk management activity as from global corporate survey of corporate activities

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Figures

Figure 1a: Firms facing material risk - by risk area

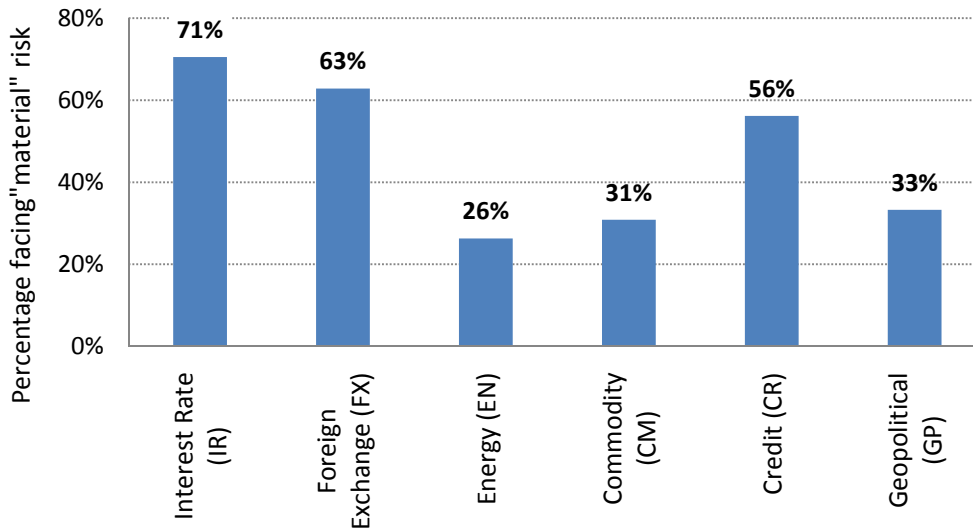
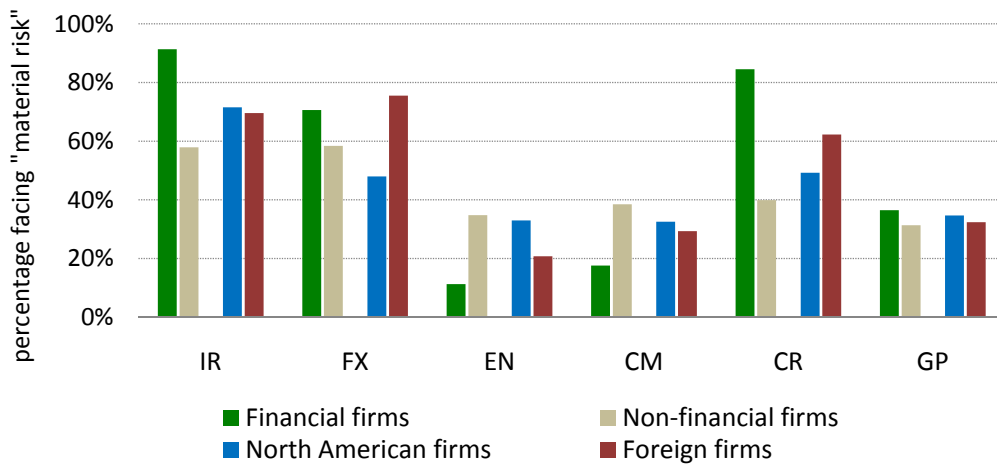
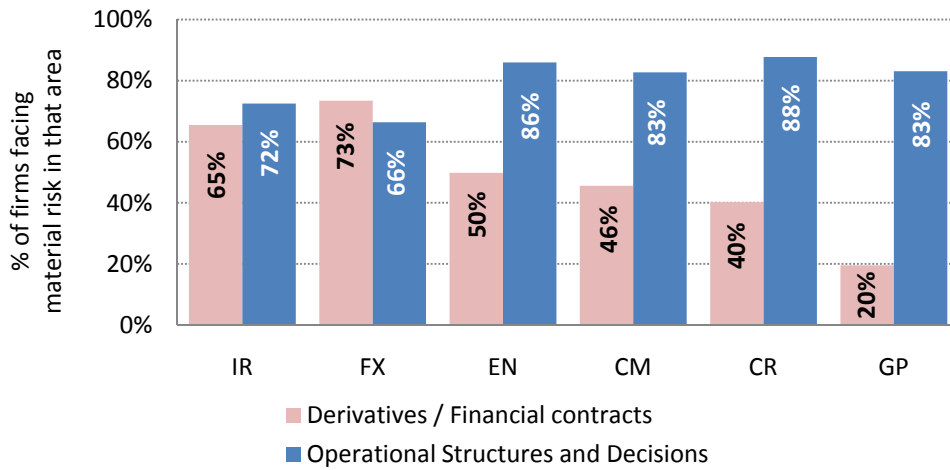


Figure 1b: Firms facing material risk - by subsample

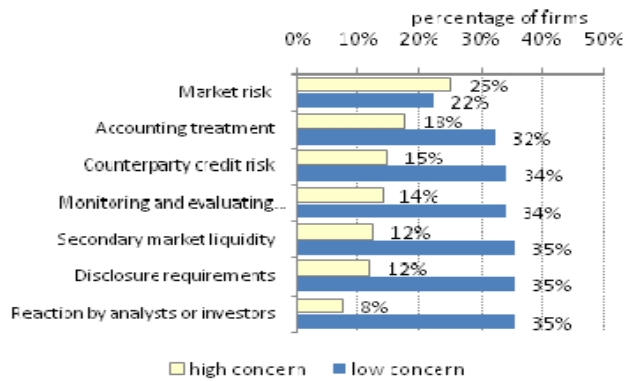


**Figure 2: Firms managing material risk**

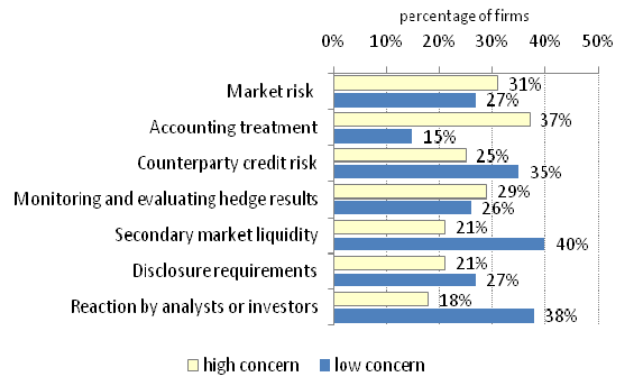


**Figure 3: Concerns about derivatives – Comparison with Wharton 1998 survey responses**

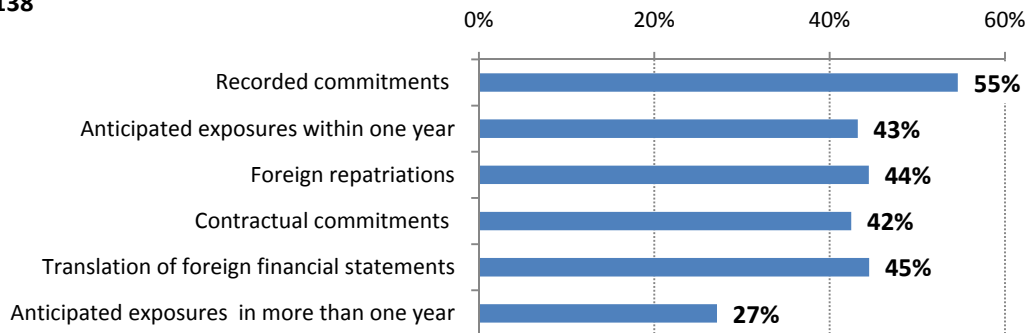
North American non-financial firms in this survey



US nonfinancial firms from Wharton 1998 survey

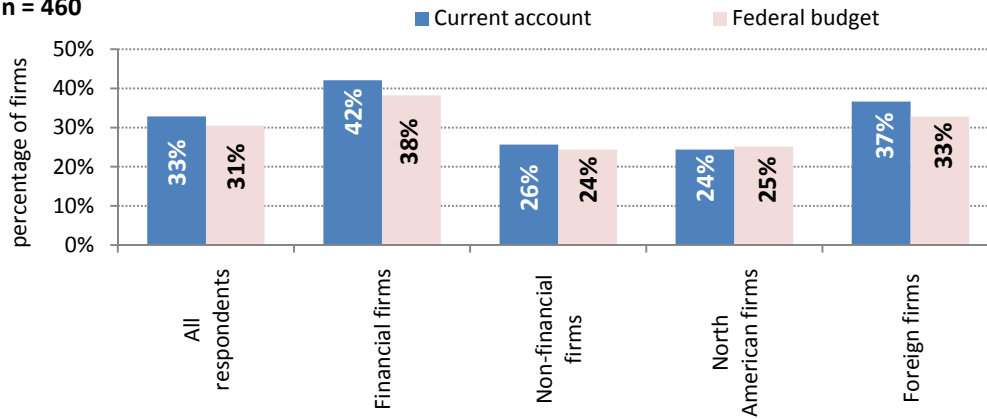


**Figure 4: Percent of FX exposures hedged**  
n = 138



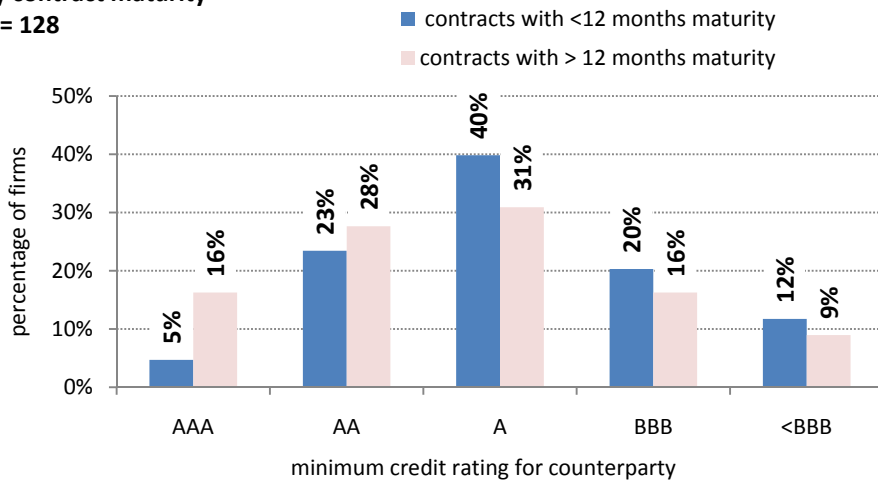
**Figure 5: Does your country's current account or federal budget surplus/deficit affect the amount and timing of your FX hedging strategy?**  
**Yes responses**

n = 460

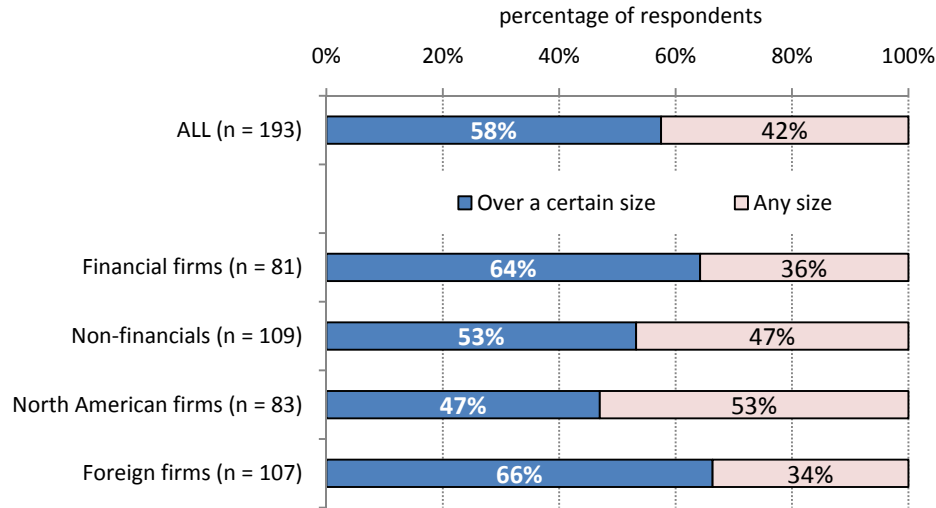


**Figure 6: Minimum credit rating for counterparty by contract maturity**

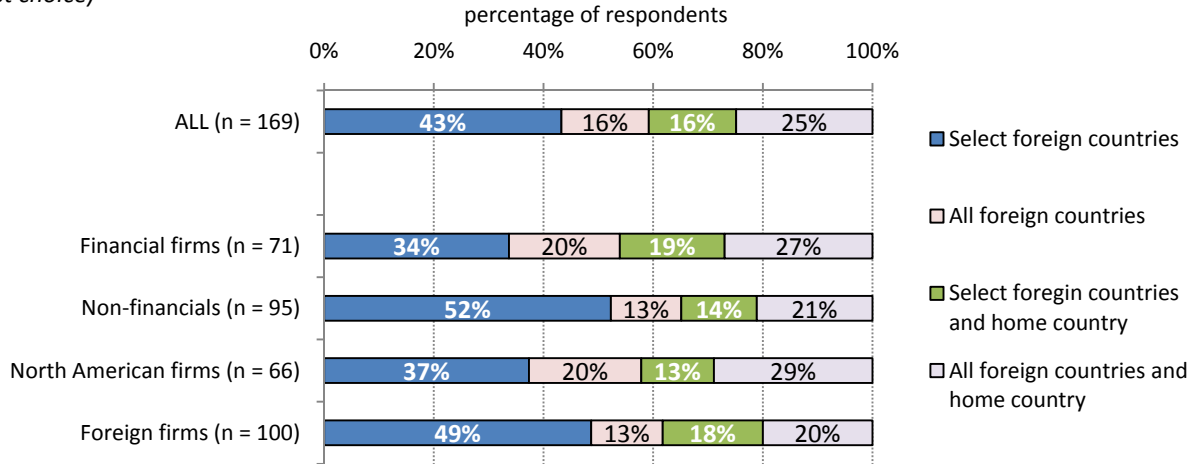
n = 128



**Figure 7: For what size investments does your firm evaluate geopolitical risks?**  
(best choice)



**Figure 8: For investment in what locations does your firm evaluate geopolitical risks?**  
(best choice)



**Tables**

<b>Table 1: Basic demographic characteristics of survey respondents n = 1,161</b>									
Region (HQ)		Industry		Size (USD sales)		Legal Form		Credit Rating	
North America	45%	Basic Materials	5%	<\$25m	13%	Public Traded	37%	AAA	10%
Asia	27%	Manufacturing	20%	\$25-99m	14%	Private	45%	AA	20%
Europe	20%	Services	28%	\$100-499	23%	Gov't owned	7%	A	18%
Rest of World	6%	Financials	35%	\$500-999	10%	Non-Profit	4%	BBB	13%
No Answer	2%	Diversified/Other	10%	\$1b-4.99b	15%	No Answer	4%	<BBB	13%
		No Answer	2%	+\$5b	22%			NR or N/A	14%
				No Answer	3%			No Answer	13%

<b>Table 2a: Perceptions of change in levels of risk (2006 to 2010)</b>						
Risk	IR	FX	EN	CM	CR	GP
Increase	57%	62%	54%	54%	70%	54%
Same	22%	27%	36%	37%	19%	38%
Decrease	21%	11%	10%	9%	11%	8%
Num	919	804	481	502	744	515

<b>Table 2b: Changes in levels of risk management (2006 to 2010)</b>						
Risk	IR	FX	EN	CM	CR	GP
Increase	63%	62%	50%	54%	72%	48%
Same	31%	33%	47%	43%	24%	48%
Decrease	7%	5%	4%	4%	4%	4%
Num	907	784	479	499	730	509

<b>Table 3: Most important risk n = 1,161</b>							
<b>Panel A –all respondents</b>		Risk Area					
		IR	FX	EN	CM	CR	GP
As % of “most important” votes		25%	20%	9%	13%	26%	7%
As % of firms with material risk		38%	33%	37%	44%	51%	22%
<b>Panel B - by subgroups</b>		Risk Area					
As % of “most important” votes		IR	FX	EN	CM	CR	GP
Financial firms		37%	9%	1%	1%	46%	5%
Non-financial firms		18%	26%	14%	19%	16%	7%
North American firms		29%	15%	10%	17%	21%	7%
Foreign firms		21%	24%	8%	9%	31%	6%
As % of firms with material risk		IR	FX	EN	CM	CR	GP
Financial firms		42%	13%	5%	7%	57%	15%
Non-financial firms		34%	48%	44%	54%	43%	26%
North American firms		45%	34%	34%	56%	48%	23%
Foreign firms		32%	33%	41%	32%	53%	19%

**Table 4: Importance of various goals to risk management program**

**Panel A: All respondents n = 1,131**

Number in “very Important” column is percentage of firms that rated that goal/objective as very important. Number in “not Important” column is percentage of firms that rated that goal/objective as not important. Importance score is weighted average measure of importance for that goals across all respondents, with 4 = very important, 3 = important, 2 = somewhat important and 1 = not important . Number in rated as “most important” column is percentage of firms ranking that goal/objective as the most important to the firm.

Goals /Objective of Risk Management Program	Rating (votes)		Importance Score*	Rated as “Most Important”
	“Very Important”	“Not Important”		
g. Avoid large losses from unexpected price movements	50%	3%	3.69	18%
l. Shareholders expect us to manage risk	41%	3%	3.66	5%
k. Increase firm value	39%	4%	3.55	14%
e. Increase expected future cash flows	38%	3%	3.63	15%
f. Improve or maintain credit rating	31%	8%	3.34	4%
m. Ability to pursue investment opportunities even in difficult times	29%	8%	3.33	11%
a. Increase reported earnings predictability	29%	9%	3.33	10%
h. Improve corporate decision making environment	28%	4%	3.47	7%
b. Reduce operating cash flow volatility	28%	5%	3.42	8%
d. Reduce cost of debt	23%	13%	3.13	5%
j. Reduce cost of equity	13%	18%	2.79	1%
i. Decrease volatility of share price	12%	22%	2.65	0%
c. Increase the amount we can borrow	12%	23%	2.64	1%

**Panel B: Rated as “most important” by subgroups**

Goals /Objective of Risk Management Program	Financial firms N = 393	Non-financial firms N = 705	North American firms N 513	Foreign firms N = 585
g. Avoid large losses from unexpected price movements	24%	15%	15%	21%
l. Shareholders expect us to manage risk	9%	3%	5%	6%
k. Increase firm value	16%	13%	14%	14%
e. Increase expected future cash flows	6%	19%	17%	12%
f. Improve or maintain credit rating	7%	2%	3%	4%
m. Ability to pursue investment opportunities even in difficult times	14%	9%	11%	10%
a. Increase reported earnings predictability	7%	12%	9%	11%
h. Improve corporate decision making environment	5%	9%	9%	6%
b. Reduce operating cash flow volatility	4%	11%	10%	8%
d. Reduce cost of debt	5%	5%	5%	5%
j. Reduce cost of equity	1%	1%	0%	1%
i. Decrease volatility of share price	1%	0%	1%	0%
c. Increase the amount we can borrow	1%	2%	1%	1%

**Table 5: What assumption do you most commonly make about the future price distribution when doing scenario analyses or financial simulations?**

n = 1,095	
Assume a normal distribution with mean and variance taken from historic data	28%
Assume a normal distribution with mean and variance from some other source (estimated or market implied forecasts)	21%
Modify a normal distribution with assumptions to make it more conservative (e.g. treating the 5% tail as if it were the 10% tail)	19%
Assume a non-normal distribution that allows for fatter tails and potential skewness	16%
Let the historic data determine the shape of some arbitrary distribution	13%
Other	3%

**Table 6: Firms indicating that they use financial derivatives in their risk management program**

<b>Panel A: Full Sample</b>							
n = 1,161		<b>Yes</b>		<b>No</b>			
		64%		36%			
<b>Panel B: By Geographic Region and Economic Sector</b>							
		All Regions		North America n = 525		Foreign n = 609	
		Yes	No	Yes	No	Yes	No
Financial sector firms	n = 404	78%	22%	72%	28%	81%	19%
Non-financial sector firms	n = 730	56%	44%	54%	46%	59%	41%
<i>Primary product sector firms</i>	<i>n = 109</i>	71%	29%	72%	28%	70%	30%
<i>Manufacturing sector firms</i>	<i>n = 229</i>	67%	33%	68%	32%	64%	36%
<i>Service sector firms</i>	<i>n = 392</i>	46%	54%	42%	58%	51%	49%
		All Sectors		58%	42%	68%	32%
<b>Panel C: By Firm Size - USD Sales (2009 dollars)</b>							
(n = 1,077 with usable responses)		<b>Yes</b>		<b>No</b>			
< USD25M	n = 115	35%		65%			
USD 25M – 99M	n = 157	44%		56%			
USD 100M – 499M	n = 260	54%		46%			
USD 500M – 999M	n = 114	76%		24%			
USD 1.0B – 4.9B	n = 179	80%		20%			
USD 5.0B and more	n = 252	85%		15%			
<b>Panel D: By Ownership Structure</b>							
n = 1,080 with usable responses		<b>Yes</b>		<b>No</b>			
Publicly Traded	n = 427	78%		22%			
Private	n = 515	53%		47%			
Government Owned	n = 87	70%		30%			
Non-Profit	n = 51	43%		57%			
<b>Panel E: By Credit Rating</b>							
n = 917 with usable responses		<b>Yes</b>		<b>No</b>			
AAA	n = 118	72%		28%			
AA	n = 228	65%		35%			
A	n = 181	69%		31%			
BBB	n = 153	73%		27%			
BB	n = 83	76%		24%			
< BB	n = 69	57%		43%			
Not Rated	n = 85	47%		53%			

<b>Table 7: Most important reasons for not using financial derivatives n = 380</b>	Num	%
a. Insufficient exposure to financial or commodity prices	132	34%
b. Exposures are more effectively managed by other means	71	31%
g. Costs of establishing and maintaining a derivatives program exceed the expected benefits	56	25%
c. Difficulty pricing and valuing derivatives	41	18%
f. Concerns about perceptions of derivative use by investors, regulators and the public	31	13%
h. Other	30	13%
e. Accounting treatment	14	6%
d. Disclosure requirements of the SEC or the FASB	9	4%

<b>Table 8 Degree of concern with issues related to derivative use</b>					
<b>Panel A: All responses, n = 601</b>					
Area of Concern	High concern	Moderate concern	Low concern	No concern	Concern score *
c. Market risk (unforeseen change in value of derivative)	39%	39%	15%	7%	3.10
b. Counterparty credit risk	31%	37%	22%	10%	2.89
e. Monitoring and evaluating hedge results	23%	41%	26%	11%	2.75
d. Secondary market liquidity	23%	39%	24%	14%	2.71
a. Accounting treatment	21%	35%	27%	16%	2.60
g. Disclosure requirements	14%	31%	30%	24%	2.36
f. Reaction by analysts or investors	11%	32%	31%	26%	2.28
* Concern score is weighted average with high concern = 4, moderate concern =3, low concern = 2 and no concern = 1					
<b>Panel B: Concern score by subgroup</b>					
Area of Concern	Financial firms n = 254	Non-financial firms n = 348		North American firms n = 266	Foreign firms n = 335
c. Market risk (unforeseen change in value of derivative)	3.28	2.97		2.95	3.22
b. Counterparty credit risk	3.23	2.65		2.74	3.02
e. Monitoring and evaluating hedge results	2.87	2.67		2.57	2.9
d. Secondary market liquidity	3.02	2.49		2.53	2.85
a. Accounting treatment	2.72	2.52		2.53	2.66
g. Disclosure requirements	2.48	2.27		2.28	2.41
f. Reaction by analysts or investors	2.45	2.16		2.14	2.4

<b>Table 9: Frequency of derivative valuation</b>						
Frequency	All respondents n = 595	Financial Firms n = 254	Non-financial firms n = 341		North American firms n = 263	Foreign firms n = 332
Daily	34%	63%	13%		27%	40%
Weekly	12%	9%	13%		9%	14%
Monthly	31%	17%	42%		36%	27%
Quarterly or less	12%	5%	17%		16%	8%
No schedule	11%	6%	15%		11%	11%

<b>Table 10: Reaction to possible changes in regulatory rules for derivative instruments</b>							
<b>Panel A: Reaction to restriction on OTC derivatives and push towards all standardized exchange-traded contracts</b>							
Impact on firm's usage of derivatives	All respondents n = 604		Financial firms n = 256	Non-financial firms n = 348		North American firms n = 265	Foreign firms n = 339
Increase in usage	10%		15%	7%		6%	13%
No change in usage	54%		39%	66%		65%	47%
Decrease in usage	32%		43%	24%		28%	36%
Discontinue usage	3%		3%	3%		2%	4%
<b>Panel B: Reaction to required cash collateral or increased collateral positions for all OTC derivatives</b>							
Impact on firm's usage of derivatives	All respondents		Financial firms	Non-financial firms		North American firms	Foreign firms
Increase in usage	6%		9%	3%		4%	7%
No change in usage	35%		38%	32%		33%	37%
Decrease in usage	52%		51%	53%		55%	50%
Discontinue usage	7%		2%	11%		9%	6%

<b>Table 11: Impact on firm value from a sudden 100 basis point rise in interest rates</b>						
<i>For the top row and first column top number is the number of responses, the second is the percentage of responses for each category and the number in brackets in the average change in firm value. In the heavy lined conditional block, top number is number of conditional responses to both questions and the diff= [X.X%] is the average difference in the IR change on firm value between hedged case and unhedged case.</i>						
Impact on firm value of a sudden 100 basis point rise in interest rates		WITH FIRM'S CURRENT RISK MANAGEMENT PROGRAM				
		All	Increase	No Change	Decrease	
<b>WITHOUT FIRM'S CURRENT RISK MANAGEMENT PROGRAM</b>	<b>All</b>	432	40	262	130	
		410	9%	61%	30%	
			[10.9%]	[0%]	[-9.5%]	
	<b>Increase</b>	20	16	3	1	20
		5%	diff =	diff =	diff =	
		[15.4%]	[-2.1%]	[-12.3%]	[70.0%]	
<b>No Change</b>	170	1	160	2	163	
	41%	diff =	diff =	diff =		
	[0%]	[5.0%]	[0%]	[-12.5%]		
<b>Decrease</b>	220	17	67	113	197	
	54%	diff =	diff =	diff =		
	[-13.5%]	[20.5%]	[9.1%]	[7.7%]		
			34	230	116	380

<b>Table 12: Firms that have "frequently" or "sometimes" used interest rate derivatives in past three years for the following purposes...</b>				
Use of Interest rate derivatives to ...	All respondents n = 502		Financial firms n = 224	Non-financial firms n = 266
a. Swap from fixed rate to floating rate	44%		68%	25%
b. Swap from floating rate to fixed rate	58%		65%	54%
c. Fix in advance the rate or spread on new debt	45%		51%	39%
d. Reduce or lock in rate based upon market view	47%		56%	40%

	<b>All respondents n = 514</b>		<b>Financial firms n = 238</b>		<b>Non-financial firms n = 264</b>	
<b>Interest rate contracts/positions</b>	Use	<i>Ranked as most used*</i>	Use	<i>Ranked as most used</i>	Use	<i>Ranked as most used</i>
c. Interest rate swaps	67%	71%	75%	63%	61%	81%
a. Forward rate agreements	45%	47%	52%	33%	38%	64%
h. Varying the maturity of the debt	32%	43%	36%	39%	28%	45%
b. Interest rate futures	30%	31%	50%	27%	13%	39%
g. Option combinations (e.g., caps, collars)	26%	13%	34%	7%	20%	50%
d. Interest rate swaptions	18%	13%	31%	6%	7%	25%
f. Exchange traded IR option contracts	14%	8%	23%	4%	6%	24%
e. OTC IR options	13%	4%	24%	1%	4%	16%

*\* Ranked as most used is a percentage of the number one ranking votes relative to all firms that indicate use*

<b>Mix</b>	<b>All respondents n = 498</b>	<b>Financial firms n = 237</b>	<b>Non-financial firms n = 287</b>	<b>North American firms n = 242</b>	<b>Foreign firms n = 282</b>
Over-the-counter only	35%	24%	45%	38%	32%
Mostly OTC	25%	30%	21%	20%	29%
Equal mix	12%	18%	7%	9%	15%
Mostly exchange-traded	14%	21%	9%	14%	16%
Exchange-traded only	13%	8%	18%	19%	8%

<b>Benchmark</b>	<b>All respondents n = 498</b>	<b>Financial firms n = 237</b>	<b>Non-financial firms n = 287</b>
a. Cost of funds relative to a target (fixed/floating) portfolio	35%	24%	45%
b. The volatility of interest expense relative to target portfolio	25%	30%	21%
c. Cost of funds relative to an Index (e.g., LIBOR)	12%	18%	7%
d. Cost of funds relative to a target duration portfolio	14%	21%	9%
e. Our firm does not use a benchmark	13%	8%	18%

<b>Panel A: Does the shape of the yield curve impact the size or amount of your interest rate hedge positions?</b>					
	<b>All respondents n = 553</b>	<b>Financial firms n = 248</b>	<b>Non-financial firms n = 293</b>	<b>North American firms n = 245</b>	<b>Foreign firms n = 296</b>
Yes	57%	75%	43%	48%	65%
No	43%	25%	57%	52%	35%

<b>Panel B: How Important is your firm's forecast outlook for interest rates for the extent you hedge IR risk</b>					
	<b>All respondents n = 561</b>	<b>Financial firms n = 248</b>	<b>Non-financial firms n = 299</b>	<b>North American firms n = 250</b>	<b>Foreign firms n = 297</b>
Very Important or Important	60%	71%	49%	54%	64%
Somewhat Important or not important	40%	29%	51%	46%	36%

<b>Table 17: Impact on firm value from a sudden 10% decline in value of home currency</b>						
For the top row and first column top number is the number of responses, the second is the percentage of responses for each category and the number in brackets in the average change in firm value. In the heavy lined conditional block, top number is number of conditional responses to both questions and the diff= [X.X%] is the average difference in the FX change on firm value between hedged case and unhedged case.						
Impact on firm value of a sudden 10% decline in value of home currency		WITH FIRM'S CURRENT RISK MANAGEMENT PROGRAM				conditional totals
		All	Increase	No Change	Decrease	
<b>WITHOUT FIRM'S CURRENT RISK MANAGEMENT PROGRAM</b>	<b>All</b>	357 345	65 18% [7.9%]	180 50% [0%]	112 31% [-7.7%]	
	<b>Increase</b>	51 15% [9.9%]	44 diff = [-2.5%]	6 diff = [-5.0%]	0 diff = [-]	50
	<b>No Change</b>	138 40% [0%]	2 diff = [7.5%]	130 diff = [0%]	4 diff = [-5.8%]	136
	<b>Decrease</b>	156 45% [-11.9%]	10 diff = [15.7%]	32 diff = [6.5%]	104 diff = [5.9%]	146
Conditional totals			56	168	108	332

<b>Table 18: Firms that have "frequently" or "sometimes" used foreign currency derivatives in past three years to manage risk from...</b>						
Use of foreign currency derivatives to manage risk from ...	All firms n = 459	Financial firms n = 160	Non-financial firms n = 265	North American firms n = 147	Foreign firms n = 278	
b. Recorded commitments (e.g., booked contracts)	76%	75%	76%	72%	77%	
d. Anticipated transactions/investments within one year	70%	75%	67%	64%	73%	
a. Foreign repatriations (e.g., dividends, royalties)	68%	69%	68%	73%	65%	
c. Contractual commitments (e.g., unbooked contracts)	66%	70%	63%	55%	71%	
f. Translation of foreign subsidiary financial statements	58%	62%	55%	58%	58%	
e. Anticipated transactions/investments in more than one year	48%	59%	41%	43%	51%	

	All firms n = 427	Financial firms n = 180	Non-financial firms n = 240	North American firms n = 140	Foreign firms n = 280
<b>Panel A: Use of foreign currency contracts /positions (as percentage of all respondents)</b>					
a. Forward contracts	64%	62%	66%	55%	69%
h. Cross currency swaps	38%	54%	27%	36%	40%
c. Futures contracts	32%	45%	23%	33%	32%
b. Money market deposits/loans	31%	39%	25%	19%	37%
i. Foreign currency debt financing	27%	29%	25%	27%	27%
f. Exchange-traded options	17%	24%	13%	16%	18%
g. Option combinations (e.g., caps, collars)	17%	22%	13%	17%	17%
e. OTC options	17%	26%	9%	9%	20%
d. Non deliverable forwards (NDFs)	15%	22%	10%	9%	18%
<b>Panel B: FX instrument/position ranked as #1 most commonly used (as percentage of users of that instrument/position above)</b>					
a. Forward contracts	75%	66%	80%	78%	73%
i. Foreign currency debt financing	42%	37%	44%	39%	41%
b. Money market deposits/loans	37%	30%	46%	52%	34%
h. Cross currency swaps	31%	32%	28%	44%	24%
c. Futures contracts	25%	20%	33%	37%	19%
e. OTC options	21%	19%	23%	15%	21%
f. Exchange-traded options	15%	7%	27%	27%	10%
g. Option combinations (e.g., caps, collars)	14%	8%	22%	17%	13%
d. Non deliverable forwards (NDFs)	11%	10%	13%	23%	8%

	All firms n = 332	Financial firms n = 135	Non-financial firms n = 190	North American firms n = 115	Foreign firms n = 232
<b>Panel A: Percentage of total FX risk managed. . .</b>					
Using operational activities	31%	28%	35%	31%	32%
<i>indicating 100% of risk managed with operational activities</i>	4%	1%	5%	3%	3%
Using financial derivatives	37%	49%	29%	31%	41%
<i>indicating 100% of risk managed with financial derivatives</i>	7%	14%	2%	3%	11%
<b>Panel B: Popularity of various methods of operational hedging for FX risk</b>					
b. Pricing strategies	55%	44%	62%	59%	53%
a. Foreign currency debt	45%	56%	39%	44%	47%
e. Product strategies	25%	34%	19%	21%	27%
c. Shifting production location	21%	14%	25%	32%	15%
f. Increase productivity	15%	6%	19%	13%	15%
g. Other	9%	9%	9%	9%	9%
d. Promotional strategies	8%	6%	8%	9%	7%

Mix	All firms n = 387	Financial firms n = 179	Non-financial firms n = 202	North American firms n = 121	Foreign firms n = 260
Over-the-counter only	39%	31%	47%	41%	38%
Mostly OTC	23%	30%	16%	20%	24%
Equal mix	12%	13%	10%	11%	12%
Mostly exchange-traded	14%	18%	11%	12%	16%
Exchange-traded only	12%	8%	16%	17%	10%

Category of importance	All firms n = 454	Financial firms n = 183	Non-financial firms n = 263	North American firms n = 151	Foreign firms n = 287
Very important or Important	45%	40%	50%	58%	39%
Somewhat important or Not Important	55%	60%	50%	42%	61%

		Commodity risks	Energy risks
Firms that evaluate 2 or more sources of these risks, n =		119	160
<i>as percentage of firm that evaluate this risk</i>		51%	44%
Of these evaluated risks how many do firms manage	0	2%	2%
	1	6%	2%
	2+	93%	96%

Commodity and energy contracts/positions	All respondents n = 193		North American firms n = 105		Foreign firms n = 84	
	Use	Ranked most used*	Use	Ranked most used	Use	Ranked most used
a. Forward contracts	39%	61%	33%	63%	46%	59%
b. Futures contracts	34%	54%	33%	51%	33%	57%
c. Fixed pricing contracts	34%	57%	38%	50%	27%	65%
h. Swaps	17%	28%	17%	22%	17%	36%
d. OTC options	13%	31%	11%	25%	15%	38%
f. Option combinations (e.g., caps, collars)	12%	25%	16%	18%	7%	50%
e. Exchange traded option contracts	9%	18%	10%	0%	8%	29%
g. Debt contracts with embedded options	2%	25%	2%	50%	2%	0%

\* Ranked most used is a percentage of the number one most commonly used votes relative to all firms that indicate use

Mix	All firms n = 150	North American firms n = 72	Foreign firms n = 74
Over-the-counter only	41%	38%	45%
Mostly OTC	19%	18%	18%
Equal mix	17%	19%	15%
Mostly exchange-traded	10%	13%	8%
Exchange-traded only	14%	13%	15%

CM and EN risk management approach is...	All firms n = 182	North American firms n = 92	Foreign firms n = 84
Discretionary	31%	26%	37%
Variable	25%	22%	30%
Non-discretionary	37%	46%	27%
Other	7%	7%	6%

Percentage of firms facing various forms of credit risk	All firms n = 231	Financial firms n = 123	Non-financial firms n = 108	North American firms n = 99	Foreign firms n = 132
a. Trade credits or accounts receivable from customers	67%	46%	91%	69%	65%
f. Corporate bonds in an investment portfolio	39%	66%	8%	36%	41%
b. Long term contracts with customers	38%	43%	32%	27%	46%
e. Counterparties on financial derivatives	36%	54%	15%	31%	39%
c. Long term contracts with suppliers	23%	13%	35%	27%	20%
g. Loan guarantees (cosigning)	22%	27%	16%	14%	27%
d. Loans to vendors	13%	17%	8%	8%	17%

Percentage of firms using each method for managing credit risk	All firms n = 212	Financial firms n = 120	Non-financial firms n = 92	North American firms n = 88	Foreign firms n = 124
a. Minimum credit rating for counterparties	65%	75%	52%	57%	71%
b. Strict caps on exposure to any single party	61%	63%	59%	59%	63%
c. Collateral	56%	78%	27%	52%	59%
h. Loan guarantees (cosigning)	29%	38%	18%	28%	30%
f. Credit default swaps	18%	28%	4%	13%	22%
d. Credit insurance	17%	13%	24%	10%	23%
g. Total return swaps	9%	16%	1%	8%	10%

<b>Table 29: Use of various methods to deal with geopolitical risk</b>					
<b>Panel A:</b> Use of various methods to deal with geopolitical risk (as percentage of all respondents)	<b>All firms n = 210</b>	<b>Financial firms N = 88</b>	<b>Non-financial firms N = 119</b>	<b>North American firms N = 90</b>	<b>Foreign firms N = 117</b>
b. Avoid investments in certain countries	50%	45%	52%	52%	47%
e. Increase research before new investment	44%	47%	42%	42%	45%
j. Diversify investments across more countries	40%	59%	25%	32%	45%
c. Decrease size of investments in risky countries	36%	39%	34%	31%	39%
d. Increase use of partners or consortia	36%	25%	44%	42%	31%
k. Lower company profile in risky region	26%	22%	30%	26%	27%
n. Increase hurdle rate on projects in risky regions	26%	24%	27%	28%	24%
m. Increased use of currency/commodity hedging	19%	18%	19%	22%	16%
f. Increase use of political risk analysts	18%	26%	12%	16%	20%
g. Increase use of security personnel	16%	7%	23%	22%	11%
h. Alter supply chain management	16%	1%	27%	24%	9%
i. Diversify investments over more industries	16%	27%	8%	13%	18%
a. Political risk insurance	15%	13%	18%	10%	20%
l. Enhance public relations in risky region.	15%	14%	16%	16%	15%
<b>Panel B:</b> Ranked as #1 most commonly used method for dealing with geopolitical risk (as percentage of users of that method above)	<b>All firms</b>	<b>Financial firms</b>	<b>Non-financial firms</b>	<b>North American firms</b>	<b>Foreign firms</b>
a. Political risk insurance	66%	64%	67%	67%	65%
b. Avoid investments in certain countries	47%	50%	45%	47%	47%
m. Increased use of currency/commodity hedging	33%	50%	22%	10%	58%
c. Decrease size of investments in risky countries	31%	29%	33%	21%	37%
h. Alter supply chain management	27%	100%	22%	32%	18%
i. Diversify investments over more industries	24%	17%	44%	33%	19%
d. Increase use of partners or consortia	24%	14%	27%	24%	22%
j. Diversify investments across more countries	24%	27%	20%	24%	25%
e. Increase research before new investment	20%	22%	18%	24%	17%
f. Increase use of political risk analysts	19%	17%	21%	29%	13%
k. Lower company profile in risky region	18%	16%	19%	22%	16%
l. Enhance public relations in risky region.	16%	17%	16%	21%	12%
n. Increase hurdle rate on projects in risky regions	9%	10%	9%	16%	4%
g. Increase use of security personnel	6%	17%	4%	10%	0%

<b>Table 30: When valuing investment projects with significant political risk, how does your firm incorporate the political risk into the decision?</b>					
<b>Method of incorporating risk into valuation (may be multiple choices)</b>	<b>All firms n = 206</b>	<b>Financial firms n = 89</b>	<b>Non- financial firms n = 114</b>	<b>North American firms n = 85</b>	<b>Foreign firms n = 118</b>
a. Add a risk premium to the required rate of return	57%	58%	57%	53%	61%
b. Use risk-adjusted expected cash flows	28%	33%	24%	26%	29%
c. Scenario / Simulation analysis	36%	47%	26%	33%	37%
d. Price in political risk insurance costs	15%	18%	13%	9%	19%