

# The use of derivatives in Slovenian non-financial firms: is financial risk already well managed?\*

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## **Abstract**

*Recent research about the financial behaviour of Slovenian firms has documented enterprise risk management as being one of its weakest areas. The goal of this article is to present insights into financial risk management, i.e. into the extent of the use of derivatives in the largest Slovenian firms and the related practices. The results are confronted with the same types of characteristics of US and German firms (although being much larger) revealed in comparable studies. These firms provide relevant benchmarks for assessing the development gap since they operate in more advanced financial environments and are therefore expected to have much more refined approaches to the use of derivatives than Slovenian firms. A survey points to the much smaller extent of the use of derivatives by Slovenian firms. There is a substantial gap, especially in the area of risk management policies (e.g. documentation, reporting, counterparty risk, valuation etc.).*

**Key words:** *corporate risk management, financial risk, survey analysis, risk determinants, exchange rate risk, interest rate risk, commodity risk, corporate finance, derivatives*

**JEL classification:** *G30, G32*

## **1. Introduction**

According to the initial contributions and fundamental building blocks of modern finance theory enterprise risk management was not only considered a futile exercise but also as a means to destroy value. In the efficient MM (Modigliani and Miller,

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1958) tax-free and transactions costs-free framework investors only bear systematic risk as they are able to diversify their financial exposures across separate stock (Modigliani and Miller, 1958). Since risk management that is oriented to managing a firm's specific risks is not a costless exercise all such activities wash away some of the initial profits and thus destroy some shareholder value.

Bartram (2000) argues that capital market imperfections such as agency costs, transaction costs, taxes and the increasing costs of external financing, risk management on the firm level (as opposed to risk management performed by stock owners) represent a means to increase firm value to the benefit of the shareholders. Cassidy et al. (1990), Diallo and Kim (1989) and others used event-study methodology to test investor reaction to announcements relating to expanding the risk management department. They concluded that risk management activities are far from being worthless to investors. Moreover, even in the perfect MM world there are other organisational forms of firms than corporations and several interest groups for which active risk management process is fruitful. Owners of partnerships, limited liability firms, and others are dramatically dependant on the success of their businesses and the capital invested therein. Using an ordered probit regression Aabo (2004) finds the significantly greater extent of hedging activities in 'stakeholder oriented' firms compared to more 'stockholder oriented' ones for a sample of Danish firms. He argues that value creation through risk management also seems to be highly important to firms in a small open economy.

Two general theoretical risk management approaches explain the motives to hedge. The first promotes risk management as a hedging tool to enhance shareholder value. The argument of proponents of the second rests on agency relationships between agents (managers) and principals (shareholders) (Tufano, 1998).

Risk management should bring more benefits than raise costs. While costs are easily recognised and recorded, benefits are more obscure (Fatemi and Luft, 2002). The former are represented by the direct costs of transactions and the indirect cost of the risk management department. Nance et al., (1993) argued that the benefits stem from three sources. Firstly from tax savings, secondly from lower financial distress costs and, thirdly, from avoiding the problem of foregoing value enhancing projects, i.e. *an underinvestment problem*. Fatemi and Luft (2002) argue that firms should not manage risks solely for tax reasons since this would bring about excessive costs. Further, benefits can only be realised in countries whose corporate tax rates are progressive and whose corporate codes allow tax carry-forwards. These features enable efficient risk management to decrease the volatility of corporate profits and thus the tax burden (Smith and Stulz, 1985). By these means the convexity of the tax schedule can be decreased.<sup>2</sup> However, the argument about lower financial dis-

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<sup>2</sup> The convexity of taxes is a consequence of a more than proportional increase in the tax burden as a result of an increase in profit.

stress costs is more promising than taxes alone. Active risk management can decrease the probability of a default and lower the cost in the case of distress.<sup>3</sup> Smith and Stulz (1985) stressed the consequences of decreased costs, with the first being less volatile operating profits and a lower cost of capital, and the second more constant times interest earned which increases the borrowing capacity and value of tax shields of the firm. In this sense, risk management can be seen as a substitute for equity (Copeland, 2002). In addition, new levels of debt bring more restrictive covenants which further lower the costs of financial distress since managers have to play by the rules. This brings additional safety for creditors (Wruck, 1990). The last argument for more active risk management is promoted by Froot et al., (1993). These authors argued that since firms create value through investing in projects with positive net present values, prefer to follow a pecking order in their financing of the business<sup>4</sup>, and that the volatility of interest rates, commodity prices and foreign exchange rates negatively impact on operational cash flows, firms deal with insufficient amounts in their capital budgets. This underinvestment issue prevents the optimal increase in the shareholders' wealth.

The agency theory argumentation for risk management is, in fact, just the opposite. According to this view, managers try to fully hedge volatile cash flows even though that would not be in the interest of shareholders (Tufano, 1998). The reason for such behaviour is the level of managerial risk aversion. This is normally higher than the risk aversion of the shareholder since managers can only be active in one firm and thus prefer a lower risk/return profile. Namely, they face fierce consequences of negative outcomes. On the other hand, shareholders are able to diversify their portfolio of shares and are thus willing to take greater risk. Proponents of this theory see too-extensive hedging, cash flow hedging and/or pet project hedging as means of wealth transfer away from shareholders to managers (Fatemi and Luft, 2002). Tufano (1998) argued that to some extent risk management increases agency costs between shareholders and managers.<sup>5</sup> However, this is only one dimension. Corporate managers' risk management activities are additionally complicated by behavioural factors. Steil (1993) reminded us that cognitive perceptions of risk and uncertainty underlie pure financial hedging activities, resulting in sub-optimal strategies.

The extent to which managers are risk-averse depends on their compensation schemes. If the scheme is convex enough, meaning that a manager's total current compensation is an increasing function of the firm's value, the manager reduces

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<sup>3</sup> These are direct and indirect costs, the former being the cost of court procedures, attorneys etc., and the latter being opportunity costs, loss of reputation and the like.

<sup>4</sup> According to Myers (1984), net operating cash flow represents by far the largest extent of financing real investments.

<sup>5</sup> An agency relationship also exists between managers/shareholders and debtors, but risk management decreases those costs. Hedging some states of the world solves Myers's (1977) underinvestment problem.

their initial risk aversion. In these cases they cease to abandon projects with volatile expected cash flows since the 'dark side' of those projects (e.g. financial distress) is compensated for by the greater withheld upside potential (Smith and Stulz, 1985). The literature prescribes the shifting of the provisions of compensation schemes towards increased convexity (or at least decreased concavity), meaning raising managers' participation in increases in the value of the firm. In so doing, owners should take care of the type of compensation involved. Tufano (1996) and Rogers (2005) conclude that compensation with stock is better than compensation with stock options since it has a greater effect on the achieved level of managerial risk-taking.

As a side effect of increased globalisation and rapid change in risk management, approaches in the corporate world are expanding beyond trading departments and increasingly including non-financial risks.<sup>6</sup> Changes include horizontal as well as vertical extensions from financial risk management. Horizontal extension here means other business operations such as sales generation and retailing, while vertical means integrated risk management at the corporate level (Keers, 2002). From the corporate level, a view of the productivity and performance of the entire organisation can be gained which, in turn, can drive key business decisions. More accurate budgets and targets, supported by a scenario analysis, can serve as a means of simulating the effects of gaps between what is planned and realised, tilting current operations towards precious value creating tools. Integrated enterprise risk management reduces the chances of being blindsided (PriceWaterhouseCoopers, 2004). However, Clark and Varma (1999) argued that, while most companies now see risk as a key strategic issue, risk is typically still being treated tactically and in a piecemeal way. This is expected to change rapidly since firms are increasingly recognising the gains from such activities and, to a large extent, firms are ever more obliged to disclose their risk management techniques. This is the result of country-specific legislation and various codes of business practices.<sup>7</sup> According to Clarke and Varma (1999), an integrated risk management approach allows companies to consistently deliver superior performance and it should be an integral part of their strategy.

Despite the changing attitudes to enterprise risk management, the main focus of this article is financial risk management. One undeniable characteristic of the past few decades is the greater concern about the volatility of foreign exchange rates, interest

<sup>6</sup> CEOs in German firms consider market or beta risk as the most important, followed by financial, operational and strategic (Fatemi and Glaum, 2000). A similar ranking stems from other studies as well (see Graham and Harvey 2001 and Joseph and Hewins, 1997). However, the PriceWaterhouseCoopers (2004) survey indicates that strategic risk is becoming more and more studied in the corporate world. Namely, risk drivers such as over-regulation, increased competition, loss of key talents, and reputation risk have reached high levels of concern.

<sup>7</sup> The Turnbull Report and Combined Code in the UK, Sarbanes-Oxley Act in the US, *KonTraG* in Germany etc. Slovenian firms are obliged to properly manage and disclose financial risk under the Companies Act (ZGD-H, 2004). Additional obligations come from the IAS.

rates, stock yields and commodity prices. Market fluctuations have had a dramatic effect on the fortunes of companies.<sup>8</sup> The article is valuable for it presents the extent of the use of derivative securities in Slovenian firms and the related practices. Results are based on survey questionnaire. They serve as a comparison of Slovenian firms with US and German firms. Namely, Slovenian firms are expected to be less sophisticated in the area of risk management since a survey of treasury functions in Slovenian companies conducted by both the Slovenian Institute of Auditors and the Research Centre of the Faculty of Economics at the University of Ljubljana has revealed weaknesses in risk management (Berk, 2003). US and German firms represent a reasonable benchmark for comparison since they are operating in more advanced environments, and Slovenian firms are expected to follow a similar direction. Therefore, the comparison can help in assessing the development gap between Slovenian and US and Slovenian and German firms.

An international survey-based comparison of US and German firms has shown that German firms are more likely to use derivatives than US firms and that German ones have to some extent stricter reporting and that they value their portfolios of derivatives more frequently (Bodnar and Gebhardt, 1998).<sup>9</sup> They are more likely to incorporate their market views, and their primary goal is oriented to accounting results (whereas the primary goal of US firms is more about managing cash flows), but the general pattern of the use of derivatives between the two countries (such as among size and industry) is very comparable. This finding suggests that the general tendency to use derivatives is driven by economic issues such as operational activities and firm characteristics.

One of the main findings of this article shows that Slovenian firms use derivatives less often and to a much smaller extent. Firms use derivatives to hedge cash flows but it is not common for firms to specifically document risk management policies and to value their portfolios of derivatives. The most commonly stated concern about the use of derivatives relates to insufficient liquidity, monitoring and evaluating of hedge results, followed by market and credit risk. Slovenian firms use basically the same instruments to manage certain types of exposure as US and German firms, which supports the view of Giddy and Dufey (1995) that specific exposures are best hedged by certain derivative contracts. However, they use them to a much smaller extent. By including their market view in their foreign exchange hedging decisions, they speculate less than German firms, except in the area of interest rate hedging.

The article is organised as follows. The next four sections describe the samples of surveyed firms and report the extent of the use and overall goals and areas of use of

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<sup>8</sup> For approaches to hedging certain types of financial risk, see Campbell and Kracaw (1992) and Jorion (2001).

<sup>9</sup> The study compared results of US survey conducted in the fall of 1995 to results of the German survey conducted in the spring of 1997.

derivatives. In Section 6 there is a comparison of the use of derivatives by type of financial risk hedged for all three studied countries. Section 7 discusses attitudes to a risk management strategy, and Section 8 concludes.

## 2. Survey framework, methodology and hypotheses

The sample of surveyed firms was constructed with the aim to capture the practices of those Slovenian firms that are either the largest in the economy or have assumingly the largest foreign exchange exposure.<sup>10</sup> The motivation for doing that is the desire to compare presumably the most sophisticated Slovenian firms against US and German respondent firms. By doing this, one is able to assess the development gap that exists between the studied groups of firms. The results therefore should not be applied to the broadest set of Slovenian firms as their practices regarding the use of derivatives lag behind for various reasons, i.e. insufficient knowledge, lack of IT support, organisational shortfalls, unawareness of risk etc.

Therefore, a sample for mailing the survey questionnaire was constructed that contained all firms on the Ljubljana Stock Exchange (listed in either primary or free markets), the top 80 exporters, and the top 80 relative exporters (share of revenues in foreign markets in total revenues), regardless of the industry. Questionnaires were sent out in November 2004 to 257 firms. By late December, 57 firms had returned completed questionnaires, which makes response rate of 22.2 percent. Firms had been asked to answer questions about the use of derivatives in year 2004.

Compared to the US and German firms studied by Bodnar, Hayt and Marston (Bodnar et al., 1998), Bodnar, Hayt and Marston (Bodnar et al., 1996), Bodnar, Hayt, Marston and Smithson (Bodnar et al., 1995), Bodnar and Gebhardt (1998), and Fatemi and Glaum (2000), Slovenian firms are significantly smaller. The size breakdown of firms (measured by total revenues) in all three economies under comparison shows that about 95% of the Slovenian firms are in the size group of up to EUR 0.25 billion, but only about 19% and 10% of US and German firms, respectively, are also in that group. At the upper end, there are just two (3.5% of all respondent firms) represented in size groups of more than EUR 0.5 billion, whereas about 64% of US and 82% of German firms are included in that size group.<sup>11</sup> It is for this fact that the

<sup>10</sup> The survey was conducted by the Research Centre of the Faculty of Economics at the University of Ljubljana (hereafter 'RCEF-IFI').

<sup>11</sup> According to the common practice, Bodnar and Gebhardt (1998) structured the sample of firms in a way that all relevant industries were included with the same weights in both economies. That was not the case for the Slovenian sample. Namely, it made more sense to structure the sample so as to include all the largest firms which faced fewer obstacles in the implementation of risk management. Empirical evidence suggests the significant fixed cost of a hedging programme (Bodnar et al., 1995). The fixed costs of the programme make the use of derivatives uneconomical for small firms despite



results of the following comparison should be viewed with at least some degree of caution and some additional educated reasoning. Table 1 shows the size distribution of respondent firms in all three surveys.

Table 1: Breakdown by size groups

Sales Groups	U.S.	Germany	Slovenia
0.5 billion EUR and more	127	103	2
	64.47%	81.75%	3.51%
0.25 - 0.5 billion EUR	32	11	1
	16.24%	8.73%	1.75%
less than 0.25 billion EUR	38	12	54
	19.29%	9.52%	94.74%
Total	197	126	57
	100.00%	100.00%	100.00%

Sources: Bodnar and Marston (1998), Bodnar and Gebhardt (1998) and RCEF-IFI survey results.

Firms in the Slovenian sample make 67.4% of the EUR 76.7 million average *revenues* in foreign markets, EUR 4.0 million *earnings before interest and taxes* and their average *debt-to-capital* ratio reaches the level of 26.25%. On average, they employ 529 employees who on average produce *annual valued added* of EUR 32,778 per worker. The average *adjusted return on equity* reaches 6.2%, *return on assets* 4.9%, and the *gross profit margin* levels off at around 31.7%.<sup>12</sup>

Compared to the US firms studied by Bodnar and Marston (1998), the respondent Slovenian firms are significantly more export-oriented and depend significantly more on foreign markets regarding their inputs of production. Whereas only 12.7 percent of Slovenian firms collect less than 5 percent of revenues abroad, this is true in 79.3 percent of cases for US firms. On the other end, 69 percent of Slovenian firms collect more than 50 percent of revenues abroad, but only 2.1 percent of US firms do reach that ratio. A similar relationship holds for foreign market dependence by inputs.<sup>13</sup>

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the potentially large benefits predicted by theory (Smith and Stulz, 1985). In addition, Slovenian corporations faced a transition in the last decade, and it is thus expected that only large firms succeeded by establishing a derivative hedging programme of any kind. By controlling for industry, the sample of firms would have been even smaller.

<sup>12</sup> Since the distribution of firms in the sample is not normal, the median (in brackets) is different from the mean. Above all, *revenues* (EUR 27.2 million), *earnings before interest and taxes* (EUR 1.1 million), *share of revenues in foreign markets* (81%), *number of employees* (360) and *annual value added per worker* (EUR 20,223) show substantial differences.

<sup>13</sup> 14.5 percent of Slovenian firms record expenses in foreign currencies of less than 5% of total expenses, but 73.2 percent of US firms do so. For 27.3 percent of Slovenian firms foreign currency expenses reach the level of 50 percent of total expenses. The share of US firms with such a percentage is 2.1.

From a methodological point of view this article (as well as cited comparative ones) does not call for any sophisticated tools. To spot the differences ratio comparison is used, since despite the fact that the Slovenian questionnaire included the same set of questions and was structured in a way as to be comparable, I cannot run any tests to statistically reject or support some sets of hypotheses. For that purpose, detailed responses from US and German firms would have to be analysed jointly alongside responses from Slovenian firms using a *t-test* independent sample procedure. Unfortunately, these are not available. Independent *t-test* was used only in comparison of relevance of types of risk among Slovenian companies (see Table 3).

As survey questionnaires included the same type of questions, direct comparison was enabled which should have shown differences in preferences of the use of derivatives. However, by interpreting the results one should bear in mind some potential shortcomings. Three the most obvious are tied to different institutional setting, potential different macroeconomic positions and circumstances in financial markets in the studied economies and their close related markets.

Two hypotheses (aspects) that are straightforward to judge are as follows:

1. *Hypothesis I*: Slovenian firms do not differ much from US and German firms (as benchmarks for firms from the two most developed financial environments) with respect to the use of types of derivatives by different types of financial risk (FX, interest and commodity risk).
2. *Hypothesis II*: Slovenian firms do not differ substantially with respect to the financial risk management policies employed compared to selected firms from the two benchmark countries. Therefore, in areas like policy documentation, the valuation of portfolios of derivatives, reporting etc., they are already at a high professional level.

### **3. Extent of the use of derivative instruments**

The RCEF-IFI survey results provide a logical explanation of the fact that risk management is relatively weak in Slovenian firms. Namely, firms have started to use derivatives only recently. Two respondent firms started to use them in 2000, three in 2001, five in 2002, three in 2003 and one firm in 2004.

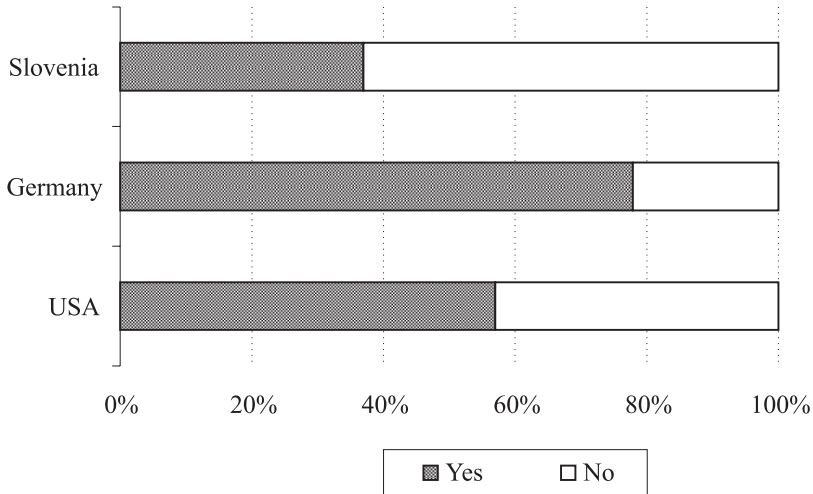
Among the 57 respondents in the survey, there were 21 users (37 percent) and 36 non-users of derivative securities.<sup>14</sup> Compared to the US and German firms from

<sup>14</sup> Firms that responded negatively to the question asking about use/non-use were offered reasons for the non-use of derivatives. Among 36 Slovenian non-users in the survey, the prime reason was 'insufficient exposure', the second 'other means to manage exposure', and the third 'difficulties in measurement'. While the responses of Slovenian firms are similar to those of US firms in terms of the first



Bodnar and Gebhardt (1998) and Bodnar et al. (1998), the percentage of Slovenian firms that use derivatives lags behind (see Figure 1).

Figure 1: Users of derivatives (in percent)<sup>15</sup>



Sources: Bodnar, Gebhardt (1998) and RCEF-IFI 2004 survey results.

One of the reasons for the low percentage of users of derivatives among Slovenian firms could be the greater use of internal hedging techniques, e.g. asset liability management, leads and lags, netting etc.<sup>16</sup> An additional survey would be needed to clarify this issue for all studied firms in the three countries.

The survey of Slovenian firms reveals great differences in the use of option contracts compared to US firms. Whereas only 20 percent of Slovenian firms use options, the share of their US counterparts that use them is 69 percent. Slovenian firms do not see the need to use them. Some argue they are cost-inefficient. However, there are also some responses that reveal a lack of knowledge here.

two reasons, American users do not see measurement as a reason not to use those instruments. Rather, they are concerned with the opinions of investors, the regulator and the public (Bodnar et al., 1998).

<sup>15</sup> Bodnar and Gebhardt (1998) argued that the higher percentage of derivatives users among German (compared to US) firms (especially in the area of FX risk) might be the consequence of the fact that the German economy was at the time of conducting the surveys more open than the US economy.

<sup>16</sup> Some internal hedging techniques are mentioned in Berk (2005).

Table 2: Use of options by US firms

	FX Risk	IR Risk	Comm Risk	ANY
Standard European-Style Options	56	28	25	84
Standard American-Style Options	31	26	33	75
Average Rate (price) Options	15	7	17	38
Basket Options	8	5	4	17
Barrier Options (Knock in/out)	18	5	5	26
Contingent Premium (deferred)	5	1	5	23
Option Combinations (collars, straddles, etc.)	21	10	24	50
Other	5	5	2	9

Source: Bodnar et al. (1998). Note: 142 firms answered the survey question regarding types of options.

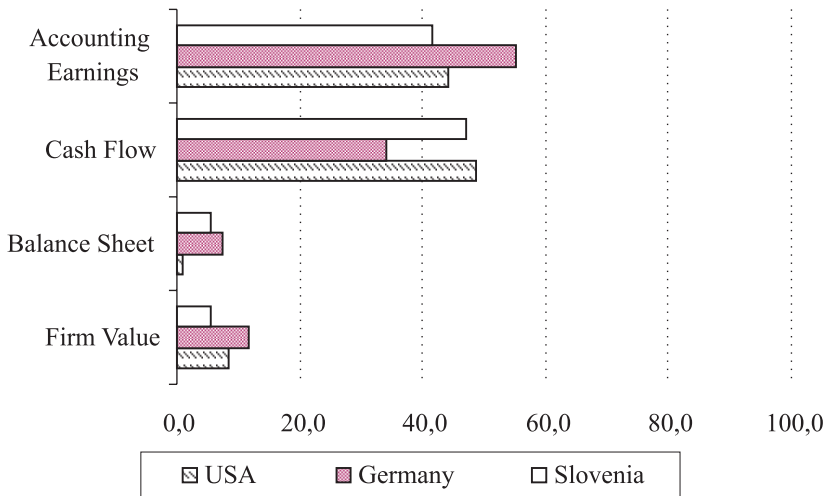
US firms show a relatively high degree of sophistication in terms of the use of options since, in addition to standard European-style and standard American-style options, they often employ option combinations, barrier options and others (Bodnar et al., 1998). Table 2 shows the use of different types of options in US firms by type of financial risk.

#### 4. Goals of use

Goal-setting is the focal point of any concerted action. The theoretical literature argues that firms should predominantly use derivatives to hedge volatile cash flows since market value can thus be increased optimally (Bartram, 2000, Nance et al., 1993, Smith and Stulz, 1985). Bodnar and Gebhardt (1998) found that relatively many firms consider the hedging of accounting profit as the primary goal of financial risk management. This especially holds for German firms – 55.3 percent of firms. 34.0 percent of German firms hedge primarily for cash flow reasons, 11.7 percent for market value, and 7.4 percent of German firms hedge some balance-sheet items. Cash flow hedging is the primary reason considered by the majority of US firms (48.6 percent), followed by accounting profit (44.0 percent), market value (8.3 percent) and some balance-sheet items (0.9 percent). Cash flow hedging as a primary goal gains in importance with firm size. On the other hand, the importance of accounting profit also falls.<sup>17</sup>

<sup>17</sup> In the size group of over EUR 5 billion revenues 65.4 percent of US and 48.1 percent of German firms consider cash flow hedging as the primary goal, accounting profit being second in relevance for 23.1 percent of US firms, and 37 percent for German firms. Market value hedging is also gaining in importance. 15.4 percent of US and 18.5 percent of German firms hedge primarily for that reason (Bodnar and Gebhardt, 1998).

Figure 2: Primary goal of financial risk management (in percent)



Sources: Bodnar, Gebhardt (1998) and RCEF-IFI 2004 survey results.

Cash flow hedging is the most relevant goal in Slovenian firms as well since 47.2 percent of such firms consider financial risk management in that way. 41.7 percent of firms hedge accounting profit, 5.6 percent market value and 5.6 percent some specific balance-sheet items (Figure 2).<sup>18</sup>

The comparison of Slovenian firms in the sample and the firms in the smallest size group in the Bodnar and Gebhardt (1998) study for US firms<sup>19</sup> shows similarities in the goals of hedging<sup>20</sup>. The large majority of German firms of a comparable size (81.8 percent) consider accounting profit as the primary goal. Bodnar and Gebhardt (1998) argued that the difference between US and German firms can largely be explained by means of the informational role of financial statements in both countries. In Germany they are used not only for investors but for tax purposes as well. In addition, some financial decisions are based on accounting statements (e.g. dividend payouts).

<sup>18</sup> By measuring goal-importance on a five-level scale (with 1 being the highest and 5 the lowest) the results were as follows: cash flow 1.95, accounting profit 2.29, balance-sheet items 3.68, market value of the firm 4.02.

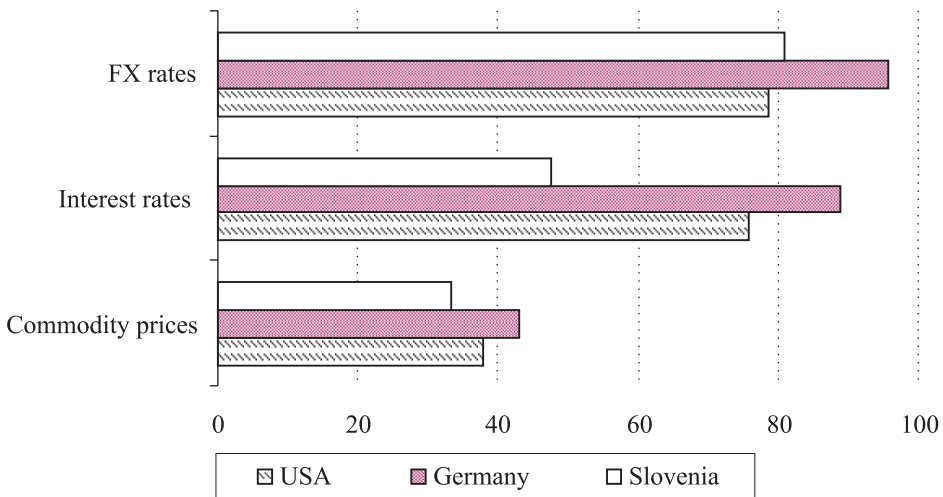
<sup>19</sup> Literally all Slovenian firms are represented in this size group (Table 1).

<sup>20</sup> Cash flow hedging as a primary goal was stated by 48.6 percent of US firms, and accounting profit by 38.1 percent.

## 5. Areas of use

Bodnar and Gebhardt (1998) argued that US and German firms use derivatives primarily to manage foreign exchange (FX) risk (German firms 96 percent, and US firms 79 percent) and interest rate risk (89 and 76 percent, respectively). The survey of Slovenian firms offers similar findings. Among those firms that use derivatives, 81.0 percent of firms hedge FX risk, 52.4 percent interest rate risk, while only 33.3 percent hedge commodity price risk.<sup>21</sup>

Figure 3: Derivative use across risk types



Sources: Bodnar, Gebhardt (1998) and RCEF-IFI 2004 survey results.

The results presented above support the perception about the relevance of types of risk of Slovenian Chief Financial Officers (CFOs) documented in Berk (2003).<sup>22</sup> Slovenian CFOs consider FX rate risk as the most relevant, followed by interest

<sup>21</sup> Answers from another question in the survey show the allocation of the average importance of FX risk hedging at 1.72, interest rate risk hedging at 2.28, and commodity price risk at 2.02 (with 1 representing the highest importance, and 3 the lowest importance). Differences between FX and interest rate risk are statistically significant at the 0.4% level. The relatively high result for commodity price risk (compared to the data in Figure 3) might indicate that Slovenian firms may use these instruments in the future more often.

<sup>22</sup> Results in the paper are based on a survey about the treasury function in Slovenian firms conducted by the Slovenian Institute of Auditors and the Research Centre of the Faculty of Economics at the University of Ljubljana in 2002. In the sample of surveyed firms, there were 1,500 firms employing at least 20 people at the end of 2001. Firms were randomly selected in the stratum, which were set according to main NACE/SIC Code activities. Complete questionnaires were collected from 137 surveyed firms (Berk, 2003).

rate risk, with commodity price risk being seen as having low relevance (Table 3). FX rate, interest rate risk and commodity price risk received an average relevance of 4.29, 4.18 and 1.80, respectively (with 1 not being relevant and 5 being very relevant). FX risk relevance rises significantly with the size and share of foreign sales, but not significantly with leverage.<sup>23</sup> The perception of interest risk is on average higher for firms with larger financial leverage.<sup>24</sup> The differences are not significant though. The reason is the high inter-firm volatility of levels. Also quite large are the differences in average perceptions of commodity price risk between firms that differ in the size and share of foreign sales, although they are not significant.

Table 3: Relevance of FX rate risk, interest rate risk and commodity price risk

		FX rate		Interest Rate		Commodity price	
All firms	N	131		128		120	
	Mean	4.29		4.18		1.80	
	St. Dev.	1.19		3.80		1.34	
Size		smallest	largest	smallest	largest	smallest	largest
	N	40	43	39	43	76	43
	Mean	3.93***	4.79***	3.87	4.07	1.70	2.00
	Sig.	0.001		0.358		0.219	
Leverage		lowest	highest	lowest	highest	lowest	highest
	N	42	42	41	42	38	40
	Mean	4.24	4.50	3.88	4.98	2.03	1.70
	Sig.	0.312		0.282		0.675	
Share of foreign sales		smallest	largest	smallest	largest	smallest	largest
	N	69	43	70	41	64	38
	Mean	4.01***	4.7***	3.79	4.05	1.66	2.00
	Sig.	0.001		0.187		0.188	

Source: SIR-RCEF 2002 survey results; [1- not relevant, ..., 5- very relevant].

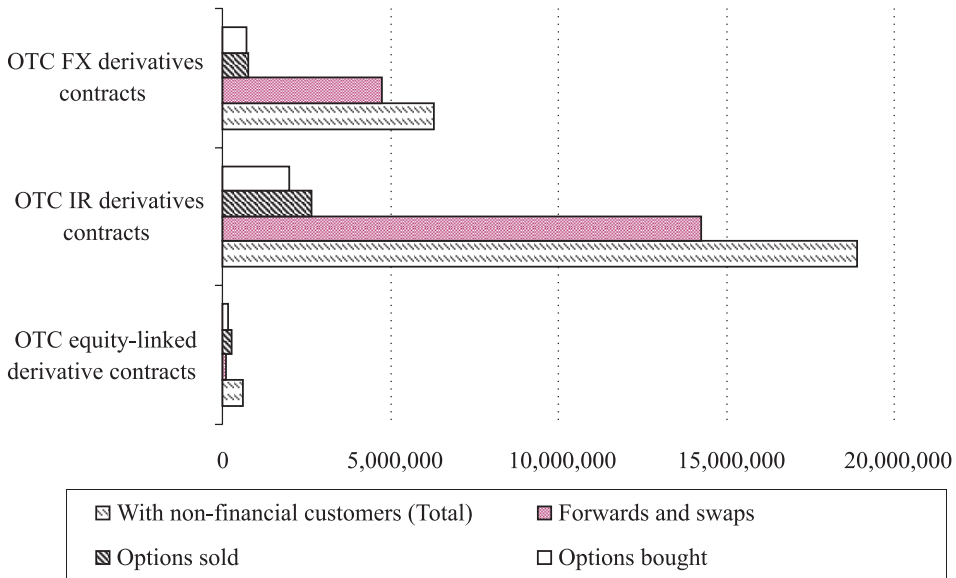
In Germany and in the US, most firms manage more than one type of risk by using derivatives (Bodnar and Gebhardt, 1998). Multiple derivative usage is more frequent in German firms, with 44 percent of them using derivatives for all three types of risk, and 85 percent using a combination of FX and interest rate derivatives. The comparable shares for US firms amount to 27 and 58 percent. Among surveyed Slovenian firms 50 percent use derivatives of all three types, and 86 percent use FX and interest rate derivatives.

<sup>23</sup> Graham and Harvey (2001) also found similar results for the sample of US firms.

<sup>24</sup> For firms with the highest *debt-to-capital* ratio the relevance is 4.98, and for their counterparts with the smallest ratio it is 3.88.

Comparing these findings with the statistics published by the Bank of International Settlements (BIS) reveals an interesting fact. The BIS documents (Figure 4) about three times larger notional amounts outstanding of interest rate derivative contracts than foreign exchange derivative contracts used by non-financial customers (Quarterly Review, 2005).<sup>25</sup> Hence, the average amount of interest rate risk hedged is greater than the average amount in the case of foreign exchange. The largest amount (by notional amount outstanding) of single-currency interest rate derivative contracts is written in euros (40.3%), followed by US dollars (31.8%), Japanese yen (12.5%), pounds sterling (8.1%), and Swiss francs (1.7%).<sup>26</sup> FX derivatives predominantly involve the US dollar (87.8%), followed by the euro (40.2%), Japanese yen (24.0%), pound sterling (14.5%) and Swiss franc (5.1%).

Figure 4: Notional amounts outstanding of OTC derivative contracts with non-financial customers (million US dollars)



<sup>25</sup> In terms of both notional amounts outstanding as well as gross market value, derivatives markets are growing rapidly. The BIS documents 55 percent growth in the period between January 2002 and June 2003 for both exchange-traded and OTC derivatives, and 46 percent for OTC derivatives and 22% for exchange-traded derivatives in the period between June 2003 and December 2004. There is 187.3 trillion US dollars of interest rate derivative contracts outstanding (measured by notional amounts), 29.9 trillion US dollars of FX derivative contracts, and 4.4 trillion US dollars of equity-linked derivative contracts.

<sup>26</sup> Relationships differ across currencies by importance of type of derivatives. Forward rate agreements on interest rates are relatively more important (in terms of notional amounts outstanding) for US-dollar written derivative contracts (and not important for Japanese-yen written contracts), whereas swaps are relatively more important for euro- and yen-based contracts.



Source: BIS Quarterly Review (2005).

The maturity of derivatives is also interesting. Table 4 shows the maturity structure of notional amounts by OTC derivative securities.<sup>27</sup>

Table 4: Notional amounts outstanding of OTC derivative contracts (net of inter-dealer double counting) with non-financial customers by maturity (million US dollars)

		One year or less	One year and up to five years	Over five years
OTC FX derivatives contracts	Total	4,557,835	1,153,127	560,304
	Forwards and swaps	3,323,891	921,286	524,350
	Options sold	635,407	122,744	13,195
	Options bought	598,537	109,097	22,759
OTC IR derivatives contracts	Total	6,796,356	6,898,703	5,199,272
	Forwards and swaps	4,697,044	5,444,971	4,110,914
	Options sold	1,124,694	861,607	642,899
	Options bought	974,618	592,125	445,459
OTC equity-linked derivative contracts	Total	289,350	250,006	46,620
	Forwards and swaps	60,448	58,806	16,038
	Options sold	129,036	108,164	20,264
	Options bought	99,866	83,036	10,318

Source: BIS Quarterly Review (2005).

In general, FX options have a shorter maturity than FX forwards and swaps, especially for maturities longer than five years, whereas differences in maturity are not so obvious by interest rate derivatives. In about 60 percent of cases, non-financial customers hedge interest rate exposures with contracts having a maturity of over one year (roughly 25% over five years). On the other hand, FX exposures are about 75 percent hedged by contracts maturing within a year (82% using options and 70% using forward rates agreements and swaps), with only a few hedging FX exposure for more than five years.<sup>28</sup>

<sup>27</sup> The BIS does not report notional amounts of commodity derivative securities since trading activity can only be measured by the number of contracts (Quarterly Review, 2005, p. 46), but it does report notional amounts of equity-linked derivative securities.

<sup>28</sup> 11 percent of those using forwards and swaps hedge for a period of more than five years, and around

## 6. Management of financial risk by types of financial risk

### 6.1. Management of foreign exchange risk

US, German and Slovenian firms hedge cash flow (i.e. transactions) more frequently than translation or economic exposure. In the US, one-half of the sample firms responded that they do hedge transactions frequently (and a further 43.5 percent that they do sometimes). A fairly similar position applies to German and Slovenian firms as well.<sup>29</sup>

Table 5: Exposures hedged with FX derivatives

	USA		Germany		Slovenia	
	Frequently	Sometimes	Frequently	Sometimes	Frequently	Sometimes
Contractual Commitments	50.6	43.5	-	-	-	-
Accounts Receivable/Payable	-	-	77.2	16.3	52.9	35.3
Pending Commitments	-	-	29.3	50.0	46.2	38.5
Anticipated Transactions < 1 yr	55.3	36.5	28.3	41.3	50.0	37.5
Anticipated Transactions > 1 yr	11.8	42.4	6.5	40.2	0.0	53.8
Competitive Exposures	7.1	16.5	8.7	14.1	23.0	46.0
Foreign Repatriations	37.6	37.6	38.0	37.0	6.2	31.3
Translation of Foreign Accounts	15.3	14.1	5.4	9.8	25.0	25.0

Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

The comparison of German and US shows that German firms do not hedge anticipated transactions to such an extent as US firms. Only 28.3 percent of respondent firms frequently hedge anticipated transactions within a year. The share among US firms is 55.3. Slovenian firms are quite like US firms since 50 percent of Slovenian firms hedge anticipated transactions within a year. On the other hand, Slovenian firms do not frequently use derivatives to hedge foreign repatriations (Table 5).

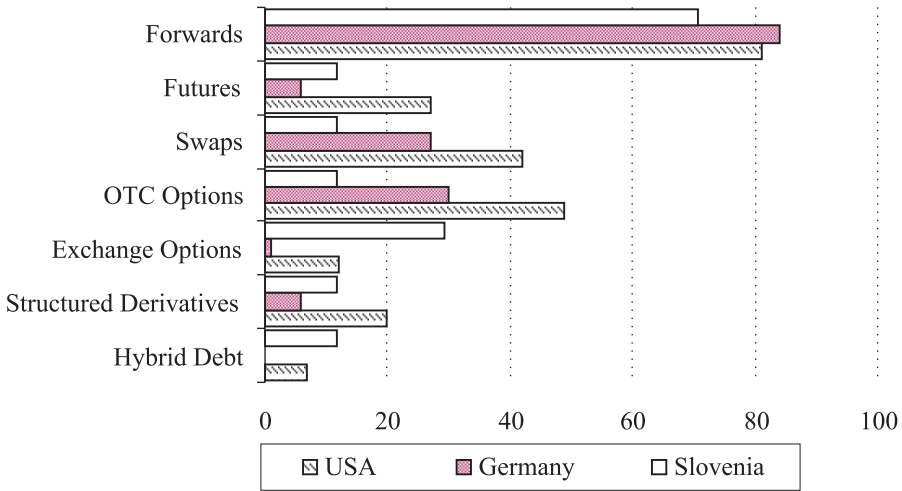
The comparison also shows that for the purposes of FX hedging, forward contracts are the most suitable instrument (Figure 5). Next, firms use OTC options, swaps

<sup>29</sup> 2.5 percent of those using options.

<sup>29</sup> Questions and answers for the German and Slovenian firms have been broken down by on-balance sheet (accounts receivable/payable) and off-balance sheet transactions (pending commitments).

and futures (Bodnar and Gebhardt, 1998). Options, swaps and futures are more frequently employed by US firms, whereas German firms more often use *plain vanilla* forward contracts. Slovenian firms that use FX derivatives (17 firms use FX derivatives out of the 21 firms that hedge financial risks with derivatives) similar to German firms, mostly employ forwards (76 percent).

Figure 5: Preference over FX derivative instruments



Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

Only a few Slovenian firms set a hedge for a shorter period than the duration of the exposure. About 60 percent of firms adjust the duration of the hedge to the duration of the exposure, yet 33 percent hedge until the end of the accounting or fiscal year. In the case of foreign repatriations, about 50 percent hedge for the accounting or fiscal period but only one-third of firms for the duration of the transaction exposure.

Giddy and Dufey (1995) argued that certain derivative securities are best suited to hedge specific financial exposures. International financial management textbook arguments suggest that fixed claims/liabilities should be hedged using simple derivative securities, but expected claims/liabilities should be hedged using options. Bodnar and Gebhardt (1998) found that the use of options in US practice increases along with the volatility of cash flows. With US firms options are more frequently used to hedge the FX risk of anticipated transactions above one year than forward and futures contracts. Table 7 shows this is not the case for German firms. The Slovenian survey shows that the relationship also does not hold for Slovenian firms.

Empirical research about the hedging behaviour of firms shows that due to transaction costs and asymmetric information as well as other imperfections firms neither fully hedge their financial risks, nor hedge optimally from the perspective of owners (Fatemi and Glaum, 2000). They try to avoid negative states of the world and to deliberately speculate by keeping some positions open and to leave some free room for anticipated upside gains. If a firm has a comparative advantage in some areas, it makes perfect sense to let speculation create additional opportunities (Fatemi and Luft, 2002). The figure below shows the impact of FX market views on hedging strategy. Bodnar and Gebhardt (1998) noted that German firms incorporate their market view much more frequently than US firms. 13.5 percent of them frequently actively take positions, and 37.1 percent do so sometimes. For Slovenian firms I found that 70.6 percent of firms actively take positions sometimes, but do so frequently in only 11.8 percent of them.

Table 6: FX instrument choice by type of exposure

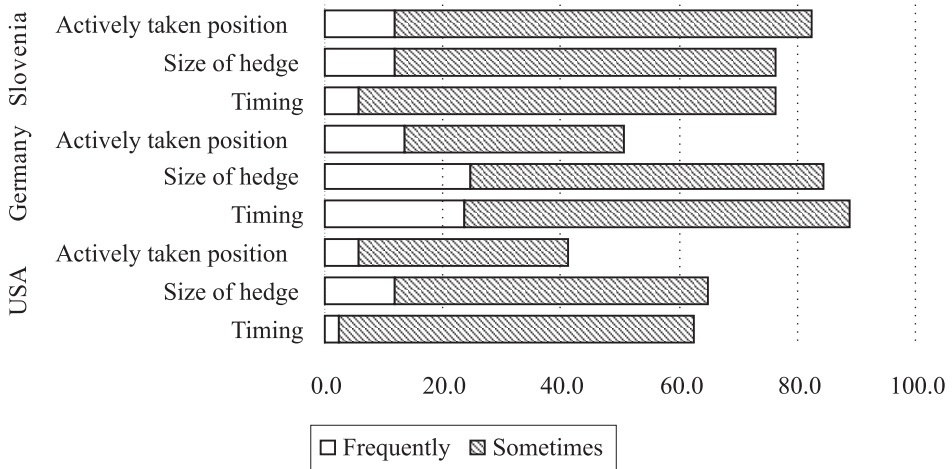
	USA			Germany			Slovenia		
	F	O	S	F	O	S	F	O	S
Contractual Commitments	82.5	7.5	5.0						
Accounts Receivable/ Payable				69.6	16.3	7.6	76.5	11.8	11.8
Pending Commitments				47.8	20.7	5.4	64.7	11.8	11.8
Anticipated Transactions < 1 yr	60.0	28.8	5.0	47.8	20.7	5.4	76.5	11.8	0.0
Anticipated Transactions > 1 yr	21.3	31.3	2.5	23.9	17.4	3.3	47.1	11.8	0.0
Competitive Exposures	5.0	16.3	2.5	8.7	5.4	2.2	35.4	11.8	11.8
Foreign Repatriations	82.5	7.5	7.5	58.7	4.3	12.0	23.5	0.0	0.0
Translation of Foreign Accounts	12.5	11.3	6.3	3.3	1.1	3.3	0.0	0.0	0.0

Legend: F – futures and/or forwards, O – options, S – swaps.

Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

About 24 percent of German firms frequently adjust the size or timing of a hedge, but only 2.4 percent (timing) and 11.8 percent (size of hedge) of US firms, and 5.9 percent (timing) and 11.8 percent (size of hedge) of Slovenian firms do so.

Figure 6: Impact of a FX market view



Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

Bodnar and Gebhardt (1998) argued that the incorporation of market views into the hedge increases with the size of a firm. Results of the RCEF-IFI Survey generally cannot support this argument. Namely, Slovenian firms are much smaller than US and German firms which should, according to Bodnar and Gebhardt (1998), leave Slovenian firms with less market views, and make US firms more comparable with German firms.

## 6. 2. Management of interest rate risk

The surveyed Slovenian firms frequently use *spread fixing* on new debt (in 72 percent of cases) and *fixed-to-floating swaps*. German firms use *floating-to-fixed rate swaps* to the largest extent, but this might be mainly the result of the relatively low levels of interest rates (which are mean-reverting in the long run) in Germany at the time of conducting the survey. In general, German firms use interest rate derivatives more often than their US counterparts (Bodnar and Gebhardt, 1998). The difference in types of derivatives used between Slovenian and German firms can at least be partly explained by the falling trend of interest rates and the decreasing risk premium during the Slovenian accession period.

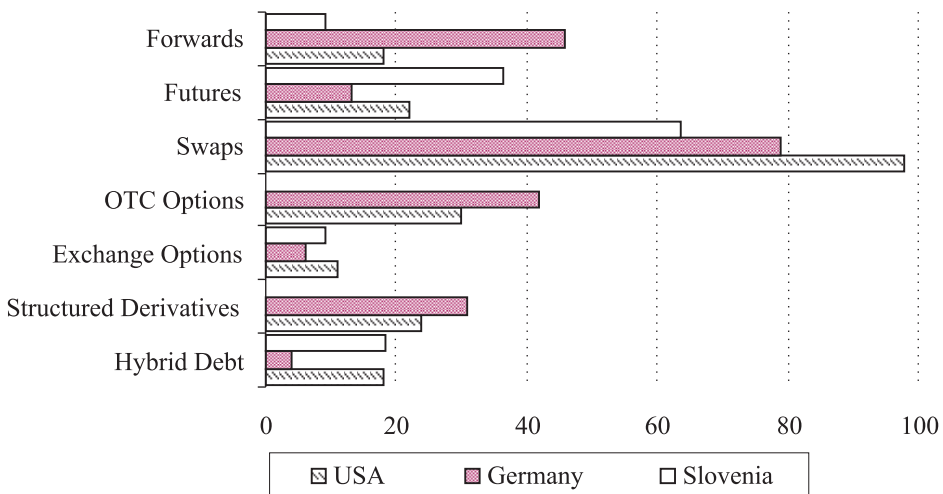
Table 7: Uses of interest rate derivatives

	USA		Germany		Slovenia	
	Frequently	Sometimes	Frequently	Sometimes	Frequently	Sometimes
Swap Fixed Rate Debt to Floating	10.0	55.6	6.0	60.7	100.0	100.0
Swap Floating Rate Debt to Fixed	10.0	66.7	31.0	58.3	16.7	100.0
Fix Spread on New Debt	3.3	43.3	15.5	52.4	71.7	100.0
Lock In Rate for Future Financing	1.1	45.6	20.2	65.5	50.0	100.0

Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

As in the case of FX risk hedging, where forwards are most suited to doing the job, swap contracts are the most common instrument for interest rate risk hedging (Figure 7). The relative importance of types of instruments is comparable across the three countries. In fact, the German pattern differs more from the US pattern than the Slovenian pattern from the US and German ones. Slovenian firms use futures relatively more than German firms (they more frequently rely on forward contracts). Despite being the most important in absolute terms, swaps are relatively less important in Slovenia (compared to both US and German firms). German firms use structured products more frequently than US and Slovenian firms.

Figure 7: Preference over interest rate derivative instruments

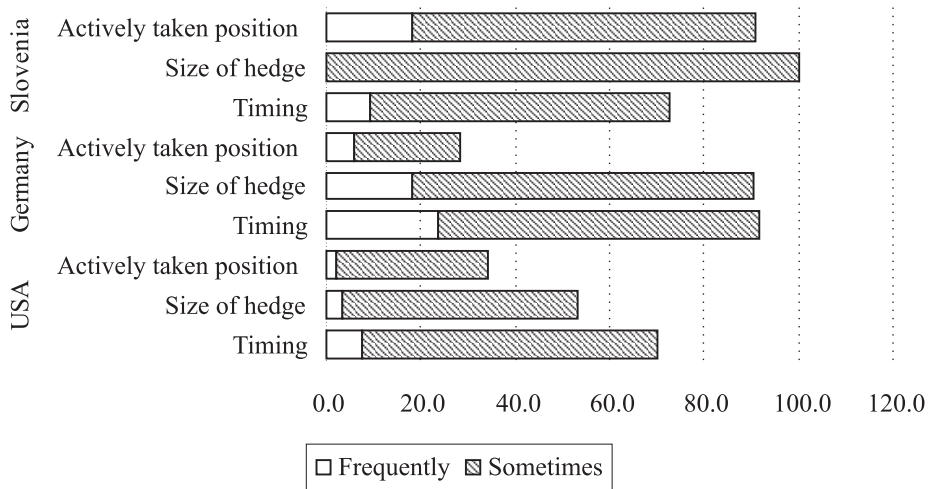


Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.



By incorporating their own interest rate market view within the decision-making process, Slovenian firms are leading US and German firms in this area.

Figure 8: Impact of interest rate market view



Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

About 18. percent of firms incorporate their own view into the related business decision (i.e. take an active position) frequently and 72.7 percent of firms sometimes incorporate their views. Also 23.6 percent of German firms frequently adjust the timing of a hedge according to their market view, and an additional 68.3 percent adjust the timing sometimes. Among US and Slovenian firms the shares of those firms are 7.8 percent (frequently) and 62.2 percent (sometimes), and 9.1 percent (frequently) and 63.6 percent (sometimes), respectively. The size of a hedge is frequently adjusted by 18.3 percent of German and 3.3 percent of US firms, but by none of the Slovenian firms. While all Slovenian firms do sometimes adjust the size of a hedge, 72 percent of US firms and one-half of all German firms are involved in adjusting the size of a hedge.

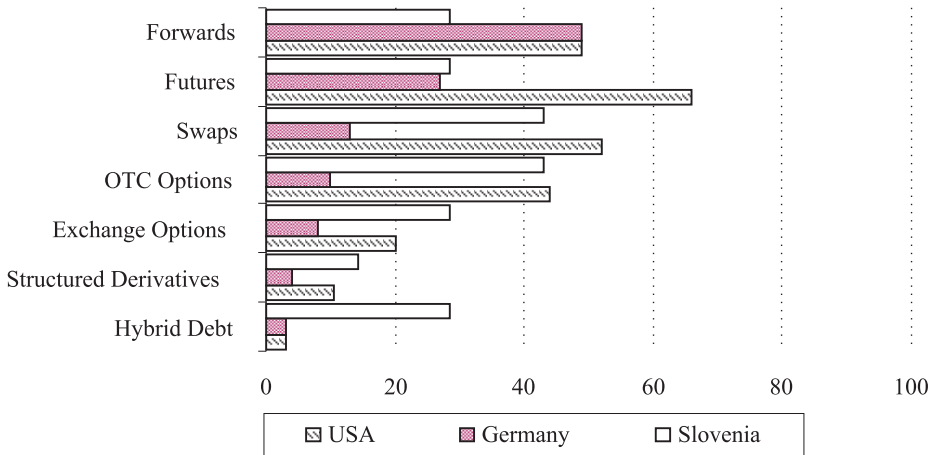
### 6.3. Management of commodity price risk

In the area of commodity price risk, again Slovenian firms do not differ substantially in the selection of types of derivatives from German and US firms. In fact, US and Slovenian firms use much more specific commodity derivatives than German firms.

Predominantly, US firms use futures (67 percent of firms). However, swaps (53 percent) and OTC options (44 percent) are widely used as well. German firms are oriented to forward contracts (44 percent) (Figure 9). Slovenian firms most frequently

use swaps and OTC options (both 42 percent) followed by forwards, futures, exchange-traded options and hybrid debt all with the same frequency (26 percent).

Figure 9: Preference over commodity derivative instruments



Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

## 7. Financial risk management policies

The PWC 2004 survey (PWC, 2004) shows a comparison of the extent to which firms regard enterprise risk management as important. It shows that European firms have so far made the furthest inroads into establishing efficient enterprise risk management systems. They are followed by Asian-Pacific firms. 61 percent of European firms already have such a system in place or will have within a year (13 percent), while for US firms the figure is only 39 percent (29 percent in place and 10 percent within a year).<sup>30</sup> It is interesting that compared to CEOs from all other regions CEOs in US firms are the far least convinced that enterprise risk management can enhance the ability to take appropriate risk to help create value. A possible explanation could be due to the empirical fact that risk management is not that integrated into the strategic planning process and not quantified to such an extent as it is in Europe, Asia-Pacific and South America. All five surveyed processes in risk management, which are also considered building blocks in the integrated risk management *step-by-step* COSO framework (2002), are more frequently in place at European firms, with US counterparts lagging behind by 16 percentage points (monitoring of risk) to 38 percentage points (risk identification).

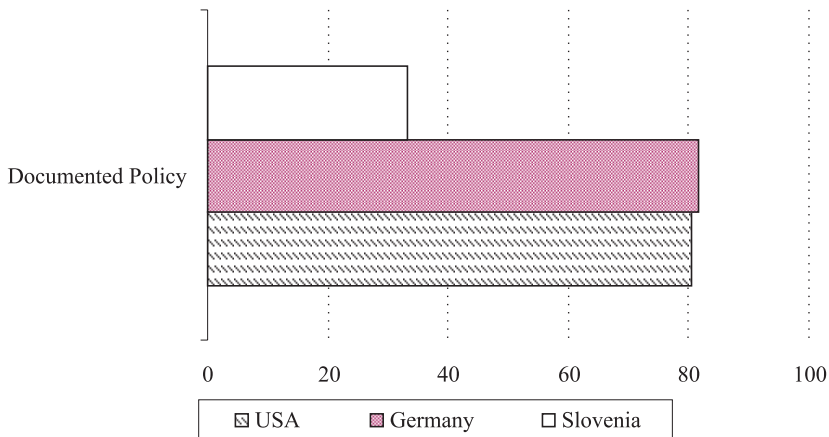
<sup>30</sup> Smith and Roth (1990) reported that very few US survey respondents employed risk management information systems in making decisions in 1990.

### 7. 1. Financial risk management policy documentation and reporting

Non-financial firms started to establish written documentation procedures on a wide scale after encountering large losses in 1994, when many firms had used derivatives to actively speculate on their fortunes in financial markets (Bodnar and Gebhardt, 1998). The rationale of having proper documentation lies in the ability to act systematically and in establishing proper and transparent responsibilities. However, the real benefit appears over time. It shows in the development of sound simultaneous thinking about risk which becomes a normal part of doing business. After the initial scepticism, the organisation is grabbing it for itself. The ultimate advantage of setting the management policy lies in employees who become increasingly comfortable with the risk and can take more risks because they understand it and can manage them through it (Managing Risk, 2004).

Slovenian firms lag behind their US and German peers since only about one-third of the surveyed firms documented financial risk management practices (use of derivatives). Among US and German firms, the share of such firms is around 80 percent (Bodnar and Gebhardt, 1998).<sup>31</sup> It is therefore reasonable to expect an increase in financial management practices documentation in the near future.

Figure 10: Documented policy with respect to derivatives



Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

<sup>31</sup> The share of firms with consistently established documentation procedures increases with firm size. However, not to such an extent that it can explain the size mismatch among Slovenian, US and German firms. Namely, those procedures exist in 70 percent of German firms from the smallest size group (see Table 1).

Further, Slovenian firms do not frequently report about their hedging activities. 19 percent of the surveyed firms report monthly, 11.9 percent quarterly, 4.8 percent annually and 44.7 percent as needed (Table 8).

Table 8: Frequency of reporting derivatives activity

		Monthly	Quarterly	Annually	As Needed
USA	Board of Directors	3.5	24.6	21.1	50.9
Germany	CFO	80.2	7	1.2	11.6
	Board of Executive Directors	35.3	27.9	14.7	22.1
	Supervisory Board	8.1	30.6	32.3	29
Slovenia	Board of Executive Directors	19	11.9	4.8	44.7

Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

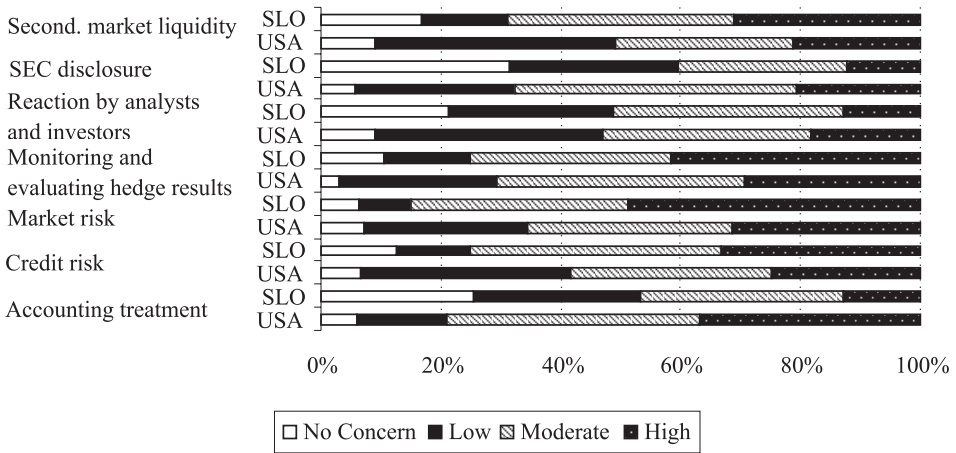
An additional 19.5 percent of firms do not report at all. This is in sharp contrast to German firms, 80.2 percent of which report monthly and only 11.6 percent as needed (Bodnar and Gebhardt, 1998).<sup>32</sup> It is interesting that US firms have much more relaxed reporting rules. In the majority of cases they report as needed (50.9 percent), 21.1 percent report annually, 24.6 percent report quarterly, and only 3.5 percent report monthly.

## 7. 2. Concerns about derivatives

All three cited surveys included questions about concerns regarding hedging activities using derivatives. Slovenian firms are above all concerned with market risk (change in the market value of derivatives), their monitoring and evaluating, insufficient second market liquidity, and credit risk. They are far less concerned with disclosures, accounting treatment or reactions by analysts and investors. In contrast, US firms are primarily concerned with accounting treatment, monitoring and evaluating hedge results, and credit risk.

<sup>32</sup> This is the percentage of firms where employees report to the CFO. Monthly reporting to the board is being performed by 35.3 percent of firms (the board gets reports quarterly in 27.9 percent of firms).

Figure 11: Concerns about derivatives



Sources: Bodnar et al. (1998) and RCEF-IFI 2004 survey results.

In general, German firms do not show much concern about derivative activities. The only issue of concern for them is the reactions of analysts and investors. Bodnar and Gebhardt (1998) argued that this might be the consequence of their approach to risk management using derivatives securities, which is generally more conservative than in the US.<sup>33</sup>

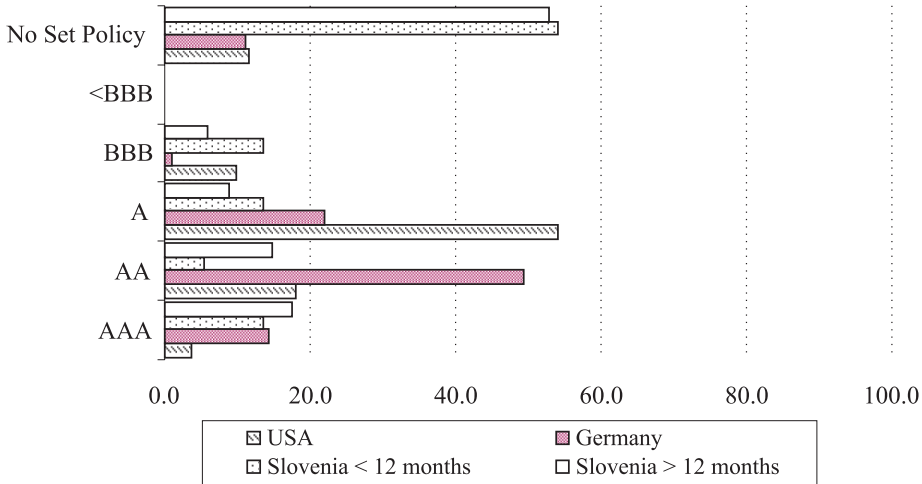
### 7.3. Counterparty risk

One of the indicators that Slovenian firms have only recently started to manage financial risk with derivatives is the counterparty risk that firms take when setting up derivatives transactions. Although US and German firms on average differ in the risk that are willing to take when buying derivative securities, the differences are far from being so great as in the case of comparing Slovenian to US or Slovenian to German firms.

The majority of German firms (about 50 percent) consider an AA rating of a counterparty as the lowest rating. Over 50 percent of US firms set this threshold at a single A. Stricter rules in the selection of a counterparty might be one of the factors explaining the lower overall concerns expressed by German firms.

<sup>33</sup> Conservative ‘labelling’ relates to more frequent reporting, counterparty risk monitoring and portfolio valuation (see the following paragraphs).

Figure 12: Lowest rated counterparty for derivative transactions



Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

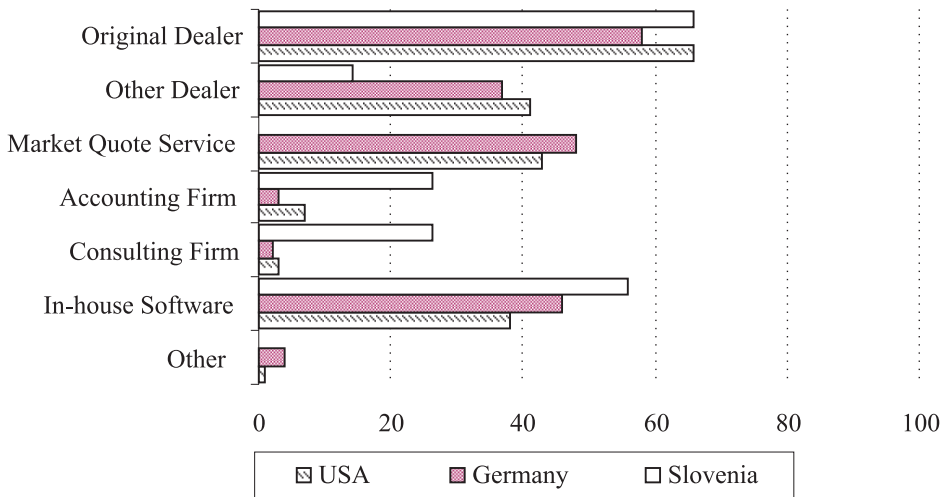
Whereas only something more than 10 percent of German and US firms do not have established policies regarding counterparty rating, more than 50 percent Slovenian firms fall into this category. This holds regardless of the duration of the exposure hedged (Figure 12).

#### 7. 4. Measuring the value of derivatives and the portfolio

In the three compared countries, the prime source of the valuation of derivatives is the original dealer, who is well trusted. Firms select their dealer and make transactions with those who offer a professional relationship, have a sound track record and with whom firms have good experience. Slovenian firms purchase derivative valuation services from consultants and accountants and rely on internal sources of valuation more frequently than German and US firms. They rarely rely on other dealers than the one who sets the transaction (Figure 13).



Figure 13: Sources of derivatives values



Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

A widely used technique that is frequently employed to value exposures, portfolios of derivatives and, consequently to evaluate the efficiency of hedging, is *value at risk*.

Table 9: Frequency of valuing the derivatives portfolio

-in percent

	USA	Germany	Slovenia
Daily	16.9	26.0	0.0
Weekly	8.5	19.8	20.0
Monthly	35.6	28.1	34.3
Quarterly	17.8	4.2	14.3
Annually	4.2	5.2	5.7
As Needed/No Schedule	16.9	16.7	48.5

Sources: Bodnar and Gebhardt (1998) and RCEF-IFI 2004 survey results.

Whereas more than half of US firms (56 percent) calculate *value-at-risk*, only 21 percent of Slovenian firms do so (Bodnar et al., 1998). Those firms that use this technique for valuing their portfolio of derivatives use it infrequently. Almost one-half of German firms value the portfolio weekly. Among Slovenian firms there are only one-fifth of such firms.

## 8. Discussion and conclusions

This paper assesses the development gap in the use of derivatives by Slovenian firms relative to firms from more developed financial environments. As a benchmark, international survey results obtained from a sample of US and German firms are used. The gap is assessed by comparing the survey results of Slovenian firms. The survey conducted by the Research Centre of the Faculty of Economics at the University of Ljubljana was conducted via the same set of questions used with the US and German firms. The results demonstrate the weakness of enterprise risk management in the area of financial risk management. Nevertheless, the comparison with US and German firms should be interpreted with some caution since the Slovenian firms are much smaller in size, and besides operate in different macroeconomic and institutional environment.

Combining these differences here is practically impossible. Obviously it would require modelling the partial impact of availability of derivative instruments for separate transactional currencies and interest rates, expectations about real convergence, present behavioural biases, etc. For the intuitive judgement it is fair to write that in general, all three economies were in rather the same macroeconomic position regarding GDP growth and inflationary pressures when surveys were conducted – i.e. rather high growth and moderate inflation. However, in Slovenian case (in late 2004), basic raw materials and other commodities (except oil) were selling at relatively low levels. This factor has made firms more reluctant to hedge their exposures as they profited from cheap production inputs. Additional factor that distinguished circumstances of Slovene firms from those of US and German firms were interest rates which were still on their decreasing path due to real convergence towards EU levels.

Slovenian firms have only recently started to hedge certain risks (predominantly FX risk). Compared to the US and German sample firms, the share of users of derivative securities is relatively small. However, Slovenian firms predominantly see cash flow hedging as their primary goal and follow roughly the same pattern of the use of certain types of derivatives to hedge specific exposures as their US and German counterparts. In general, separate types of risk are dealt with differently. This reveals the fact that the type of risk dictates the use of a particular instrument and not the stage of development. The most important difference exists between FX risk (that is being hedged by forward contracts) and interest rate risk (hedged by swaps).

Similar to US and German firms, Slovenian firms use derivatives mainly for FX hedging (in relative terms to derivatives with interest rate and commodities underlying instruments even more). This is relatively intuitive, since banks mainly offer FX OTC derivatives and besides that macroeconomic dynamics and commodities price levels moved favourably by the time of conducting the survey. The most frequently used instrument is the OTC forward, whereby a hedged instrument is bought for the horizon that equals the time of the exposure. Slovenian firms that hedge foreign re-

patriations and translation exposure adjust the expiration of the hedging instrument to the reporting horizon (for either accounting or tax reasons). Including own market views in setting up a hedge is more common with Slovenian than US firms, but less than with German firms. In general, the share of German users of derivatives is the highest in all three samples.

Despite the ambition to enter the EMU and the well-known fact that about two-thirds of Slovenian foreign trade is directed to EU markets, the hedging of FX risk should remain one important area of concern. Besides, there is a growing need to hedge interest rates and commodity prices. Because of the only recent start to hedging activities, I argue that the reasons for managing financial risk in Slovenian firms are predominantly those supported by academics who argue that enterprise risk management is motivated by avoiding financial distress, an underinvestment problem and for tax reasons (i.e. firms hedge to maximise shareholder wealth). As the use of derivatives becomes more of a day-to-day routine, the motives of agency relationships may appear among managers.

The establishing of consistent financial risk management policies (as the next development stages happen they ought to be founded for other types of risk as well), proper documentation and sound reporting of the performance of portfolios of derivatives (and their efficiency) is expected to improve significantly in the near future. The value of portfolios of derivatives should be systematically and regularly measured (e.g. using some risk measure like *value at risk*). Namely, in those areas Slovenian firms lag behind their more sophisticated US and German peers.

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## Uporaba financijskih izvedenih instrumenata u slovenskim ne-financijskim tvrtkama: Da li se financijskim rizikom već dobro upravlja?

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### **Sažetak**

*Nedavnim istraživanjem o financijskom ponašanju slovenskih firmi uočilo se da je upravljanje rizikom jedno od njegovih najslabijih područja. Cilj ovoga članka je pružiti uvid u upravljanje financijskim rizicima, tj. i šire, u uporabu financijskih izvedenih instrumenata u najvećim slovenskim tvrtkama i pripadajućim praksama. Rezultati su uspoređeni s istovrsnim značajkama američkih i njemačkih tvrtki (iako su mnogo veće) iznesenim u usporedivim istraživanjima. Te tvrtke pružaju određene benchmarkove za ocjenjivanje razvojnog jaza s obzirom da one posluju u naprednijim financijskim okruženjima pa se stoga od njih i očekuje da imaju puno profinjenije pristupe uporabi financijskih izvedenih instrumenata od slovenskih tvrtki. Istraživanje ukazuje na puno manji opseg uporabe istih od strane slovenskih firmi. Postoji znatna praznina, naročito na području politika upravljanja rizicima (npr. dokumentacija, izvještavanje, rizik suprotnih strana, procjenjivanje itd.).*

**Ključne riječi:** *upravljanje korporativnim rizikom, financijski rizik, analiza istraživanja, odrednice rizika, tečajni rizik, kamatni rizik, riziko promijene cijene sirovine, korporativne financije, financijski izvedeni instrumenti.*

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