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ON DERIVATIVES USAGE: A COMPARATIVE
STUDY OF US AND DUTCH FIRMS**

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Discussion paper

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THE IMPACT OF INSTITUTIONAL DIFFERENCES ON DERIVATIVES USAGE: A COMPARATIVE STUDY OF US AND DUTCH FIRMS

Abstract

This paper tests the influence of institutional differences on risk management practices. Several survey studies have investigated derivatives usage for risk management purposes in the US (see, among others, Bodnar, Hayt, Marston and Smithson, 1995 and Bodnar, Hayt and Marston, 1996, 1998). In this paper, we compare derivative practices of US and Dutch firms. This comparison is interesting because the institutional setting for Dutch firms differs from the US setting with respect to shareholder orientation, international trade, disclosure regulation, and the reliance on financial markets. In a number of survey studies additional countries have been studied, such as New Zealand (Berkman, Bradbury and Magan, 1997), Sweden (Alkebäck and Hagelin, 1999) and Germany (Bodnar and Gebhardt, 1999). In contrast with these papers, we facilitate a comparison by applying a matching and a weighting strategy, which corrects for different distributions over industry and size classes in the Dutch and US samples. After these corrections, the remaining results can be attributed to institutional differences. We find that Dutch firms hedge more financial risk. Because of the greater openness of the Netherlands, Dutch firms experience far more foreign exchange exposure and hedge more currency risk. US firms have more concerns regarding derivative usage, which may be linked to the stricter disclosure requirements in the US. US firms also focus more on accounting earnings, which may be attributable to the shareholder orientation in the US versus the stakeholder orientation in the Netherlands. Whereas Dutch firms tend to rely on OTC-transactions, US firms use exchange-traded derivatives and therefore require a higher counter party rating for derivatives transactions. This distinction can be accredited to the differences in the financial environments between the US and the Netherlands. The aforementioned results indicate that institutional differences between the US and the Netherlands have a significant effect on the risk management practices and derivatives use of US and Dutch firms.

JEL classification: F30; G15; G32

Keywords: risk management; derivatives; hedging; international finance

I. Introduction

The use of derivative securities for risk management purposes has been a worldwide phenomenon for several decades. The growing use of these financial instruments is part of an increased awareness of risk management among corporate managers. Active risk management is now an important part of modern corporate financial culture. This movement is driven at least in part by the theoretical arguments that risk management with these instruments can increase shareholder value (see, e.g., Stulz (1984), Smith and Stulz (1985) and Froot, Scharfstein and Stein (1993), for arguments on the value impact of risk management). As a result of this risk management phenomenon, the market for derivative instruments has been expanding rapidly in the last 10 to 15 years. However, despite the size of these markets, relatively little is known about how firms use derivatives for risk management purposes. Several survey studies have investigated derivative usage for risk management purposes in the United States (US). An often-cited series of studies is Bodnar, Hayt, Marston and Smithson (1995) and Bodnar, Hayt and Marston (1996, 1998). These studies provide a detailed description of derivative usage, motives for usage and non-usage, exposures, concerns, policies, etc. in the US.

In a number of recent survey studies, additional countries have been studied, such as New Zealand (Berkman, Bradbury and Magan, 1997), Sweden (Alkebäck and Hagelin, 1999), Germany (Gebhardt and Russ, 1999), Belgium (De Ceuster, Durinck, Laveren and Lodewyckx, 2000), UK (Mallin, Ow-Yong and Reynolds, 2001) and Switzerland (Loderer and Pichler, 2000). This paper investigates derivative use in risk management of firms in the Netherlands and compares it with the established evidence from firms in the US. Although the aforementioned studies provide information on risk management practices outside the US setting, they do not facilitate a direct comparison between US and non-US firms. The samples studied are different with respect to the distribution over size and industry classes. Thus, the outcomes of these studies do not allow comparisons because differences may be attributed to both the institutional setting and to differences in size and industries between countries. One exception to this is Bodnar and Gebhardt (1999) who generated matched samples in order to compare risk management practices of US and German firms. However, in contrast with this paper we facilitate a direct comparison by applying a weighting strategy, which corrects for different distributions over size and industry classes in the Dutch and US samples. As a result, after these corrections, we can have more confidence that results can be attributed to institutional differences.

We compare derivative practices of Dutch firms to those of US firms because the institutional setting for Dutch firms differs from the US in four areas that are likely to influence risk management practices. First, shareholder orientation is a common characteristic for US firms whereas Dutch firms are oriented at multiple stakeholders. In the Netherlands shareholders have limited influence on firms and thus may demand less financial risk management. Second, the Dutch economy is much more open than the US economy, which suggests greater risk to international financial price fluctuations. As Dutch firms experience much more international trade flows than US firms do, a greater emphasis on currency exposure and foreign exchange risk hedging policies by Dutch firms is expected. Third, distinct differences in accounting regulations between the US and the Netherlands exist. While US firms are bound to disclosure requirements according to the FASB regulations, Dutch firms are not legally obliged to publish information on derivatives usage in their annual reports. As annual reports originate from internal accounting procedures, one can expect stricter internal control and reporting procedures in the US than in the Netherlands. Fourth, Dutch firms traditionally have close ties with commercial banks whereas US firms tend to rely more on a broader array of financial institutions and exchanges. This difference in the area of counter parties for derivatives transactions may influence risk management practices. Considering the distinct differences in institutional background between the US and the Netherlands, we are interested to examine the differences and similarities in derivatives usage and risk management practices between US and Dutch firms. Moreover, the characteristics of Dutch firms are also found in many other continental European countries. Therefore, our analysis is also suggestive of a broader comparison between US and European firms.

For the US derivative usage data we use the survey data from the 1998 Wharton Survey of Financial Risk Management (Bodnar, Hayt and Marston, 1998). This data set contains responses of 399 (response rate of 20.7%) US firms from early 1998. As for information on Dutch firms' derivatives usage, we carried out a survey among Dutch exchange-listed firms using similar questions as the US survey. The Dutch survey, carried out in 1998, was sent to 167 firms and produced 84 usable responses, yielding a response rate of 50.3%. All firms in both surveys are non-financial firms. In order to create similar size and industry distributions in the US and the Dutch samples, we attach a weight to each US firm. The weighting of the US firms is based on the relative presence of firms with a similar size and industry classification in the Dutch sample.

Our results indicate that Dutch firms use derivatives more often to hedge financial risk than US firms for all size and industry classes. Notably, Dutch firms are more exposed to foreign exchange risk than US firms; a result that is undoubtedly driven by the fact that the Dutch economy is much more open than the US economy. We also find that US firms show a higher level of concern regarding derivatives usage than Dutch firms, which is likely attributable to the stricter disclosure requirements regarding derivatives in the US. Furthermore, Dutch firms are less likely to incorporate their view on currency movements when engaging in derivatives transactions than are US firms, which may be related to the greater shareholder orientation of US firms and the increased pressure that exists to show good performance on a quarterly basis. Interestingly, US firms are more worried about counter party risk than Dutch firms and demonstrate this by requiring a higher counter party rating than do Dutch firms. This result seems likely to derive from institutional differences in the market structure in which Dutch firms have close ties with banks whereas US firms use various financial institutions and exchanges for derivatives transactions.

The paper is organized as follows. In section II we discuss recent work on derivative surveys and some of the theoretical issues about cross sectional differences in usage. Section III presents our data sets and explains the matching and weighting procedures. In section IV we investigate the similarities and differences between the overall derivatives usage and risk management practices by Dutch and US firms. In section V currency risk is examined and in section VI control and reporting procedures are investigated. Section VII concludes.

II. The impact of the institutional setting on risk management

Several survey studies have investigated derivatives usage for risk management purposes in the US. Earlier studies include Block and Gallagher (1986) and Dolde (1993). More recently Philips (1995), Bodnar, Hayt, Marston and Smithson (1995) and Bodnar, Hayt and Marston (1996, 1998) described risk management practices by US firms. The aim of these latter studies is to provide a detailed description of risk management practices, such as derivative usage, motives for usage and non-usage, exposures, concerns, and reporting and control policies. These studies produce a reasonable picture of derivative use among US firms. Roughly speaking only one out of two US firms uses derivatives, with usage heavily tilted towards large firms. US firms indicate that their key motive behind financial hedging is to decrease the volatility of the cash flows. Exchange rate risk is the

most common hedged risk using derivatives, followed by interest rate risk and then commodity risk. Besides, the above-mentioned studies find that risk management activities are largely centralized and the hedging horizon is often limited to a period of one year.

The results of the US studies suggest that risk management practices are influenced by firms' objectives of shareholder wealth maximization. This objective also underlies the justification for risk management in the theoretical literature, i.e. risk management with derivative instruments can increase shareholder value. Firms can decrease the volatility of the cash flows by hedging financial risks such as currency, interest rate and commodity risk. And by reducing the volatility of cash flows they will decrease expected taxes, agency costs and costs of financial distress, thus enhancing future expected cash flows. Also the availability of sufficient internal funds for investments can be secured (see Stulz, 1984, Smith and Stulz, 1985 and Froot, Scharfstein and Stein, 1993), eliminating the need to either turn down profitable projects for lack of internal funding or having to bear the extra costs of obtaining external financing. If the costs of using financial derivatives, such as costs for employees, computers, training and facilities, and transaction costs, are less than the benefits provided via the avenues mentioned above, or any other perceived benefit by the market, then derivative use will be a shareholder-value enhancing activity.

The empirical literature on risk management initially focused exclusively on US firms. Of course, derivative instruments are used worldwide for risk management purposes. Additional countries have been investigated in a number of studies. Berkman, Bradbury and Magan (1997) study derivatives usage in New Zealand. They find that, in comparison with US firms, New Zealand firms hedge more financial risk across all size categories. They attribute this finding to a higher exposure to currency risk in New Zealand. Alkeback and Hagelin (1999) study derivatives usage in Sweden. They used a questionnaire to gather data from all stock-listed non-financial firms with headquarters in Sweden. The responses are directly compared with the results of the survey of Bodnar, Hayt, Marston and Smithson (1995) and Bodnar, Hayt and Marston (1996) without controlling for differences in size or industry classification. They find that the lack of knowledge about derivatives within the firm is the main concern of Swedish firms. In contrast, within US firms this issue is of least concern. De Ceuster, Durinck, Laveren and Lodewyckx (2000) sent a questionnaire to coordination centers (which are often used as financial vehicles) and to the largest firms in Belgium. Their survey does not discriminate between financial and non-financial firms. They notice that, opposite to empirical findings in the US, Belgian firms focus their hedging strategies more on

reducing earnings volatility than on reducing cash flow volatility. Mallin, Ow-Yong and Reynolds (2001) sent a questionnaire to the financial directors of 800 UK non-financial listed firms. They find that the primary objective cited by the firms for using derivatives is to manage fluctuations in accounting earnings, a view that is inconsistent with theoretical arguments on risk management. Loderer and Pichler (2000) have a slightly different approach compared to the previously mentioned surveys. They examine the currency risk management practices of Swiss stock-listed firms. They find that these firms are unable to quantify their exposure to currency risk. All studies above focus on a single country. Bodnar and Gebhardt (1999) compare risk management practices of US and German firms using results from a survey of derivatives usage among German public firms (Gebhardt and Russ, 1999). Their results indicate that more German firms use derivatives than US firms do. The primary goal of hedging differs as German firms focus more on managing accounting results whereas US firms tend to focus on managing cash flows. Furthermore, German firms are far less concerned regarding issues with respect to derivatives usage than US firms. However, although this study provides comparative information on risk management practices inside and outside the US setting, it does not facilitate a direct comparison between US and non-US firms. The samples in the study are different with respect to size and industry distribution. Therefore, the outcomes of this study do not allow a direct comparison as differences may be attributed to differences in the institutional settings as well as differences in firm size and industry classification between countries.

In this paper we survey the risk management activities of firms in the Netherlands and compare them with the results from US firms. The unique feature of this study is that the results are compared in a technically more precise way in order to investigate the influence of institutional differences. The Netherlands is chosen for its distinct differences with the US in terms of corporate setting and the resemblance with other continental European countries.

There are four major areas in which the US and the Dutch corporate environments differ. First, shareholder orientation is a common characteristic for US firms, whereas Dutch firms are oriented at multiple stakeholders and shareholders have less influence on firm's decisions. This issue is demonstrated by the result that La Porta, Lopez-de-Silanes and Shleifer (1999) place the Netherlands and the US in a group with respectively low and high shareholder rights. Furthermore, in the Netherlands listed firms have a two-tier board structure consisting of an Executive Board and a Supervisory Board. The Supervisory Board members have the legal obligation to consider the

interests of the firm as a whole, which limits shareholder orientation. This difference in shareholder-stakeholder orientation could lead to some interesting differences in the area of the hedging horizon. For example, US firms might be expected to be more short term oriented and focused on hedging transaction risk and anticipated transactions within a period of one year (or the budget period), whereas Dutch firms might focus on a longer time span.

Second, the Dutch economy is much more open to international influences than the US economy. In 1998, Dutch exports were to 50.4% of GDP, while imports were 46.7% of GDP. In contrast, US exports were only 9.2% of GDP while imports were only 12.8% of GDP (United Nations, 1999). As Dutch firms experience proportionally larger international trade and capital flows than US firms do, a greater emphasis on currency exposure and foreign exchange risk hedging policies by Dutch firms is expected.

Third, distinct differences in accounting regulations between the US and the Netherlands exist. While US firms are bound to disclosure requirements according to the FASB regulations (see FASB, SFAS No 115, 119 and 133), Dutch firms are not legally obliged to publish information on derivatives usage in their annual reports (see Blij et al., 1997). As annual reports originate from internal accounting procedures, one can expect that internal control and reporting procedures are stricter in the US than in the Netherlands. We also predict that the level of concern regarding derivatives transactions will be higher at US firms due to the distinct differences in disclosure requirements.

Fourth, Dutch firms traditionally have close ties with commercial banks (see Boersma and Veld, 1995) as counter parties for derivative transactions. On the other hand, while US firms also rely on commercial banks for derivatives, they have a much wider source of counter parties for derivatives transactions, such as investment banks, special purpose vehicles, insurance companies or exchanges (see Bodnar and Gebhardt, 1999). This difference may influence risk management practices. We expect that the difference between counter parties in both countries will be most pronounced in the area of counter party rating. US firms will require higher counter party ratings, both for derivative transactions on short and on long term. Furthermore, because of the linkage with commercial banks, we expect Dutch firms to use OTC derivatives more frequently than US firms.

Considering these distinct differences in institutional background between the US and the Netherlands, we are interested to examine the differences and similarities in derivatives usage and risk management practices between US and Dutch firms. Moreover, the characteristics of Dutch firms are representative of other continental European countries and may act as a baseline upon which to generalize.

III. Comparative sample selection and weighting procedures

The US survey data we use is from the 1998 Wharton Survey of Financial Risk Management by Non-Financial Firms (Bodnar, Hayt and Marston, 1998). This data set contains the responses of 399 firms. The questionnaire was mailed to just under 2000 randomly selected US exchange-listed non-financial firms in October 1997. A second mailing was done in March 1998. The 399 complete questionnaires imply a response rate of 20.7%. The US sample also contained the additional Fortune 500 firms not already part of the random sample. Responses from these additional firms are excluded from the comparison in this paper.¹ The questionnaire used in the 1998 US survey was translated into Dutch and sent to all listed non-financial Dutch firms in November 1998. A follow-up was mailed in December 1998. Of the total of 167 Dutch listed non-financial firms, 84 returned a usable response, which corresponds with a response rate of 50.3%.

In order to generate comparative samples of the US and Dutch questionnaire we both *match* and *weigh* the responses based on industry classification and firm size. We match in order to remove firms in one country of which no comparables exist in the other country. We weigh the remaining firms because previous studies have shown that hedging practices are influenced by a firm's industry classification and by firm size. Therefore, we weigh observations in order to correct for differences in the distribution over size and industry classes between the US and the Netherlands.

We first *match* the samples on industry classification by using the two-digit SIC-codes of US and Dutch firms. In total 102 US firms were removed which had SIC-codes that were not present among the Dutch firms, which received a questionnaire. No Dutch firm had a SIC-code that was not represented in the US sample. Finally, we matched the two samples on firm size by eliminating two US firms with a turnover of more than US\$ 63 billion, which is the turnover of the largest Dutch

non-financial listed firm. We also eliminated three US firms with zero or unknown turnover. After this matching procedure, 267 US and 84 Dutch firms remained for further analyses. In Table 1 we present the matched distributions in the US and the Netherlands over size and industry classes.

[Insert Table 1 here]

The results in Table 1 clearly illustrate that the composition of the US sample differs from the Dutch sample. For example, 27% of the US firms are large manufacturers, while only 15% of the Dutch firms are in this class. On the other hand, 12% of the Dutch firms are small trading firms, in comparison with only 3% of the US firms. Because these differences between the US and the Dutch sample are likely to influence our findings, we *weigh* US firms, based on the relative presence of similar firms in the Dutch data set. The weights are determined in order to more accurately compare the samples. The number of US firms in each class was compared with the number Dutch firms in that class. If there were relatively more (less) US firms than Dutch firms in a specific class, then the US firms in that class received a weight of less than one (more than one). The weights are applied to the US firms based on two criteria. The first is firm size, i.e. large, medium and small. Large firms have total sales of more than circa US\$ 800 million, medium firms have total sales between circa US\$ 250 million and circa US\$ 800 million and small firms have total sales of less than circa US\$ 250 million (1US\$ is DFL 1.90). This classification for size is applied to both the US and Dutch firms. The second criterion is industry, i.e. manufacturing, trade or services. We first weighed on the basis of the relative presence in one of three size classes, and then on the basis of the relative presence in one of the three industry classes. In order to exemplify the weighting procedure, for US firms in the category large manufacturers the weighting would be $(25/84)/(99/267) = 0.80$ for the relative presence in the size class large and $(44/84)/(201/267) = 0.70$ for the relative presence in the industry class manufacturing. The total weight of a large US manufacturing firm would therefore be $0.80 \times 0.70 = 0.56$. We calculated three different sets of weights for three specific sub-samples of firms, i.e. firms that indicate using derivatives to hedge financial risk in general, firms that indicate hedging currency risk and firms that indicate that they do not hedge financial risk.² The purpose of

¹ The inclusion of these responses would have biased the sample towards the larger Fortune 500 firms.

² Alternatively, a weighting based on nine classes (three size classes times three industry classes) may be used. For example, there are 73 US and 13 Dutch firms that are part of the class large and manufacturers. In this particular class the proportion of US versus Dutch firms is 5.62 (73 US firms against 13 Dutch firms). The total US sample outnumbers the Dutch sample by a multiple of 3.18 (267 US firms versus 84 Dutch firms). Therefore, the relative weight of the US firms in this group is 0.57 ($=3.18/5.62$). This result closely resembles our procedure. However, sub-sampling into

our weighting schemes is to adjust the results so that the primary remaining explanation for any differences in the results are attributable to differences between the US and Dutch institutional setting. In our discussion of the results we always mention in the tables and figures whether weighting (and if so which weighting) is applied.

IV. Overall derivatives usage

In this section we compare the responses on derivatives usage of the US and Dutch firms and also look into the reasons firms put forward for not using derivatives. We start this section using unweighted samples. We first examine the overall derivative usage of US and Dutch firms and discriminate between size and industry classification. We then examine the types of financial risk US and Dutch firms hedge, the motivation firms put forward for managing financial risk and the types of derivatives firms use. Furthermore, the risks US and Dutch firms perceive with respect to derivatives usage are evaluated. The section concludes with an investigation into the reasons for firms not to use derivatives.

We begin by examining the differences in derivatives usage between US and Dutch firms. As derivatives use is often considerably influenced by the size of the firm and the industry it operates in, we distinguish between size and industry classification. Table 2 and 3 provide an overview of the US and Dutch derivatives use by size and industry classification respectively.

[Insert Table 2 here]

Table 2 shows that 60% of the Dutch firms use derivatives against 44% of the US firms. The derivatives usage of Dutch firms is higher for all size groups. The difference in derivatives usage between US and Dutch firms decreases with firm size. The large US and Dutch firms have more or less similar usage rates (82% against 88%). For the medium size group the difference is 11% (46% for US firms against 57% for Dutch firms) and for small firms the difference is 30% (12% for US firms versus 42% for Dutch firms). The fact that the usage rate of derivatives drops significantly when firm size decreases may be explained by decreasing economies of scale regarding the

hedgers, non-hedgers and currency hedgers leads to smaller sample sizes and in some of the nine classes no firms are included. Because the use of nine classes is not possible in these cases, we did not use this method.

investment in employees, training, computers, facilities, etc. Notwithstanding the economies of scale argument, the large difference between US and Dutch derivatives usage amongst small firms remains apparent and may be due to differences in the degree of openness between the US and Dutch economy.

[Insert Table 3 here]

Table 3 indicates that the derivative usage of Dutch firms is larger across all industries. The difference in derivative use is small in the services sector (7%) and more markedly in the manufacturing sector (20%). The difference in the trade sector is most pronounced (31%). As mentioned above, a possible explanation for this across the board difference is the openness of the Dutch market, which exhibits more international trade compared to more national trade in the US. Table 3 also indicates that in the US manufacturing firms (75% of all respondents) are far more represented than in the Netherlands (52% of all respondents). Table 2 already demonstrated that in the Netherlands medium firms (27% of all respondents) are more represented than in the US (18% of all respondents). These differences, combined with the fact that both industry and size are found to influence derivative usage, stress the added value of our weighting system.

Next to measuring the usage rate of derivatives, it is also important to know which financial risks, such as foreign exchange, interest rate and commodity risk, US and Dutch firms hedge with derivatives.³ Table 4 shows the answers of the respondents to our inquiry. For this question we apply a set of weights based on the sample of US firms that indicate using derivatives.

[Insert Table 4 here]

The responses from the questionnaires show that of the US firms who indicate hedging financial risk with derivatives, 79% hedge currency risk. In contrast, nearly all the Dutch firms, 96%, hedge currency risk. This difference is likely explained by the higher openness of the Dutch economy. With interest rate risk, a slightly higher percentage of Dutch firms, 81%, hedges this risk compared to 73% of the US firms that use derivatives. We did not expect a large difference in derivatives usage between US and Dutch firms regarding interest rate risk, as all firms that have interest

³ As no Dutch firm indicated hedging equity risk we will not examine this type of financial risk in detail.

bearing debt or deposits face this type of risk, regardless of the country of residence. A far lower percentage of Dutch firms, 20%, hedge commodity risk, compared to 44% of US firms; this may be due to the fact that there are more firms from the manufacturing sector in the US, which are more commodity oriented.

Thus far we have compared data on the overall derivatives usage between US and Dutch firms and have looked into the different types of financial risk they hedge. As derivatives are (supposedly) used to hedge financial risk, we are interested to find out more about the motives behind the risk management practices of the US and Dutch firms. According to theory firms benefit from hedging by reducing the volatility in the firm's cash flows. By reducing the volatility of cash flows specific costs can be decreased, such as the bankruptcy costs, expected taxes, and agency costs, which in turn increases firm value. Table 5 shows the results on our question what firms are trying to manage by hedging. Firms could choose from the following three answers: volatility in accounting earnings, volatility in cash flows or balance sheet accounts or ratios.⁴

[Insert Table 5 here]

Table 5 displays that slightly more Dutch (60%) than US firms (50%) indicate that managing the volatility of their cash flows is the most important reason for their risk management practices. More US firms (44%) than Dutch firms (33%) indicate managing the volatility in accounting earnings as being most important. This difference is possibly explainable by the fact that shareholder value creation is more important in the US than it is in the Netherlands. In further support of this difference in focus, notice the difference in the percentage of US and Dutch firms indicating that managing the volatility in accounting earnings is "not at all important" or "not a consideration", 7% versus 23%. This is also consistent with the view that US firms are more shareholder-oriented and Dutch firms are more stakeholder-oriented. This is the case because shareholders generally define good performance in terms of accounting earnings rather than in terms of cash flow. For both US and Dutch firms managing balance sheet accounts or ratios is obviously not an important reason for their hedging programs as respectively 88% and 66% indicate this being not at all important or not a consideration or being least important.

⁴ This question was not included in the survey of Bodnar, Hayt and Marston (1998). Therefore, we use the results of the previous questionnaire (Bodnar, Hayt and Marston, 1996). Consequently, the results are unmatched and unweighted.

The US and Dutch financial environments differ regarding counter parties for derivatives transactions. In the US, firms have a broader choice of counter parties as exchanges offer a more extensive range of derivatives and banks and other financial institutions offer over-the-counter (OTC) products. In the Netherlands, firms have close relations with banks who are their primary providers of derivative instruments. We are interested whether this institutional difference is demonstrated by the types of derivatives US and Dutch firms use.⁵ Table 5 shows which derivatives the firms consider being most important for hedging their currency, interest rate and commodity risk.

[Insert Table 6 here]

Regarding derivatives for hedging currency risk, the majority of US firms, 56%, and Dutch firms, 77%, prefer OTC forward contracts with OTC options the next preferred instrument for both countries. In contrast to US firms, no Dutch firm used either futures or exchange-traded options. With respect to managing interest rate risk, 78% of the US firms against 52% of the Dutch firms consider swaps as being the most important derivatives. Again Dutch firms were much more likely, 28% against 4%, to favor OTC interest rate forward contracts. Regarding commodity risk a large part of the US firms, 40%, prefers futures, whereas most Dutch firms (35%) indicate preferring OTC options. Overall these results support a relative preference among Dutch firms to use banks for transacting in derivatives across all classes.

While derivatives usage can be beneficial in that it can lower financial risks, the relative recentness of widespread derivative use and the possibility of a lack of complete understanding by the users as well as the stakeholders raise concerns as new risks associated with the use of derivatives arise. We examine whether the concerns regarding derivatives usage are similar in the US and the Netherlands. For this question we apply a set of weights based on the sample of US firms that indicate using derivatives.

[Insert Figure 1 here]

⁵ This question was not included in the survey of Bodnar, Hayt and Marston (1998). Therefore, we use the results of the previous questionnaire (Bodnar, Hayt and Marston, 1996). Consequently, the results are unmatched and unweighted.

Figure 1 demonstrates that the general level of concern regarding derivatives is higher among US firms than among Dutch firms. This is in line with our expectation due to the stricter external accounting and disclosure regulations and the greater risk of corporate litigation for insufficient fiduciary care in the US. Of the US firms, 76% have a high or moderate level of concern regarding external disclosure requirements against only 12% of the Dutch firms. This corresponds with the stricter disclosure requirements in the US and recent changes in the disclosure rules. Again supporting the accounting earning issues from above, internal accounting treatment is of high or moderate concern to 75% of US hedgers, while only one quarter of hedgers in the Netherlands indicate a similar level of concern and 48% indicate that it is no concern at all. Monitoring and evaluating hedge results and market risk of hedges are the issues that concerns the most Dutch firms with 26% and 27%, respectively, indicating high or moderate concern. Nevertheless, the concern of Dutch firms on these issues is well below that of US firms at 63% and 64%, respectively.

In addition to examining the reasons for using derivatives, it is also interesting to investigate the reasons firms put forward for not using them. We asked the US and Dutch firms to indicate the three most important reasons for their decision not to use derivatives. Regarding this specific question, we use a set of weights based on the sample of respondents that indicate not using derivatives. Figure 2 below presents an overview of the answers to this question.

[Insert Figure 2 here]

Figure 2 points out that the common reason in both countries for not using derivatives is insufficient exposure to financial risk. Of the American respondents that report not using derivatives 58% indicates insufficient exposure as being the most important reason and 16% indicates it as the second most important reason. Insufficient exposure is for 67% of the Dutch firms the most important reason for not using derivatives and for 15% the second most important reason. To see whether the argument of insufficient exposure is valid, we examine the response to the questions about the percentage of operating revenues and costs in foreign currency. The responses from the questionnaires show that 59% of the US non-hedgers have no operating revenues in foreign currencies and 52% have no operating costs in foreign currencies. Thus it appears consistent that around 58% of US non hedgers may have insufficient exposure to use derivatives. For the Dutch firms the picture is different. Of the Dutch non-hedgers, only 19% indicate no operating revenues in foreign currencies and merely 15% indicate no operating costs in foreign currency. Moreover, 29%

of the Dutch non hedging firms indicate operating revenues in foreign currencies of at least 50% of their total revenue and 24% indicate having operating costs in foreign currencies of at least 50% of their total operating costs. Therefore, the fact that 67% and 15% of the Dutch firms indicate that their most important and second most important reason for not hedging is based on insufficient exposure, is surprising. We acknowledge that as 6% of the US firms and 4% of the Dutch firms indicate that exposures are more effectively managed by other means, some of the foreign exchange exposure may be shed by other means than by using derivatives. Operational hedging, for instance by moving factories to countries where foreign currency revenues are incurred, or by raising a loan in a foreign currency, may be alternative strategies to using derivatives. Also, part of operating revenues and costs may be in the same foreign currency, thereby reducing the total foreign currency exposure.

Only 3% of the US firms indicates that external disclosure requirements are the most important reason for not using derivatives against 0% of the Dutch firms. The US result is striking given the fact that 22% of the US firms indicate being highly concerned about external disclosure requirements (see Figure 1). As there were no disclosure requirements on derivatives usage in the Netherlands during the time of the questionnaire, the Dutch result is fully in line with our expectations. While internal accounting treatment is just a minor reason for US firms for not using derivatives, for Dutch firms it is not important at all.

V. Currency exposure

In this section we investigate foreign currency risk management practices. In order to facilitate a comparison between the US and Dutch results, we apply weights in this section based on the sample of US firms that specifically indicate using currency. We first compare the differences in foreign currency operating revenues and costs between US and Dutch firms. Next, as the effectiveness of a hedging program requires using a benchmark, we examine the use of a benchmark for hedging currency risk. Then, various types of foreign currency risk that are hedged by US and Dutch firms are investigated. Thereafter, we examine the hedging horizon of the firms and finally we look into whether managers are willing to incorporate their personal view when making derivatives transactions.

Because the Netherlands has a much more open economy than the US we expect foreign exchange exposure of Dutch firms, as measured by the foreign currency revenues and expenses, to be higher than of US firms. We asked the firms to indicate their foreign currency operating revenues and costs. The tables below show the results from this question.

[Insert Table 7 here]

The results affirm our hypothesis: whereas all Dutch firms have operational revenues and costs in foreign currency of at least 10%, a full 26% of US firms have foreign currency operating revenues less than 10% and 33% has foreign currency operating costs less than 10%. Thus, Dutch firms display more foreign currency activity than US firms.⁶ If firms use derivatives in order to hedge currency risk it seems quite natural to expect those firms to use a benchmark for the evaluation of their risk management practices. When questioned on this, we were surprised to find out that 60% of the Dutch firms and 43% of the US firms that hedge currency risk indicate not having or using a benchmark. The fact that substantially more US firms have a benchmark for evaluating their currency risk management practices may indicate the greater formality of hedging programs and the concern over demonstrating sufficient fiduciary responsibility.

[Insert Table 8 here]

We are also interested to know whether US and Dutch firms differ with respect to the types of foreign currency risks they hedge. Firms can hedge various exposures, such as translation exposure that arises from consolidating foreign currency operations, on-balance sheet commitments that arise from contracts and which are already recorded in their internal accounting system, or anticipated future foreign currency cash flows that are hedged in advance. On a strategic level firms may hedge competitive operating long term economic exposure, which originates from changes in the competitive position of the firm resulting from exchange rate changes. Figure 3 displays the responses to questions about the kind of currency risks that firms in the two countries hedge.

[Insert Figure 3 here]

⁶ At the time of the questionnaire (1998), the Euro was not yet introduced. Even though exchange rate movements between prospective Euro participants were already limited in 1998, the current foreign exchange exposure for Dutch firms may be lower than during the pre-Euro era.

Figure 3 demonstrates that a higher percentage of Dutch firms frequently hedges short term currency risks, such as repatriations, on- and off-balance sheet commitments and anticipated transactions shorter than one year, than US firms do. The picture reverses when considering longer term exposures such as anticipated transactions over one year and economic/competitive exposure. A slightly higher percentage of US firms hedges these types of foreign exchange risk frequently in comparison with Dutch firms. The fact that only a small percentage of US and Dutch firms frequently hedge anticipated transactions over a year and economic/competitive exposure is surprising given predictions of financial theory. Theory suggests that firms can increase their value when hedging financial risk, and theoretically it is usually economic/competitive risk that is the most important type of risk for firms to hedge.

As for hedging translation risk, compared with Dutch firms a higher percentage of US firms report hedging translation exposure frequently. Hedging translation exposure, which implies hedging balance sheet accounts, smoothes the balance sheet but is less likely to increase shareholder value as it does not necessarily stabilize the firm's cash flows. The fact that more US firms hedge translation risk could be correlated with the shareholder and market orientation of US firms as outside investors are more likely to provide capital to firms with more stable balance sheets.

In addition to the type of currency exposure they hedge, we also asked the US and Dutch firms to comment on their hedging horizon for foreign exchange risk management. Table 9 below shows that for all types of foreign exchange risk classes, hedging the maturity of the exposure is most common for both US and Dutch firms.

[Insert Table 9 here]

Both US and Dutch firms are likely to hedge contractual commitments and anticipated transactions to the maturity of the hedge, with a slight bias towards under hedging the maturity as opposed to over hedging it. The tendency to under hedge the maturity of the exposure increases with economic/competitive exposure. To our surprise, however, no US firm hedges economic/competitive exposure for longer than the maturity of the exposure, whereas in the Netherlands 15% of the firms hedging economic/competitive exposure indicate doing so. Respectively 19% and 15% of the US and Dutch firms hedge economic/competitive exposure to the end of the budget/fiscal year which is contradictory to economic theory as the horizon of economic

exposure reaches beyond a budget or fiscal year. This is suggestive of an earnings management focus to hedging. The fact that 26% and 40%, respectively, of the US and Dutch firms hedge translation risk to the end of the budget/fiscal year is not as surprising as this is an exposure that is defined by accounting cycles and can be successfully controlled in annual increments.

When hedging foreign currency exposure, managers may also be tempted to incorporate their view on foreign exchange rate changes in order to try to outperform the market and make a profit. We asked the US and Dutch firms whether their view on exchange rate movements influenced their behavior on foreign currency derivatives transactions.

[Insert Table 10 here]

Table 10 shows that US firms are more willing to incorporate their view on foreign exchange rate changes than do Dutch firms, as 8% of the US firms versus 5% of the Dutch firms frequently alter the timing of hedges based on a market view. A similar pattern is found for altering the size of hedges based upon a view, with 9% of US firms frequently incorporating their market view against 7% of the Dutch firms. As for outright actively taking positions based upon a view, more than one third of the US firms indicated that they sometimes or frequently do so, while less than one quarter of the Dutch firms indicated doing so. As it is very difficult to consistently outperform the market, this behavior may lead to increased risk instead of less financial risk through hedging. Thus, the conclusion is that US firms are willing to take more risk than Dutch firms and therefore are more speculative on favorable foreign exchange rate movements. This behavior corresponds with the shareholder orientation in the US as US firms have more pressure to show a good quarterly performance. This is another example that proves that institutional differences influence hedging behavior.

VI. Control and reporting procedures

In this section we investigate issues regarding control and reporting procedures. Again, we apply a set of weights based on the sample of US respondents that indicate using derivatives. The use of derivatives incorporates specific risks as derivative positions can reach a magnitude far beyond the value of positions arising from normal business activities. Therefore it is apparent that good control

measures and reporting procedures should be in place. Because of the fact that US accounting rules (FASB) regarding external disclosure requirements in annual reports on derivatives activities are stricter than those in the Netherlands, we are interested to find out whether these differences are confirmed when investigating the internal control and reporting systems of US and Dutch firms. We examine the usage rate of a documented policy and the frequency of reporting on derivatives activities. We also investigate the preference for a centralized versus a decentralized approach regarding risk management activities, look into the minimum counter party rating firms require and examine how frequently the firms evaluate their derivatives portfolio. We conclude this section by examining which benchmark the firms prefer for evaluating their risk management function.

A basic control tool on derivatives usage is the use of a documented policy. Regarding the stricter derivatives disclosure requirements in the US, the more litigious nature of the stakeholders and the prevalence of recent corporate “train wrecks” with respect to derivatives, we would expect a higher percentage of US firms having a documented derivative usage policy than Dutch firms. Indeed, 73% of the US firms against 66% of the Dutch firms indicate having a documented policy. However, considering the risks involved with derivatives usage, such as market risk, counter party and liquidity risk, it is remarkable that only respectively 73% and 66% of the US and Dutch firms have a documented policy. Often only a few employees within the firm have the knowledge and insight to assess risks associated with derivative usage. Without using a documented policy hedging financial risk by using derivatives may create undesirable new risks instead of reaching the goal of shedding risk.

Whereas a documented policy defines the boundaries for derivative usage, the frequency of reporting to the Board of Directors (US) or the Executive Board (Netherlands) forms the active control of top management on the compliance of the derivative usage (to the documented policy). Furthermore, it provides the management with insight on the actual level of financial risk the firm has to bear. Because of the stricter external disclosure requirements and the legal liability of the directors, we would expect US firms to report on derivative usage to the board more frequently than do Dutch firms.

[Insert Figure 4 here]

In contrast to these priors, we found that 47% of Dutch firms report to the Executive Board on either a monthly basis (27%) or quarterly basis (20%), whereas only 21% of US firms reports to the Board of Directors on either a monthly basis (6%) or on a quarterly basis (15%). While 18% of the US firms report only annually, none of the Dutch firms indicated this frequency. Most US firms, 56%, indicated that they report “as needed” or “have no set schedule” against 39% of the Dutch firms in these categories. Although Dutch firms are by law not required to provide extensive information on derivative usage in annual reports, these figures suggest that Dutch boards demand more frequent insight in derivative positions than do US boards. For the US firms it seems that the stricter external reporting requirements on derivative usage do not lead to stricter internal reporting measures by the board.

We also investigate the approach that firms take to risk management activities, in terms of a centralized or decentralized decision structure for risk management decisions. The firms could choose from three approaches: primarily centralized risk management activities, primarily decentralized or primarily decentralized with centralized coordination. Table 11 presents the responses of the US and Dutch firms to this question for each separate form of risk; currency, interest rate and commodity.

[Insert Table 11 here]

Table 11 shows that for all three types of financial risk a centralized approach is preferred by both US and Dutch firms. This strong preference for a centralized approach suggests that economies of scale in risk management activities, such as the number of employees, knowledge, training, computers and facilities, are involved. With regard to currency risk management, there is a slight bias towards Dutch firms allowing more decentralization, with 21% of the Dutch firms having decentralized activities versus 12% for the US.

An important feature regarding the control of derivatives is counter party risk. The financial environment in the US and the Netherlands regarding counter parties for derivatives is quite different. In the Netherlands most counter parties for derivatives contracts are banks (see section IV on the types of derivatives used), while in the US there are more types of financial institutions that offer derivatives. Because in the US rating agencies probably have more influence than in the Netherlands, we expect US firms to be generally more aware of the difference in ratings and to

require a higher counter parties rating than do Dutch firms. We asked the US and Dutch firms about the lowest rated counter party with which they would enter a derivatives transaction. The responses are shown in table 12.

[Insert Table 12 here]

As counter party risk increases the longer the maturity of the derivative, we distinguish between maturities shorter than one year and maturities longer than one year. The first point to note is that between a fifth and a quarter of US firms and nearly 40% of Dutch firms have either no set policy on counter party rating or the respondent didn't know of one. While not that surprising for Dutch firms dealing mainly with banks, it is surprising for US firms. Regarding maturities less than one year all US and Dutch firms report not to engage in derivatives transactions with counter parties with ratings less than BBB. With 47% most US firms indicate a minimum counter party rating of A against 33% of Dutch firms indicating so. Regarding derivatives maturities of more than one year 78% of US firms require a counter party rating of AAA, AA or A against 61% of the Dutch firms. These figures indicate that US firms do require a higher counter party rating than do Dutch firms, which is in line with our view that counter party ratings are more common in the US than in the Netherlands. Nonetheless, it is striking that in both countries a large percentage of firms does not seriously consider counter party risk.

Another control mechanism belonging to a derivatives portfolio is regular valuation. We were interested in comparing how often firms valued their derivatives portfolio. Because of the stricter external disclosure requirements in the US, we expect a higher frequency of valuation in the US than in The Netherlands. Most US firms work with a monthly (28%) or quarterly valuation (31%) frequency. The same holds for Dutch firms with slightly lower percentages of respectively 25% and 15%. Remarkable is that 22% of the US firms value their derivatives portfolio only when needed or have no set schedule against 44% of the Dutch firms. Hopefully in these cases the firms are holding derivatives against specific easily identifiable exposures of known maturity.

A final issue in controlling a derivatives policy is that the effects of a risk management program should be measured and evaluated. According to recent theory on financial risk management a firm can benefit from hedging financial risk as the volatility of the cash flows decreases which in turn decreases expected taxes, bankruptcy and agency costs. Through decreasing the volatility of cash

flows the firm can thus increase its value. Table 13 presents the responses on the question how firms evaluate their risk management function for those firms indicating using such a method.

[Insert Table13 here]

Interestingly, table 13 shows that only 42% of the US firms indicate using the method of reduced volatility relative to a benchmark for evaluating their risk management function. Of the Dutch firms even less, namely only 23% of the firms that use an evaluation method employ a volatility reduction approach. These figures indicate that 58% of the US firms and 77% of the Dutch firms evaluate the risk management function in some other manner that may focus them more on making a profit on their hedging activities instead of decreasing the volatility of their cash flows.

VII. Conclusions

In this paper we examine the impact of the institutional differences between the US and the Netherlands on the financial risk management practices of US and Dutch firms. In order to generate a comparative sample the first step consisted of matching the results of the US (Bodnar, Marston and Hayt (1998)) and the Dutch questionnaire on the basis of industry classification and firm size. After the matching procedure, 267 US and 84 Dutch firms remained. In the second step we applied weights to the US firms. Nine weight classes were established, based on size and industry classification. The results after weighting are purely attributable to institutional differences. Due to differences between the US and the Netherlands in four main areas such as the level of international trade, the dissimilar financial arenas, the level of focus on shareholder value creation and the different external disclosure requirements, we expect distinct differences in derivatives usage and risk management practices. We find that Dutch firms (for all industry and size classes) hedge more financial risk. Because of the open economy of the Netherlands, Dutch firms experience far more foreign exchange exposure than US firms. Furthermore, we find that due to stricter disclosure requirements in the US, US firms are more concerned regarding derivatives usage. We also find that in contrast with US firms, Dutch firms generally use banks for derivatives transactions. US firms use a broader variety of counter parties for derivatives transactions and therefore require a higher counter party rating. Besides, the results show that US firms focus more on accounting earnings than Dutch firms and are more willing to incorporate their view on foreign exchange rate

movements when engaging in derivatives transactions. This type of behavior can be linked to the fact that US firms are shareholder oriented, whereas Dutch firms are stakeholder oriented. The aforementioned results indicate that the institutional differences between the US and the Netherlands have a significant effect on the risk management practices and derivatives use of US and Dutch firms.

References

- Alkeböck, P. and N. Hagelin, 1999, "Derivative usage by non-financial firms in Sweden with an international comparison", *Journal of International Financial Management and Accounting* 10, 105-120.
- Berkman, H., M.E. Bradbury and S. Magan, 1997, "An international comparison of derivatives use", *Financial Management* 26 (Winter), 69-73.
- Blij, I.H.C., M.N. Hoogendoorn, J. Maat, G.M.H. Mertens and M. Pronk, 1997, "Kwaliteitscriteria inzake wettelijke bepalingen en normen voor de jaarrekening", *Research Memorandum Limperg Instituut*, 45-57.
- Block, S.B. and T.J. Gallagher, 1986, "The use of interest rate futures and options by corporate financial managers", *Financial Management* (Autumn), 73-78.
- Bodnar, G.M. and G. Gebhardt, 1999, "Derivatives usage in risk management by US and German non-financial firms: A comparative survey", *Journal of International Financial Management and Accounting* 10, 153-187.
- Bodnar, G.M., G.S. Hayt, R.C. Marston and C.W. Smithson, 1995, "Wharton survey of derivatives usage by US non-financial firms", *Financial Management* 24 (Summer), 104-114.
- Bodnar, G.M., G.S. Hayt and R.C. Marston, 1996, "1995 Wharton survey of derivatives usage by US non-financial firms", *Financial Management* 25 (Winter), 113-133.
- Bodnar, G.M., G.S. Hayt and R.C. Marston, 1998, "1998 Survey of financial risk management by US non-financial firms", *Financial Management* 27 (Winter), 70-91.
- Boersma, J. and C. Veld, 1995, "Het gebruik van financiële derivaten door grote Nederlandse ondernemingen", *Risico & Rendement*, D.10.1-01 – D.10.1-11.
- De Ceuster, M.J.K., E. Durinck, E. Laveren and J. Lodewyckx, 2000, "A survey into the use of derivatives by large non-financial firms operating in Belgium", *European Financial Management* 6, 301-318.
- Dolde, W., 1993, "The trajectory of corporate financial management", *Journal of Applied Corporate Finance* 6, 33-41.
- FASB, SFAS No. 115, 1993, Accounting for certain investments in debt and equity securities, FASB: Stamford, CT.
- FASB, SFAS No. 119, 1994, Disclosure about derivative financial instruments and fair value of financial instruments, FASB: Stamford, CT.
- FASB, SFAS No. 133, 1997, Accounting for derivative instruments and hedging activities, FASB: Norwalk, CT.

- Froot, K.A., D.S. Scharfstein and J.C. Stein, 1993, "Risk management: Coordinating corporate investment and financing policies", *Journal of Finance* 48, 1629-1658.
- Gebhardt, G. and O. Russ, 1999, "Einsatz von derivativen Finanzinstrumenten im Risikomanagement deutscher Industrieunternehmen", in G. Gebhardt and B. Pellens, eds., *Rechnungswesen und Kapitalmarkt* (Handelsblatt: Düsseldorf), 23-85.
- La Porta, R., F. Lopez-de-Silanes and A. Shleifer, 1999, Corporate ownership around the world, *Journal of Finance* 54, 471-517.
- Loderer, C. and K. Pichler, 2000, "Firms, do you know your currency risk exposure? Survey results", *Journal of Empirical Finance* 7, 317-344.
- Mallin, C., K. Ow-Yong and M. Reynolds, 2001, "Derivatives usage in UK non-financial listed companies", *European Journal of Finance*, 63-91.
- Phillips, A.L., 1995, "1995 Derivatives practices and instruments survey, *Financial Management* 24 (Summer), 115-125.
- Smith, C.W. and R. Stulz, 1985 "The determinants of firms' hedging policies", *Journal of Financial and Quantitative Analysis* 20, 391-405.
- Stulz, R., 1984, "Optimal hedging policies", *Journal of Financial and Quantitative Analysis* 19, 127-140.
- United Nations, 1999, *1998 International trade statistics yearbook*, Volume I, United Nations (New York).

Table 1: Samples of US and Dutch respondents

	US firms					Dutch firms			
	Manufac- turing	Trade	Services	Total		Manufac- turing	Trade	Services	Total
Large (% of total)	73 (27%)	9 (3%)	17 (6%)	99	Large (% of total)	13 (15%)	3 (4%)	9 (11%)	25
Medium (% of total)	35 (13%)	5 (2%)	7 (3%)	47	Medium (% of total)	8 (10%)	6 (7%)	9 (11%)	23
Small (% of total)	93 (35%)	8 (3%)	20 (7%)	121	Small (% of total)	23 (27%)	10 (12%)	3 (4%)	36
Total	201	22	44	267	Total	44	19	21	84

The results are matched and unweighted.

Table 2: Derivatives usage by size

	US firms				Dutch firms		
	Yes (% of num)	No (% of num)	Total (% of total)		Yes (% of num)	No (% of num)	Total (% of total)
Large	81 (82%)	18 (18%)	99 (37%)	Large	22 (88%)	3 (12%)	25 (30%)
Medium	22 (46%)	26 (54%)	48 (18%)	Medium	13 (57%)	10 (43%)	23 (27%)
Small	14 (12%)	106 (88%)	120 (45%)	Small	15 (42%)	21 (58%)	36 (43%)
Total (% of total)	117 (44%)	150 (56%)	267	Total (% of total)	50 (60%)	34 (40%)	84

Answers to the question: Does your firm use derivatives (forwards, futures, options or swaps)? Large firms have total sales of more than DFL 1.5 billion (circa US\$ 800 million), medium firms have total sales between DFL 500 million and DFL 1.5 billion (between circa US\$ 250 million and circa US\$ 800 million) and small firms have total sales of less than DFL 500 million (circa US\$ 250 million). The responses are matched and unweighted.

Table 3: Derivatives usage by industry

	US firms				Dutch firms		
	Yes (% of num)	No (% of num)	Total (% of total)		Yes (% of num)	No (% of num)	Total (% of total)
Manufacturing	93 (46%)	108 (54%)	201 (75%)	Manufacturing	29 (66%)	15 (34%)	44 (52%)
Trade	6 (27%)	16 (73%)	22 (8%)	Trade	11 (58%)	8 (42%)	19 (23%)
Services	18 (41%)	26 (59%)	44 (17%)	Services	10 (48%)	11 (52%)	21 (25%)
Total (% of total)	117 (44%)	150 (56%)	267	Total (% of total)	50 (60%)	34 (40%)	84

Answers to the question: What is the main activity of your firm? The responses are matched and unweighted.

Table 4: Type of financial risk hedged

	Currency risk	Interest rate risk	Commodity risk
US firms	79%	73%	44%
Dutch firms	96%	81%	20%

Answers to the question: Which of the following statements best describes your organization's approach to the use of derivatives to manage each of the following forms of risk? Only for those respondents who answered negative on the choice: exposure not managed with derivatives. The responses are matched and weighted for hedgers.

Table 5: What do firms try to manage with hedging

	most important	second most important	least important	not at all important/ not a consideration
US firms				
Volatility in accounting earnings	44%	37%	13%	7%
Volatility in cash flows	50%	29%	16%	4%
Balance sheet accounts or ratios	1%	11%	65%	23%
Dutch firms				
Volatility in accounting earnings	33%	31%	13%	23%
Volatility in cash flows	60%	21%	10%	10%
Balance sheet accounts or ratios	8%	26%	45%	21%

Answers to the question: If you use derivatives to hedge, please indicate what the firm is trying to manage with the hedge. The responses are unmatched and unweighted.

Table 6: Types of derivatives used

Currency risk		
	US firms	Dutch firms
OTC forwards	56%	77%
Futures	12%	0%
Exchange-traded options	1%	0%
Swaps	8%	2%
OTC options	16%	12%
Structured derivatives	6%	7%
Hybrid debt	2%	2%
Interest rate risk		
	US firms	Dutch firms
OTC forwards	4%	28%
Futures	4%	3%
Swaps	78%	52%
OTC options	3%	17%
Exchange-traded options	0%	0%
Structured derivatives	7%	0%
Hybrid debt	5%	0%
Commodity risk		
	US firms	Dutch firms
OTC forwards	15%	0%
Futures	40%	6%
Swaps	27%	18%
OTC options	7%	35%
Exchange-traded options	7%	12%
Structured derivatives	4%	24%
Hybrid debt	0%	6%

Answer to the question in Bodnar, Hayt and Marston (1996): For each source of exposure that you manage, rank the seven types of derivatives by order of importance in your firm's management of that exposure. The responses are unmatched and unweighted.

Table 7: Foreign currency operating costs and revenues

Foreign currency operating revenues hedgers: US firms								
0%	5%	10%	15%	20%	25%	30%	40%	50+%
16%	10%	19%	4%	7%	5%	11%	7%	21%
Foreign currency operating costs hedgers: US firms								
0%	5%	10%	15%	20%	25%	30%	40%	50+%
12%	21%	16%	7%	7%	6%	13%	4%	14%
Foreign currency operating revenues hedgers: Dutch firms								
0%	5%	10%	15%	20%	25%	30%	40%	50+%
0%	0%	23%	4%	23%	8%	8%	19%	15%
Foreign currency operating costs hedgers: Dutch firms								
0%	5%	10%	15%	20%	25%	30%	40%	50+%
0%	0%	25%	7%	25%	18%	0%	14%	11%

Answer to the question: What percentage of your consolidated operating revenues and costs is in foreign currencies (currencies other than the one used for reporting purposes)? The responses are matched and weighted for currency hedgers.

Table 8: Benchmark for currency hedgers

	US firms	Dutch firms
Our firm does not use a benchmark	43%	60%
Forward rates available at the beginning of the period	21%	19%
Spot rates at the beginning of the period	20%	8%
Baseline percent hedged strategy (i.e. X% hedged)	9%	4%
Other benchmark (give a brief explanation)	7%	8%

Answer to the question: Which benchmark does your firm use for evaluating foreign currency risk management over the budget/planning period? The responses are matched and weighted for currency hedgers.

Table 9: Hedging horizon

US firms	Contractual commitments	Anticipated transactions	Economic/competitive exposure	Foreign repatriations	Translation of foreign accounts
Hedge shorter than the maturity of the exposure	5%	15%	31%	19%	19%
Hedge the maturity of the exposure	88%	78%	50%	74%	52%
Hedge longer than the maturity of the exposure	5%	3%	0%	0%	3%
Hedge to the end of the budget/fiscal year	2%	4%	19%	7%	26%
Dutch firms	Contractual commitments	Anticipated transactions	Economic/competitive exposure	Foreign repatriations	Translation of foreign accounts
Hedge shorter than the maturity of the exposure	3%	13%	31%	19%	30%
Hedge the maturity of the exposure	94%	73%	38%	71%	30%
Hedge longer than the maturity of the exposure	3%	10%	15%	0%	0%
Hedge to the end of the budget/fiscal year	0%	3%	15%	10%	40%

Answer to the question: For each of the following exposures, which best describes your typical hedging horizon? The responses are matched and weighted for currency hedgers.

Table 10: Market view on exchange rates

US firms	never	sometimes	frequently
Alter the timing of hedges	51%	41%	8%
Alter the size of hedges	50%	41%	9%
Actively take positions in currency derivatives	63%	33%	4%
Dutch firms	never	sometimes	frequently
Alter the timing of hedges	50%	45%	5%
Alter the size of hedges	57%	36%	7%
Actively take positions in currency derivatives	77%	18%	5%

Answer to the question: How often does your market view of exchange rates cause you to... The responses are matched and weighted for currency hedgers.

Table 11: Approach to risk management activities

US firms	Currency risk	Interest risk	Commodity risk
Exposure not managed with derivatives	22%	28%	62%
Risk management activities primarily centralized	65%	69%	28%
Risk management decisions primarily decentralized with centralized coordination	9%	2%	5%
Risk management activities primarily decentralized	3%	1%	4%
Dutch firms	Currency risk	Interest risk	Commodity risk
Exposure not managed with derivatives	4%	19%	80%
Risk management activities primarily centralized	75%	81%	12%
Risk management decisions primarily decentralized with centralized coordination	17%	0%	4%
Risk management activities primarily decentralized	4%	0%	4%

Answers to the question: Which of the following statements best describes your organization's approach to the use of derivatives to manage each of the following forms of risk? The responses are matched and weighted for hedgers.

Table 12: Counter party rating

	Maturities 12 months or less		Maturities more than 12 months	
	US firms	Dutch firms	US firms	Dutch firms
AAA	7%	6%	8%	11%
AA	18%	20%	27%	33%
A	47%	33%	43%	17%
BBB	4%	2%	1%	0%
Less than BBB	0%	0%	0%	0%
No set policy/don't know	24%	39%	21%	39%

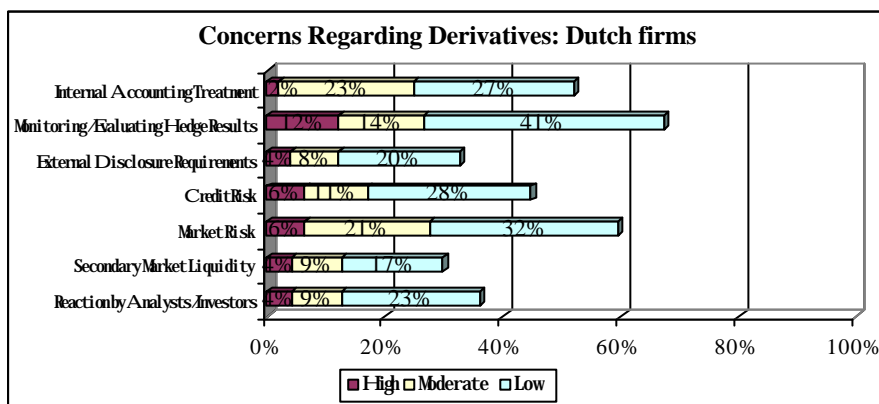
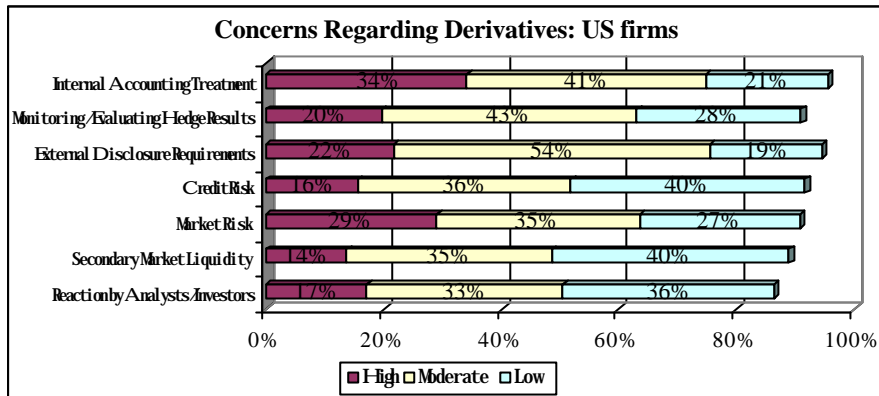
Answers to the question: What is the lowest counter party rating with which you will enter a derivatives transaction? The responses are matched and weighted for hedgers.

Table 13: Evaluation of the risk management function

	US firms	Dutch firms
Reduced volatility relative to a benchmark	42%	23%
Increased profit relative to a benchmark	16%	20%
Absolute profit/loss	26%	37%
Risk adjusted performance	16%	20%

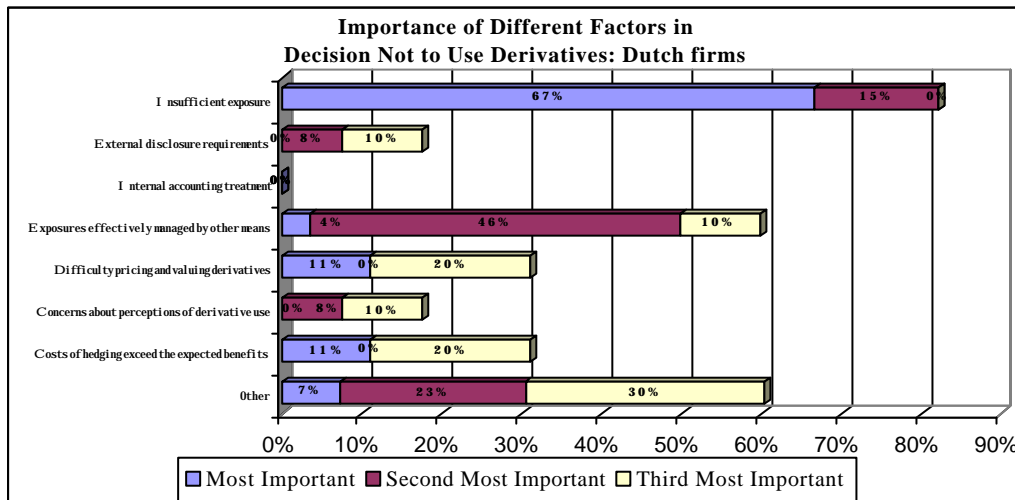
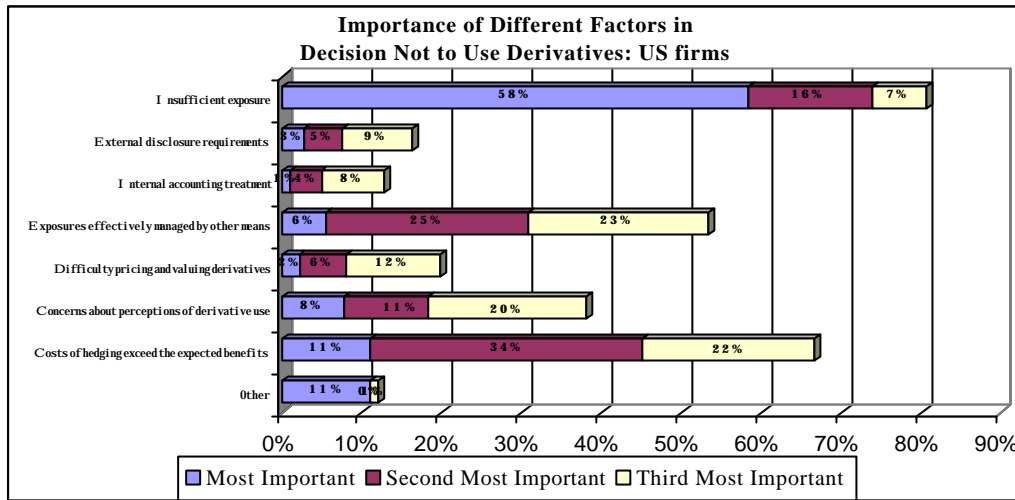
Answer to the question: How do you evaluate the risk management function? The responses are matched and weighted for hedgers.

Figure 1: Concerns regarding derivatives



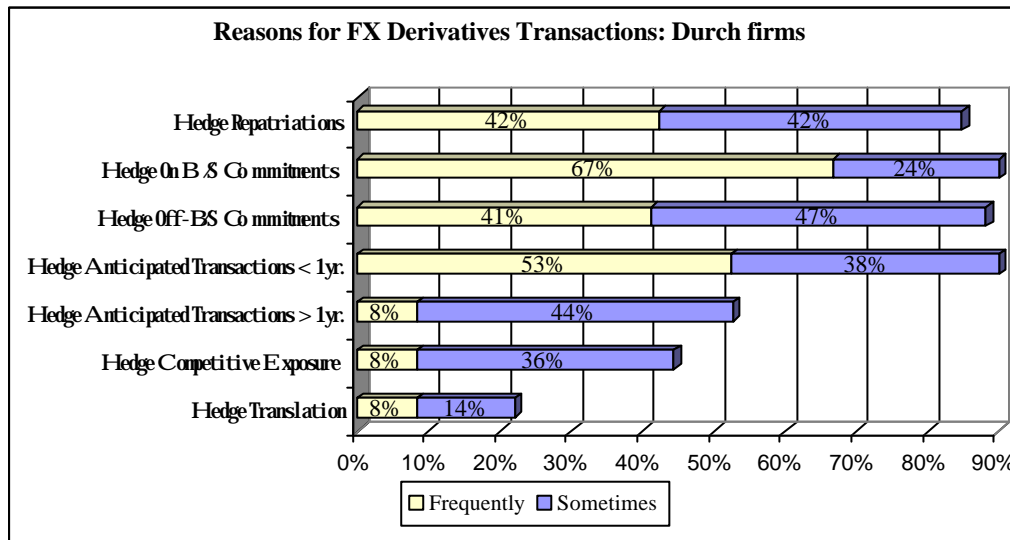
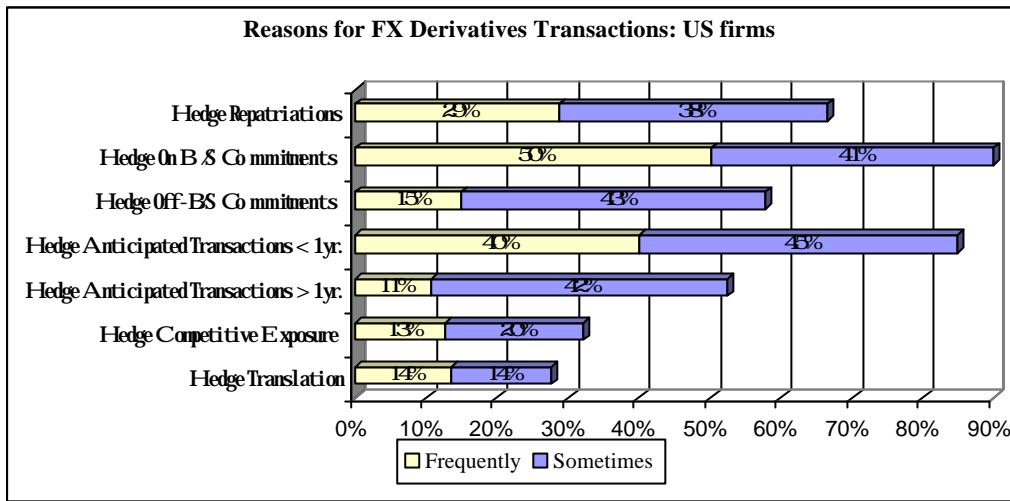
Answer to the question: Indicate your degree of concern about the following issues with respect to derivatives. The responses are matched and weighted for hedgers.

Figure 2: Reasons for not using derivatives



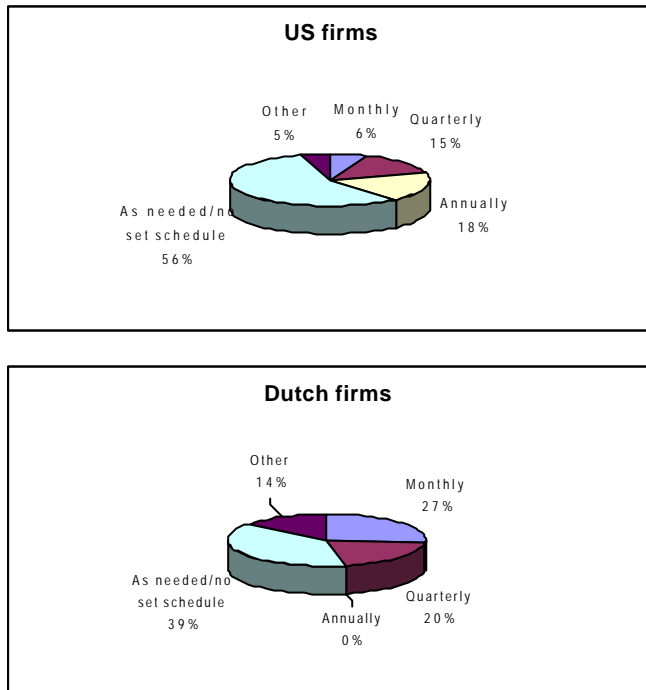
Answers to the question: Please indicate the three most important factors in your decision not to use derivatives. The responses are matched and weighted for non-hedgers.

Figure 3: Reasons for currency derivatives transactions



Answers to the question: How often does your firm transact in the currency derivatives markets to hedge the currency exposures mentioned below? The responses are matched and weighted for currency hedgers.

Figure 4: Reporting of derivatives activity



Answers to the question: How frequently is derivatives activity reported to the Board of Directors?
The responses are matched and weighted for hedgers.