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Derivatives Hedging, Geographical Diversi…cation, and Firm Market Value[¤]

Abstract

This paper examines the value e¤ect from di¤erent aspects of hedging activity and foreign operations, using a sample of Swedish …rms over the period 1997-2001. A main …nding is that there seems to be a positive value e¤ect from hedging transaction exposure, but that translation exposure hedging does not add value. Further, the results suggest that …rm value is positively related to geographical diversi…cation and …rms' net long positions in foreign currency. The latter may be caused by the depreciation of the Swedish currency during the sample period.

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1 Introduction

The purpose of this paper is to investigate whether …rms' hedging activities are rewarded by investors with higher market values. In the perfect capital market of the classic Modigliani and Miller proposition I, risk management is irrelevant to …rms. Shareholders can hedge on their own by holding well-diversi…ed portfolios, so there is no value creation by hedging away risks for an individual …rm. Recent theories derive optimal hedging policies by introducing frictions into the Modigliani and Miller model.[1] An increasing number of empirical studies have been performed to investigate these theories and the evidence suggests that …rms hedge largely in order to mitigate market imperfections consistent with theoretical recommendations.[2] Important for this study is Hagelin's (2001) evidence concerning Swedish …rms' use of currency derivatives. He found evidence implying that …rms hedge transaction exposure with currency derivatives to increase …rm value by reducing indirect costs of …nancial distress or alleviating the underinvestment problem. However, there was no evidence that translation exposure hedges were used to increase …rm value. A few recent studies have examined the risk reducing e¤ect from hedging. Allayannis and Ofek (1998) found that, on average, …rms use currency derivatives to reduce exchange rate exposure, rather than to speculate. Hagelin and Pramborg (2000) examined whether hedging reduces foreign exchange rate risk. They found that …rms that hedge have lower exchange rate exposures, given the level of inherent FX exposure, than …rms that do not hedge. It follows that …rms' hedging activity may increase …rm value. Allayannis and Weston (2001) investigated whether the use of derivatives a¤ects …rm value. The evidence suggests that there is a positive relation between …rm value and the use of foreign currency derivatives, and, assuming that most …rms use currency derivatives to hedge, that hedging causes an increase in …rm value.

[1] See e.g Stulz (1984) for a rationale based on managers' risk aversion, Smith and Stulz (1985) for rationales based on structure of taxes or transaction costs of …nancial distress, and Froot, Scharfstein, and Stein (1993) for a rationale based on the underinvestment problem that would result from costly external …nancing in combination with variable cash ‡ows. DeMarzo and Du¢e (1995) propose a rationale based on managers' private information.

[2] See e.g. Nance, et al., 1993; Mian, 1996; Geczy, et al., 1997; and Haushalter, 2000.

This paper adds to the …ndings of Allayannis and Weston (2001) mainly by studying whether hedging of di¤erent types of exposure, i.e. transaction exposure and translation exposure, are rewarded by investors. An advantage in this study is that the use of survey data makes it possible to use improved measures of foreign operations and hedging.

The results indicate that …rms that are diversi…ed geographically and hedges are valued at a premium. Also, positive net exposure to foreign currency a¤ects …rm value positively. This result may be speci…c to the period under study in which the Swedish currency depreciated substantially. In periods of depreciation …rms with long positions bene…t. An important result is that any value e¤ect from hedging comes from hedging transaction exposure, but not from hedging translation exposure. To the best of the author's knowledge, this is the …rst study to empirically document this result. The …nding is consistent with the results of Hagelin (2001) and with theoretical arguments that hedging accounting numbers should not add value.

The paper is organized as follows. The next section describes the sample and discusses e¤ects from the choice of sample period. Section three contains the variable de…nitions. Empirical results are presented in the fourth section, which is followed by the conclusions.

2 Sample Description

The paper focuses on Swedish …rms' foreign operations and hedging activities for the period 1997 to 2001. The sample is based on three consecutive questionnaires sent to non-…nancial Swedish …rms listed on the Stockholm Stock Exchange. The …rst, used by Hagelin (2001) was sent to 160 …rms in 1997, and contained questions regarding the …nancial year 1997. The second, used by Hagelin and Pramborg (2002), was sent out in March 2000, and contained questions regarding the …nancial years 1998 and 1999. The third was sent out by the author in September 2001 and contained questions regarding the …nancial years 2000 and 2001. The questionnaires are very similar and di¤er only on a few items which are not of importance for the present study. Firms were asked to answer questions regarding their foreign exchange exposure and hedging activity.

Speci…cally, they were asked to provide the percentages of total revenues, total costs and net assets that were denominated in foreign currency for each year. Further, they were asked to indicate the percentages of committed transactions, anticipated transactions, and translation exposure they hedged with derivatives. The total sample consists of 101, 130, and 128 …rms for the …rst, second, and third survey which translate into response rates of 63 percent, 47 percent, and 49 percent, respectively. All …rms met the following criteria: (i) The …rm was listed at the Stockholm Stock Exchange at the time of the questionnaire; (ii) the …rm was a non…nancial …rm; and (iii) the …rm's headquarter was located within Sweden. Financial …rms are excluded from the sample, because most of them are market makers in foreign currency derivatives; hence their motivation to use derivatives may be very di¤erent from the motivation of non-…nancial …rms. The three surveys produced a total number of …rm year observations of 617, but due to incomplete responses and missing data, the number is reduced to 455. Table 1 presents …rm characteristics and summary results for these observations.

Insert Table 1 here

During the sample period the Swedish trade-weighted currency (TCW) index was depreciating. Figure 1 displays the index. Allayannis and Weston (2001) found evidence that the value increasing e¤ect from derivatives use was higher during times of appreciation than in times when the local currency depreciated. They argued that when the local currency depreciates non-hedgers may ex-post bene…t and their market value may end up relatively higher compared to the values of the hedgers. Thus, the potential value increasing e¤ect from the risk reduction of hedging may, at least partly, be o¤set by a negative in‡uence of foregone pro…ts.

Insert Figure 1 here

The downward trend (depreciation), with a reduction in the value of the Swedish currency, SEK, of about 15 percent over the time period would suggest that exporting …rms bene…ted in terms of competitive position. Swedish …rms are generally export oriented and it is possible that hedging during this period actually hurt profits.[3] Therefore, the choice of sample period may create a bias, which, however, should be against finding value effects from hedging activity. The latter may be due to higher expected profits (cash flows) for firms with a long position in foreign currency during the sample period in which the local currency depreciated substantially.

3 Firm Value and Explanatory Variables

I follow Bodnar et al. (1999), Allayannis and Weston (2001) and others, and use the logarithm of Tobin's Q, denoted TQ, as a proxy for firms' market values. Tobin's Q is defined as the ratio of market value to replacement cost of assets, evaluated at the end of the fiscal year for each firm.[4] In order to investigate the potential effects on firm value from the use of currency derivatives and geographical diversification, I use univariate tests and multivariate regressions. Below, I describe the explanatory variables used.

1) Geographical Diversification: Morck and Yeung (1991), Bodnar, et al. (1999), and Allayannis and Weston (2001) found positive value effects from geographical diversification (multinationality). As proxy for multinationality, the earlier studies used the percentage of total revenues from foreign sources. The use of survey data enables me to use a measure that also includes costs. This measure, Foreign Activity (FA), is calculated as the average of firms percentage of total revenues and percentage of total costs denominated in foreign currency.[5]

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[3] One such example is a substantial "loss" for Volvo, as reported in Dagens Industri on November 21, 2000. The headline was "Billions lost by Volvo from currency hedging" with the subtitle "Volvo misses a currency killing of 3.5 billion kronor after the company hedged a share of Ford's payment for Volvo Cars". The expected "loss" from hedging the contracted payment of USD 1,613 million at the rate 8 SEK/USD (the spot rate at the time of the article was 10.20 SEK/USD), amounted to about half of the expected profit for the fiscal year 2000 for Volvo.

[4] I use book value of total assets minus book value of equity plus market value of equity as proxy for market value, and book value of total assets as proxy for replacement cost of assets. Fama and French (1998) used an alternative proxy for Tobin's Q: the difference between the market value of assets and the book value of assets, normalized by the book value of assets. As a robustness test I use this measure with similar results (not reported).

[5] Other proxies for geographical diversification are possible. One alternative measure is simply the percentage of foreign revenues denoted in foreign currency. This measure is similar to that used by Allayannis and Weston (2001). As a robustness test I use this measure instead of FA and the results are similar to those reported in the paper. In addition, from the questionnaires the percentages of net assets denominated in foreign currency are available. The inclusion of this variable did not change the results.

2) Net Exposure: Firms that are long in foreign currency (i.e. exporters) may be at an advantage (disadvantage) as compared to …rms that are short in foreign currency during periods when the local currency depreciates (appreciates). In order to capture the di¤erence in exposure between …rms I use a proxy, Net Exposure (NE), which is calculated as the di¤erence between the percentage of total revenues and the percentage of total costs denominated in foreign currency. This measure indicates …rms' net long or short position in foreign currency where a positive (negative) value indicates a long (short) position.

3) Hedging: Allayannis and Weston (2001) found a positive and signi…cant value e¤ect from the use of currency derivatives. Since most …rms use derivatives to hedge, it may be expected that these results translate into a positive e¤ect from hedging. However, because the Swedish TCW index depreciated during the sample period, there may be an o¤-setting e¤ect due to foregone pro…ts for hedgers as compared to non-hedgers. As proxy for hedging activity I use a dummy (H) that is set to 1 for …rms that hedge with currency derivatives and 0 for non-hedgers. A positive (negative) value on the coe¢ cient for this dummy suggests that hedging adds (reduces) value.

4) Type of Exposures Hedged: Theory, as re‡ected in standard text books (see e.g. Butler, 1999) argues that only hedging that a¤ects cash ‡ows should be of value to shareholders. In this view, translation hedging is irrelevant since only book values are a¤ected. Allocating resources to this activity may even reduce value since the resources spent are wasted. However, Hagelin and Pramborg (2002) found that translation hedging reduced exposure. They argued that the reason for this may be that …rms that hedge have translation exposures that proxies for economic exposures. If so, then by hedging translation exposure, the economic exposure is reduced. Based on this argument, translation exposure may increase …rm value by reducing the economic exposure. To investigate this issue, I …rst classify observations into four distinct groups, using three dummy variables, based on the purpose of hedging

activity. The …rst dummy ($TRTL$) is set to 1 for …rms that hedge transaction exposure and translation exposure; the second dummy (TR) is set to 1 for …rms that hedge transaction exposure only; and the third dummy (TL) is set to 1 for …rms that hedge translation exposure only. The fourth group, the base case, consists of …rms that do not hedge with currency derivatives. Second, because of few observations in the TL group, I reclassify the observations into three distinct groups based on two dummy variables. The …rst dummy in this alternative classi…cation ($TLall$) is set to 1 for all …rms that hedged translation exposure. The second dummy (NH), is set to 1 for …rms that did not hedge, and the base case consists of …rms that hedged transaction exposure only. This speci…cation provides evidence of the incremental e¤ect from hedging translation exposure.

There are a number of factors other than hedging and foreign operations that may explain the market value of …rms. The e¤ects from these factors must be controlled for before inference whether foreign operations and hedging a¤ects value may be drawn. Below, I describe the control variables and the reasons why I use them.

a) Size: Allyannis and Weston (2001) found di¤erences in Tobin's Q for large …rms as compared to small …rms, where large …rms were associated with lower Tobin's Q. Also, as large …rms are more likely to hedge than are small …rms (see e.g. Hagelin, 2001; and Pramborg, 2002) this should be controlled for. The logarithm of total assets evaluated at year-end is used to control for size ($SIZE$).

b) Liquidity: Firms that are cash constrained may have higher Tobin's Qs because they are more likely to invest in predominantly positive NPV projects. This follows from the free cash ‡ow argument of Jensen (1986) that …rms with excess free cash ‡ow are more likely to invest in projects with negative NPV. The current ratio (LIQ) evaluated at year-end is used as a proxy for liquidity.

c) Leverage: Fama and French (1998) and Allayannis and Weston (2001) found evidence of a negative relation between leverage and Tobin's Q. To control for di¤erences in capital structure, the ratio of debt to shareholders' equity (LEV) evaluated at year-end is used.[6]

d) Pro…tability: A pro…table …rm is likely to trade at a premium relative to a less pro…table one. To control for pro…tability, I use the return on capital employed for the current year ($PROF$).

e) Investment growth: As argued by Myers (1977) …rm value is a¤ected by future investment opportunities. Hedgers may have larger investment opportunities (see Allayannis and Weston, 2001), thus it is important to control for this. The ratio of capital expenditures over sales (GRO) is used as a proxy for investment opportunities.[7]

f) Dividends: Allayannis and Weston (2001) argued that if hedgers forego projects because they are not able to obtain the necessary …nancing, their Tobin's Q may remain high because they undertake only positive NPV projects. Fama and French (1998) inferred from their empirical results that dividends convey information about future pro…tability (expected net cash ‡ows). I control for dividends, following Allayannis and Weston (2001), by using a dividend dummy (DIV) that is set to 1 for …rms that paid a dividend in the current year.

g) Industrial diversi…cation: Empirical studies have found that Tobin's Q is negatively related to industrial diversi…cation, see e.g. Lang and Stulz (1994), Berger and Ofek (1995), and Bodnar, et al. (1999). I use a dummy ($MULT$) that is set to 1 if the …rm operates in more than one segment as a proxy for industrial diversi…cation.[8]

[6] I also used the ratio of long-term debt to shareholders' equity with no change in results. One factor missing from the analysis is the rating of …rms' debt from independent institutes, such as Moody's. It is likely that the quality of debt a¤ects …rm value, and Allayannis and Weston (2001) found support for this. Unfortunately, the market for corporate debt was very small in Sweden during the sample period and such data is not available.

[7] Capital expenditures is de…ned as the end-of-year …xed assets minus beginning-of year …xed assets plus depreciation for the year. Two related variables could also be included in the analysis: the ratio of R&D expenses to total sales as proxy for technological know-how and expertise, and the ratio of advertising to total sales as a proxy for consumer goodwill. Unfortunately, information on these variables are not available for Swedish …rms for this time period.

[8] The basis for the this classi…cation follows the classi…cation discussed under Industry E¤ects below.

h) Time effects: The general level of Tobin's Q changes over time as the market increases or decreases in value. I control for time effects by using year dummies (Y) in all regressions.

i) Industry effects: Firms belonging to different industries may have different values of Tobin's Q because the business they belong to require e.g. different levels of investments in fixed assets. Also, growth opportunities may differ between industries. If firms with high degrees of geographical diversification and/or hedgers are concentrated in high-Q industries, then these firms will have higher values, not because of their foreign operations or hedging activities, but because of the industry they belong to. Industry effects are captured by industry dummies (IND), where the classification follows Statistics Sweden's official classification SNI 92 on a two-digit level. This results in a total of eleven industries.

4 Empirical Results

4.1 Univariate Tests

In this section I test the main hypothesis that hedging is rewarded by investors with higher valuation, by comparing the values of Tobin's Q for hedgers and non-hedgers. Table 2 presents the mean and median values for Tobin's Q for the total sample, for hedgers, and non-hedgers, respectively.

[Insert Table 2 here]

On average, non-hedgers are characterized by higher Tobin's Q, but the difference is not significant, nor is it consistent for all years in the sample. The median values are below the means, which is indicative of a skewed distribution.[9] The percentage changes in the TCW-index are displayed, where a positive value indicates that the Swedish currency depreciated. Also, for dispositional purpose, the signs of the TCW-changes are displayed with the signs of the differences in median between hedgers and non-hedgers ($H - NH$). The results from Allayannis and Weston (2001)

[9] In the table, I report values for Tobin's Q, but for the t-tests for differences in means I use TQ, the logarithm of Tobin's Q.

suggest that there may be a larger value premium for hedgers during years when the currency appreciated (1999) and smaller in other years (1997-98, 2000-01), but the univariate analysis does not support this. It is possible that the univariate tests are inconclusive because the sample includes firms that have no exposure and therefore do not hedge. Therefore, in the last three columns of Table 1, firms with at least 35 percent FA (the median value of FA), with positive exposures ($NE > 0$), and with negative exposures ($NE < 0$) are compared. The positive premium for non-hedgers as compared to hedgers is somewhat stronger for firms with high FA, but still not significant. The differences for firms with positive and negative exposure are also insignificant. Note that Tobin's Q is generally higher for firms with FX exposure, as defined in the three last columns, than for the total sample, suggesting that geographical diversification may create value.

4.2 Cross-sectional Regressions

In the previous section, Tobin's Q is analyzed in a univariate setting. To document a relationship between foreign operations, hedging, and firm value, however, control variables that may have an impact on Tobin's Q should be included. In this section, I investigate the levels of Tobin's Q and how these can be explained using multivariate regressions. I use ordinary least squares (OLS) regressions on the pooled sample, and also perform year-by-year regressions and panel data regressions to check the robustness of the results. This is followed by causality tests, using multivariate regressions with lagged variables.

4.2.1 Levels of Tobin's Q

I investigate the effects on the level of Tobin's Q from geographical diversification, net exposure, and hedging activity using OLS regression models on the pooled sample. The first model includes the proxies for geographical diversification, net exposure, and control variables:

$$\begin{aligned} TQ_i &= \alpha_0 + \alpha_1 FA_i + \alpha_2 NE_i + \alpha_3 SIZE_i + \alpha_4 PROF_i + \alpha_5 LIQ_i + \alpha_6 LEV_i \\ &\quad + \alpha_7 GRO_i + \alpha_8 MULT_i + \alpha_9 DIV_i + \sum_{j=1} \alpha_{(9+j)} Y_i^j + \sum_{k=1} \alpha_{(13+k)} IND_i^k + \varepsilon_i, \end{aligned} \tag{1}$$

for $i = 1, \ldots, N$, where N is the number of firm year observations. In equation (1) the variables included are those discussed in section 3, and ε_i is the residual for observation i. Table 3 presents the results from this and additional regressions. The first report column, labeled Model (a), reports on the regression model in equation (1). Due to space considerations the year and industry dummies are not reported.[10]

Insert Table 3 here

The evidence from Model (a) suggests that geographical diversification is valued by investors by higher Tobin's Q. The coefficient for FA is positive and significant at the 10 percent level of significance. The positive impact from the degree of multinationality, as captured by FA, may relate to MNCs operational flexibility where e.g. production can be shifted in response to changing conditions. The coefficient for NE is also positive and significant. This result may be due to higher expected profits (cash flows) for firms with a long position in foreign currency during this period when the local currency depreciated.[11] The control variables in Model (a) have signs according to expectations. Larger firms are characterized by lower Tobin's Qs which is in line with earlier research, e.g. Allayannis and Weston (2001). Industrial diversification ($MULT$) is also associated with lower levels of Tobin's Q. The discount for diversified firms is in accordance with e.g. Lang and Stulz (1994), Bodnar et al. (1999), and Graham, Lemmon, and Wolf (2002). The coefficients for profitability ($PROF$) and growth opportunities (GRO) are positive and statistically significant, which corroborates the evidence from Allayannis and Weston (2001). The remaining control variables, leverage (LEV), liquidity (LIQ), and the dividend dummy (DIV), are statistically insignificant.

In Model (b), the hedging dummy H is added. The evidence indicates that hedging is rewarded

[10] The year dummies are not statistically significant, except for the 1999 dummy, which has a significant positive value. This can be explained by the unusually high stock market value in late 1999 and early 2000 when the dot.com bubble was at its peak. Most of the industry dummies are significant.

[11] As an alternative specification, I replaced FA and NE in the models reported in Table 3 with the percentage of revenues denominated in foreign currency (FR), and the percentage of costs denominated in foreign currency (FC) as separate variables. The coefficients for FR were positive and significant. The coefficients for FC were negative but insignificant. This supports the conjecture that exports were a positive determinant of firm value in the sample period.

by investors with higher firm value. This supports the evidence from Allayannis and Weston (2001), and it interesting to note that the positive effect from hedging is significant in a period when the currency depreciated four out of five years. The hedge dummy captures some of the effect from FA, which reflects the fact that sample firms with higher FA are more likely to use derivatives. The analysis does not provide evidence as to which of these two variables, or both, positively affects value.[12] The results for the control variables are as in Model (a) which is reassuring.

Model (c) reports on a regression to investigate the potential effect from firms' decisions to hedge different types of exposures. The coefficient for TR, representing firms that hedge transaction exposure only, is positive with a p-value of 0.054. The base case in this regression contains the group of firms that do not hedge. Thus, the significant coefficient supports the argument that transaction exposure hedging adds value. The dummy $TRTL$, representing firms that hedge both types of exposures, has a positive sign but is insignificant. The coefficient for TL, representing firms that hedge translation exposure only, is insignificant on all conventional levels of significance. This suggests that there is a positive effect from transaction hedging, but that there is no effect from translation hedging. The results are in accordance with theoretical arguments that translation hedging should not add value, but that value should come from hedging that affects cash flows.

The analysis in Model (c) is based on only eight observations for the TL group of firms which makes statistical inferences highly unreliable. Model (d) reports on an alternative specification to Model (c). In this model, firms are classified into three groups, using two dummy variables, based on whether they hedged translation exposure or not. The first dummy, $TLall$, is set to 1 for all firms that hedged translation exposure. The second dummy, NH, is set to 1 for firms that did not hedge, and the base case consists of firms that hedged transaction exposure only. This

[12] The coefficient for FA in the regression is affected since the hedging dummy captures a large part of the variation in FA. The mean FA for non-hedgers is 20.8 and for hedgers 49.5. The difference is significant at a 1 percent level of significance.

speci…cation provides evidence on the incremental e¤ect from hedging translation exposure.[13] If hedging translation exposure is valued by investors it can be expected that the coe¢ cient for $TLall$ is positive. On the other hand, if hedging transactions exposure only is the value driver, then it can be expected that the coe¢ cient for $TLall$ is zero, or even negative since resources are spent on an activity that is not valued by investors. The NH dummy variable is expected to be negative. The table shows that both coe¢ cients are negative and signi…cant on a ten percent level of signi…cance. This may be interpreted as evidence that translation exposure hedging is not rewarded by investors, but rather that …rms that hedge transaction exposure only are rewarded by higher Tobin's Qs.[14]

As robustness tests, I use panel data techniques.[15] Table 4 presents regression estimates of models, similar to models (b) and (d) presented in Table 3. The table shows two types of estimates: "between" estimates (be), based on the variation of the intra…rm means of all variables, and "within" estimates, also called …xed e¤ects (fe) estimates, based on the variation of the data within each …rm.[16] The between estimates are presented to address concerns that observations drawn repetedly from the same sample of …rms may not be independent. The …xed e¤ects estimates adjust for the possibility that unobservable, …rm speci…c factors in‡uence the level of Tobin's Q in each individual company; the estimates are equivalent to estimating OLS models and including a dummy variable for each …rm in the sample. It should be noted that with the addition of the …rm-speci…c dummy variables it would have been desirable to have a longer sample period. Most

[13] Note that 98 out of the 106 observations in the $TLall$ group are for …rms that also hedged transaction exposure. Thus, the coe¢ cient for this dummy measures the di¤erence in value between …rms that hedge both exposures and those that hedged transaction exposure only.

[14] From the questionnaires, for each exposure the percentages hedged are available. As a robustness test I used the percentage of transaction exposure, and the percentage of translation exposure hedged in a related regression. the coe¢ cients were not signi…cant. However, the coe¢ cient for transactions hedging was positive, and the coe¢ cient for translations hedging was negative, which supports the results in Table 3.

[15] In addition, I reestimate the regression models from Table 3 for each year separately (not reported). The sample size for the regressions using annual data ranges between 81 and 99 observations. Therefore, although the magnitude of the estimated coe¢ cients may be comparable to those using the pooled sample, the standard errors of these estimates tends to be greater, and the signi…cance of the coe¢ cients is generally less. In short, the results support the results from Table 3, but the statistical signi…cance for the coe¢ cients are in general low for all models.

[16] The choice of the …xed e¤ects model is based on the Breusch and Pagan (1980) test which rejects the null hypothesis of no variance in the …rm-speci…c dummies, and the Hausman (1978) test that rejects the null hypothesis of a non-systematic di¤erence in the …rm-speci…c intercepts. Both tests are signi…cant at the 1% level.

…rms have observations for only one or two years, with no …rm covering the …ve-year period.[17] Also, only a few of the sample …rms changed hedging policy during the sample period. These shortcomings of the sample reduce the possibility of …nding within variation.

Insert Table 4

From the table it is evident that the …xed e¤ects estimates for hedging and foreign operations are statistically insigni…cant at conventional levels. Given the limitations of this method due to the short sample period it is noteworthy that the sign of the hedging dummy (H) in Model fe(a) supports the evidence from the OLS regression in Table 3 with a p-value of 0.125. Also, in Model fe(b) the coe¢ cient for non-hedgers (NH) is negative. However, the coe¢ cient for translation hedgers ($TLall$) is insigni…cant well above conventional levels of signi…cance.[18] The coe¢ cients for NE and FA are statistically insigni…cant in the …xed e¤ects models. This may result from the fact that the foreign operations of the sample …rms were relatively static during the sample period. Relying on within variation, small changes in geographical diversi…cation and net exposure in foreign currency that have e¤ects on …rm value may not be detected even if such e¤ects exist.

The between e¤ects models be(a) and be(b) in Table 4 render support to the notion that net exposure to foreign currency positively a¤ects …rm value. The coe¢ cients for NE are signi…cant and positive in both models. Possible value e¤ects from hedging and/or from hedging transaction exposure cannot be con…rmed. The coe¢ cients for all hedging variables are insigni…cant, although with identical signs as in Table 3.

In sum, the results in this section for the pooled OLS regressions suggest that net exposure to foreign currency positively a¤ects …rms value. The results for hedging are mixed. The analysis does not distinguish whether geographical diversi…cation and/or hedging positively a¤ects value. The results for hedging di¤erent types of exposure suggest that any value e¤ect comes from

[17] Out of a total of 455 observations 50 are for …rms with one observation only. Any e¤ect from these observations is captured by the …rm-speci…c dummies, and thus do not contribute to the analysis. The remaning 405 observations are for 126 …rms with two observations and 51 …rms with three observations.

[18] For …rms that did not change policy, there is no within variation in the hedging variable.

transaction exposure hedging, and not from translation exposure hedging. Translation exposure hedgers rather seem to be valued at a discount compared to …rms that concentrate their hedging e¤orts to transaction exposure. However, the robustness tests of the results indicate that the evidence from the pooled OLS regressions should be interpreted with some caution.

4.2.2 Causality

The suggested relations concerning hedging in the previous section could be caused by reversed causality, that is, …rms with high Tobin's Qs may be more likely to hedge, possibly because they have large growth opportunities. If …rms with high values are valued at premiums because they have many pro…table investment opportunities, then these …rms may have an added incentive to hedge. That is, higher values for …rms that hedge may simply re‡ect the fact that high-valued …rms have an incentive to hedge, and not that hedging causes higher values. Allayannis and Weston (2001) found evidence supporting that hedging causes increases in Tobin's Q, but no evidence that the level of Tobin's Q in‡uence hedging behavior.[19] To test for the possibility of reversed causation for this sample, I follow Allayannis and Weston (2001), and classify …rms into four categories, using three dummy variables as follows:

1) NN^H: A dummy that is set to 1 for …rms that chose not to hedge in the current period and not in the next period;

2) YN^H: A dummy that is set to 1 for …rms that hedged in the current period, but chose not to hedge in the next period; and

3) NY^H: A dummy that is set to 1 for …rms that did not hedge in the current period, but chose to hedge in the next period.

[19] Géczy, Minton, and Schrand (1997), Hagelin (2001), and others have also found that Tobin's Q is not signi…-cantly related to …rms' hedging decisions.

The base case contains of …rms that hedged in the current period and the next period. I then use the dummy variables in the following regression:

$$
\begin{aligned}
TQ_i &= \beta_0 + \beta_1 FA_i + \beta_2 NE_i + \beta_3 NN_i^H + \beta_4 YN_i^H + \beta_5 NY_i^H \\
&\quad + \beta_6 SIZE_i + \beta_7 PROF_i + \beta_8 LIQ_i + \beta_9 LEV_i + \beta_{10} GRO_i \\
&\quad + \beta_{11} MULT_i + \beta_{12} DIV_i + \sum_{j=1} \beta_{(12+j)} Y_i^j + \sum_{k=1} \beta_{(16+k)} IND_i^k + \mu_i
\end{aligned} \tag{2}
$$

where TQ is the value for the current period, the explanatory variables are those used in regression equation (1), and μ_i is the error term. If …rms with high TQs choose to hedge, then …rms that begin hedging in the next period should have higher TQs in the current period than …rms that remain unhedged in the next period. Thus, the expectation in that case is that $\beta_5 > \beta_3$. Also, …rms that choose to quit hedging should be characterized by lower TQs, that is, $\beta_4 < 0$. Finally, it could be expected from the results in the previous section that …rms that do not hedge have lower TQs than …rms which do, or $\beta_3 < 0$.

The results from this regression is presented in Table 5, Model (a). As expected from the results in the previous section, …rms that do not hedge in the current period and do not begin hedging in the next period (NN^H) are characterized by lower Tobin's Qs, than …rms that hedge in the current and the next period (the base case). The Wald test for $NN^H = NY^H$ indicates that the decision to begin hedging is una¤ected by the level of Tobin's Q. However, …rms that quit hedging (YN^H) are characterized by signi…cantly lower Tobin's Qs than are …rms that continue to hedge. This …nding suggests that the decision to quit hedging is a¤ected by the level of Tobin's Q. Using the Wald test, the joint null hypothesis of no reverse causality ($NN^H = NY^H, YN^H = 0$) is also rejected. The implication on the …nding presented in Table 3 is that the value e¤ect may not necessarily come from hedging but that the relationship is more complex. However, the analysis in Table 5 su¤ers from a small sample size problem, since only a few …rms changed hedging policy. In view of the results from Allayannis and Weston (2001), Géczy, Minton and Schrand (1997), and Hagelin (2001) who found that book-to-market variables are not signi…cantly related to …rms hedging decisions, these results should be interpreted as indicative only.

Insert Table 5 here

In the previous section it is suggested that hedging transaction exposure may be a determinant for a positive value premium. To test the causality of this specific relationship, namely that it is possible that firms with high TQs focus on transaction exposure hedging, I use a similar multivariate regression model as in equation (2), but instead of using the decision to hedge to classify firms, I use the decision to hedge transaction exposure, using the three dummy variables NN^{TR}, YN^{TR}, and NY^{TR}. The interpretation of these dummies are as as above. For example, YN^{TR} is a dummy that is set to 1 for firms that hedged transaction exposure in the current period, but not in the next period. In Table 5 the results from this model, Model (b), are displayed. The results from this regression are similar to Model (a) in Table 5, and indicate that the decision to quit hedging transaction exposure is influenced by the level of Tobin's Q. As for Model (a), the results should be interpreted as indicative only as the number of firms that began/quit hedging is small. [20]

Next, I take a direct approach of testing the causality that foreign operations and hedging cause firms to have higher firm value by studying how changes in Tobin's Q can be explained by changes in geographical diversification, net exposure, and hedging activity. To accomplish this, firms are classified as in the previous section, and the following regression equation is estimated:

$$\begin{aligned} \Delta TQ_i = {} & \gamma_1 + \gamma_2 \Delta FA_i + \gamma_3 \Delta NE_i + \gamma_4 NN_i^H + \gamma_5 YN_i^H + \gamma_6 NY_i^H \\ & + \gamma_7 \Delta SIZE_i + \gamma_8 \Delta PROF_i + \gamma_9 \Delta LIQ_i + \gamma_{10} \Delta LEV_i + \gamma_{11} \Delta GRO_i + \gamma_{12} NN(DIV)_i \\ & + \gamma_{14} YN(DIV)_i + \gamma_{15} NY(DIV)_i + \sum_{j=1} \gamma_{(15+j)} Y_i^j + \sum_{k=1} \gamma_{(19+k)} IND_i^k + \nu_i, \end{aligned} \tag{3}$$

[20] As an additional test of causality I used the change in TQ from the previous period to the current period as dependent variable (not reported). Using this specification, it is possible to investigate whether changes in Tobin's Q, as opposed to the level, has an effect on the decision to hedge or not. The coefficients for all hedging variables were statistically insignificant.

where ¢TQ is the change in TQ from the current period to the next period, and changes in explanatory variables used in regression equations (1) and (2) are included. If geographical diversi…cation and net exposure create value in the sample period, it is expected that the coe¢cients γ_2 and γ_3 are greater than zero. If hedging creates value it can be expected that …rms that begin hedging increase in value relative to …rms that remain unhedged ($\gamma_6 > \gamma_4$). Similarly, it is expected that the decision to quit hedging causes a decrease in Tobin's Q, relative to …rms that remain hedged ($\gamma_5 < 0$). In a second speci…cation, I use a similar regression to investigate possible e¤ects from transaction exposure hedging. As for the regression equation (2) I substitute dummy variables re‡ecting transaction exposure hedging for the dummy variables representing hedging in equation (3). Table 6 displays the results from the two regressions.

Insert Table 6 here

Changes in geographical diversi…cation, net exposure, and hedging practises seem to be relatively unimportant. The coe¢cients for the hedging dummies are not signi…cant, nor are the Wald tests for di¤erences between …rms that begin hedging as compared to those that stay unhedged. The results concerning geographical diversi…cation indicates the relative static nature of foreign operations. For the sample …rms, the degree of multinationality (FA) and positions in foreign currency (NE) do not change very much between years. The variables of particular interest in these models are the YN and NY dummies. The coe¢cients are insigni…cant, and renders no evidence that hedging causes …rm value to increase. Note, however, that the analysis su¤er from the same problem as noted in relation to the results in Table 5, that there are very few observations for some groups. Speci…cally, there were only a few …rms that changed hedging policy during the sample period.

5 Conclusions

This paper investigates the value e¤ect from geographical diversi…cation, net exposure, and hedging activity. The most important contribution concerns di¤erent aspects of hedging activity. The …ndings from Allayannis and Weston (2001) suggest that the use of foreign currency derivatives increases …rm value. In this paper, Allayannis and Weston's (2001) …ndings are supported, and the analysis adds to their …ndings.

The results suggest that …rms that are geographically diversi…ed and hedges are valued at premiums. However, the analysis fails to distinguish value e¤ects from hedging to those from geographical diversi…cation. Possibly, both factors are important, which would support arguments that …rms that engage in international operations could increase pro…tability and be higher valued since they can exploit market imperfections (see e.g. Butler, 1999), as well as arguments that hedging adds value.

More importantly, the evidence indicates that a positive value e¤ect for hedging does not necessarily imply that all hedging activities add value. It is suggested that a positive value premium primarily comes from hedging transaction exposure, but that there is no positive e¤ect from translation exposure hedging. This …nding supports theoretical arguments that hedging should be aimed at reducing volatility in cash ‡ows, as well as Hagelin's (2001) evidence that …rms hedge transaction exposure to increase …rm value, but lack of evidence that translation exposure hedges are used to increase …rm value. The …nding from Hagelin and Pramborg (2002) suggests that …rms are successful in reducing exposure by translation exposure hedging, possibly increasing value. However, from the evidence in this paper and Hagelin (2001) it seems as if the …rms that hedge translation exposure do not hedge for the correct reasons and are therefore not rewarded by investors with increased …rm values.

Robustness tests show that the statistical evidence for the results discussed above is somewhat weak. Also, speci…c tests for causality fail to document that changes in hedging policy changes

…rm value, but rather indicate that …rm value may in‡uence the decision to hedge. The robustness tests and the tests for causality su¤ers from two properties of the sample: namely that the sample period is short and the fact that very few …rms changed hedging policy during the sample period.

Finally, the evidence suggests that the net position in foreign currency is an important determinant of …rm value. Firms with long (short) positions have, on average, higher (lower) Tobin's Qs. Potential explanations include the currency movements in the sample period. The Swedish currency depreciated quite substantially, which may improve competitive position and expected cash ‡ows for …rms that are long in foreign currency.

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Table 1: Descriptive Statistics

The table displays descriptive statistics on …rm characteristics and survey responses. Panel A contains …rm characteristics, where the variables are de…ned as follows: Tobin's Q is the ratio of market value to book value, where market value is de…ned as book value of assets minus book value of equity plus market value of equity at year-end; Total Assets is the book value of total assets at year-end; Pro…tability is the return on capital employed for the current year; Leverage is the debt-to-equity ratio at year-end; Liquidity is the current ratio at year-end; Investment Growth is de…ned as invested capital during the current year divided by total revenues for the year; Industry Diversi…cation is the proportion of …rms that are diversi…ed across industries; Dividends Paid is the proportion of …rms that paid a dividend during the current year; Panel B displays summary statistics on foreign exchange exposure and hedging, where Foreign Activity is the average of the share of revenues and the share of costs that are denominated in foreign currency; Net Exposure is the di¤erence between the share of revenues and the share of costs that are denominated in foreign currency Hedgers is the proportion of …rms that used derivatives to hedge; TR only is the proportion of …rms that hedged transaction exposure only; TL only is the proportion of …rms that hedged translation exposure only; TR and TL is the proportion of …rms that hedged transaction exposure and translation exposure;

Panel A. Firm Characteristics

	percent=1	Mean	Q3	Median	Q1
Tobin's Q	-	2.17	2.02	1.34	1.04
Total Assets	-	9132	6641	1333	310
Pro…tability	-	0.53	15.95	9.39	2.00
Leverage	-	1.68	2.19	1.29	0.73
Liquidity	-	2.40	2.57	1.78	1.19
Investment Growth	-	1.17	0.26	0.08	0.03
Industrial Diversi…cation	23.7	-	-	-	-
Dividends Paid	69.7	-	-	-	-

Panel B. Exposure and Hedging

	percent > 0	Mean	Q3	Median	Q1
Foreign Activity	85.3	36.13	60	35	5
Net Exposure*	-	8.97	17	0	0
abs(Net Exposure)	71.4	24.96	40	15	5
Hedgers	51.2	-	-	-	-
TR only	30.2	-	-	-	-
TL only	3.4	-	-	-	-
TR and TL	24.5	-	-	-	-

*percentage with positive (negative) exposure is 49.6 (21.8)

Table 2: Comparison of Tobin's Q: Hedgers vs. Non-hedgers

The table displays summary statistics on Tobin's Q for hedgers and non-hedgers, respectively. In the five first report columns the mean and median values are displayed for each year in the sample. p-values are reported for tests for differences in means, using t-tests. p-values are reported for tests for differences in medians using the Mann-Whitney statistic. The percentage change in a trade-weighted currency index, the TCW-index, is reported for each year, and the sign of the change in the index and the sign of the difference in Tobin's Q between hedgers and non-hedgers are reported. In the last four report columns, the Tobin's Q for the total sample, for firms with $FA \geq 35$, firms with positive exposure ($NE > 0$), and for firms with negative exposure ($NE < 0$) are reported.

	Tobin's Q per year					Tobin's Q 1997-2001			
	1997	1998	1999	2000	2001	All	$FA \geq 35$	$NE > 0$	$NE < 0$
Mean									
Total	1.66	2.09	2.63	2.49	1.83	2.17	2.40	2.32	2.29
Hedgers (H)	1.70	1.57	2.08	3.01	2.05	2.11	2.27	2.02	2.45
Non-hedgers (NH)	1.60	2.49	3.10	1.92	1.59	2.23	2.72	2.84	2.05
p-value diff	0.51	0.04	0.06	0.24	0.12	0.54	0.17	0.12	0.85
Median									
Total	1.35	1.25	1.47	1.41	1.25	1.33	1.42	1.33	1.50
Hedgers (H)	1.36	1.21	1.33	1.35	1.41	1.33	1.34	1.30	1.32
Non-hedgers (NH)	1.29	1.39	1.75	1.48	1.22	1.37	1.91	1.45	1.73
p-value diff	0.28	0.37	0.25	0.49	0.17	0.73	0.17	0.45	0.29
No.of Hedgers	53	41	44	52	43	233	169	145	59
No.of observations	85	94	96	99	81	455	236	225	100
ΔTCW-index	3.2	6.8	-4.4	4.5	4.2	14.7			
Sign ΔTCW-index	(+)	(+)	($-$)	(+)	(+)	(+)			
Sign median($H - NH$)	(+)	($-$)	($-$)	($-$)	(+)	($-$)	($-$)	($-$)	($-$)

Table 3: Cross-sectional Regressions: TQ

The table displays the results from cross-sectional OLS regressions, where the dependent variable is the logarithm of Tobin's Q. The explanatory variables are: FA, the average of the percentage of revenues and costs that are denominated in foreign currency; NE, the difference between the percentage of revenues and costs that are denominated in foreign currency; H, a dummy that is set to 1 for firms that hedge; $TRTL$, a dummy that is set to 1 for firms that hedge transaction exposure and translation exposure; TR, a dummy that is set to 1 for firms that hedge transaction exposure only; TL, a dummy that is set to 1 for firms that hedge translation exposure only; NH, a dummy that is set to 1 for firms that do not hedge; $TLall$, a dummy that is set to 1 for firms that hedge translation exposure; $SIZE$, the logarithm of total assets; LEV, the debt-to-equity ratio; LIQ, the current ratio; $PROF$, return on capital employed; GRO, invested capital during the year divided by total sales; DIV, a dummy that is set to 1 for firms that paid a dividend during the current year. $MULT$, a dummy that is set to 1 for firms that are diversified; Observations are for years 1997-2001. In all regressions four year dummies and ten industy dummies are included. p-values for coefficients are reported using Newey-West (1987) corrected standard errors.

Model		(a)		(b)		(c)		(d)	
	No. obs	coeff	p-value	coeff	p-value	coeff	p-value	coeff	p-value
Intercept		0.598	(0.001)	0.605	(0.001)	0.613	(0.001)	0.761	(0.000)
FA		0.002	(0.086)	0.001	(0.240)	0.001	(0.201)	0.001	(0.185)
NE		0.003	(0.065)	0.003	(0.064)	0.003	(0.047)	0.003	(0.049)
H	233			0.138	(0.047)				
$TRTL$	98					0.086	(0.252)		
TR	124					0.151	(0.054)		
TL	8					−0.034	(0.807)		
NH	211							−0.143	(0.050)
$TLall$	106							−0.076	(0.097)
$SIZE$		−0.047	(0.024)	−0.059	(0.007)	−0.055	(0.016)	−0.054	(0.017)
LIQ		−0.012	(0.226)	−0.010	(0.299)	−0.004	(0.692)	−0.005	(0.581)
LEV		−0.033	(0.201)	−0.033	(0.182)	−0.035	(0.164)	−0.034	(0.168)
$PROF$		0.003	(0.000)	0.003	(0.000)	0.003	(0.000)	0.003	(0.000)
GRO		0.003	(0.000)	0.004	(0.000)	0.004	(0.000)	0.004	(0.000)
DIV	317	0.083	(0.223)	0.076	(0.275)	0.073	(0.304)	0.070	(0.318)
$MULT$	108	−0.115	(0.015)	−0.103	(0.036)	−0.111	(0.019)	−0.110	(0.021)
$adjR^2$		0.434		0.439		0.443		0.445	
N		455		455		441		441	

Table 4: Panel Data Regressions: TQ

The table displays the results from …xed e¤ects regressions and between e¤ects regressions, where the dependent variable is the logarithm of Tobin's Q. The explanatory variables are: FA, the average of the share of revenues and the share of costs that are denominated in foreign currency; NE, the di¤erence between the share of revenues and the share of costs that are denominated in foreign currency; H, a dummy that is set to 1 for …rms that hedge; $TRTL$, a dummy that is set to 1 for …rms that hedge transaction exposure and translation exposure; TR, a dummy that is set to 1 for …rms that hedge transaction exposure only; TL, a dummy that is set to 1 for …rms that hedge translation exposure only; NH, a dummy that is set to 1 for …rms that do not hedge; $TLall$, a dummy that is set to 1 for …rms that hedge translation exposure; $SIZE$, the logarithm of total assets; LEV, the debt-to-equity ratio; LIQ, the current ratio; $PROF$, return on capital employed; GRO, invested capital during the year divided by total sales; DIV, a dummy that is set to 1 for …rms that paid a dividend during the current year. $MULT$, a dummy that is set to 1 for …rms that are diversi…ed; Observations are for years 1997-2001. The …xed e¤ects regressions include four year dummies. The between e¤ects regressions are estimated using WLS, and includes four year dummies and ten industry dummies. p-values are reported in parentheses.

	Fixed E¤ects (fe) Models				Between E¤ects (be) Models			
	fe(a)		fe(b)		be(a)		be(b)	
	coe¤	p-value	coe¤	p-value	coe¤	p-value	coe¤	p-value
Intercept	2.153	(0.000)	2.293	(0.000)	0.429	(0.048)	0.583	(0.015)
FA	0.002	(0.294)	0.002	(0.425)	0.001	(0.365)	0.002	(0.301)
NE	¡ 0.001	(0.708)	¡ 0.000	(0.979)	0.004	(0.018)	0.004	(0.013)
H	0.137	(0.125)			0.138	(0.150)		
NH			¡ 0.112	(0.253)			¡ 0.143	(0.142)
$TLall$			0.025	(0.698)			¡ 0.090	(0.373)
$SIZE$	¡ 0.257	(0.000)	¡ 0.256	(0.000)	¡ 0.049	(0.050)	¡ 0.042	(0.116)
LIQ	¡ 0.016	(0.068)	¡ 0.015	(0.082)	¡ 0.007	(0.660)	¡ 0.002	(0.899)
LEV	¡ 0.022	(0.415)	¡ 0.024	(0.371)	¡ 0.040	(0.117)	¡ 0.041	(0.109)
$PROF$	0.002	(0.003)	0.002	(0.005)	0.004	(0.000)	0.004	(0.000)
GRO	0.001	(0.671)	0.001	(0.665)	0.004	(0.066)	0.006	(0.077)
DIV	0.173	(0.069)	0.193	(0.057)	0.059	(0.536)	0.062	(0.585)
$MULT$	¡		¡		¡ 0.086	(0.280)	¡ 0.097	(0.233)
$adjR^2$	0.237		0.244		0.533		0.542	
No.of Firms	177		170		177		170	
No.of obs	405		¡		405		¡	

Table 5: Cross-sectional Regressions: Reversed Causality

The table displays the results from cross-sectional OLS regressions, where the dependent variable is the logarithm of Tobin's Q, measured at the end of each period. The explanatory variables are: FA, the average of the percentage of revenues and costs that are denominated in foreign currency; NE, the di¤erence between the percentage of revenues and costs that are denominated in foreign currency; NN^H, a dummy that is set to 1 for …rms that did not hedge in the current period and did not hedge in the next period; YN^H, a dummy that is set to 1 for …rms that hedged in the current period but not in the next period; NY^H, a dummy that is set to 1 for …rms that did not hedge in the current period but hedged in the next period; NN^{TR}, YN^{TR}, NY^{TR}, dummies representing hedging of transaction exposure with explanations as for hedgers; $SIZE$, the logarithm of total assets; LEV, the debt-to-equity ratio; LIQ, the current ratio; $PROF$, return on capital employed; GRO, invested capital during the year divided by total sales; DIV, a dummy that is set to 1 for …rms that paid a dividend during the current year. $MULT$, a dummy that is set to 1 for …rms that are diversi…ed; Observations are for years 1997-2001. In all regressions three year and ten industry dummy variables are included. Reported p-values are for Newey-West (1987) adjusted standard errors.

Model		(a)		(b)	
	No.of obs	coe¤	p-value	coe¤	p-value
Intercept		0.953	(0.000)	0.909	(0.001)
FA		0.000	(0.922)	0.000	(0.834)
NE		0.005	(0.001)	0.006	(0.002)
NN^H	127	¡ 0.202	(0.040)		
YN^H	6	¡ 0.476	(0.000)		
NY^H	11	¡ 0.193	(0.358)		
NN^{TR}	117			¡ 0.225	(0.037)
YN^{TR}	9			¡ 0.302	(0.014)
NY^{TR}	9			¡ 0.066	(0.784)
$SIZE$		¡ 0.061	(0.037)	¡ 0.060	(0.041)
LIQ		¡ 0.003	(0.753)	¡ 0.004	(0.686)
LEV		¡ 0.063	(0.055)	¡ 0.078	(0.040)
$PROF$		0.004	(0.000)	0.004	(0.000)
GRO		0.003	(0.000)	0.004	(0.000)
DIV	202	¡ 0.050	(0.592)	¡ 0.032	(0.761)
$MULT$	71	¡ 0.113	(0.052)	¡ 0.114	(0.067)
$adjR^2$		0.529		0.521	
N		283		265	
Wald tests (p-values)					
$NN = NY$		0.965		0.510	
$NN = NY, YN = 0$		0.001		0.044	

Table 6: Cross-sectional Regressions: ¢TQ

The table displays the results from cross-sectional OLS regressions, where the dependent variable is the change in the logarithm of Tobin's Q, TQ. The explanatory variables are: ¢FA, the change in foreign activity; ¢NE, the change in net exposure; NN^H, a dummy that is set to 1 for …rms that did not hedge in the current period and not in the next period; YN^H, a dummy that is set to 1 for …rms that hedged in the current period but not in the next period; NY^H, a dummy that is set to 1 for …rms that did not hedge in the current period but hedged in the next period; NN^{TR}, YN^{TR}, and NY^{TR}, dummies representing hedging of transaction exposure with explanations as for hedgers; ¢$SIZE$, the change in the logarithm of total assets; ¢$PROF$, the change in the return on capital employed; ¢LEV, the change in the debt-to-equity ratio; ¢LIQ, the change in the current ratio; ¢GRO, the change in capital expenditures over sales; NN^{DIV}, YN^{DIV} NY^{DIV}, dummies representing dividend payments with explanations as for hedgers and transaction exposure hedgers. Observations are for years 1997-2001. In all regressions a dummy for diversi…ed …rms, three year dummies and ten industry dummies are included. Reported p-values are for Newey-West (1987) corrected standard errors.

Model		(a)		(b)	
	No. obs	coe¤	p-value	coe¤	p-value
Intercept		-0.123	(0.015)	-0.181	(0.000)
¢FA		0.001	(0.787)	0.000	(0.932)
¢NE		0.001	(0.429)	0.001	(0.409)
NN^H	105	¡ 0.045	(0.439)		
YN^H	5	0.051	(0.582)		
NY^H	11	0.111	(0.263)		
NN^{TR}	93			¡ 0.050	(0.454)
YN^{TR}	7			0.013	(0.890)
NY^{TR}	8			0.047	(0.671)
¢$SIZE$		¡ 0.277	(0.020)	¡ 0.302	(0.015)
¢LIQ		¡ 0.009	(0.440)	¡ 0.008	(0.443)
¢LEV		0.028	(0.303)	0.027	(0.333)
¢$PROF$		0.002	(0.038)	0.002	(0.046)
¢GRO		0.000	(0.860)	0.000	(0.781)
NN^{DIV}	59	¡ 0.079	(0.365)	¡ 0.069	(0.449)
YN^{DIV}	10	¡ 0.237	(0.145)	¡ 0.258	(0.138)
NY^{DIV}	5	¡ 0.023	(0.784)	¡ 0.103	(0.207)
$adjR^2$		0.235		0.244	
N		238		221	
Wald tests (p-values)					
NN = NY		0.130		0.371	

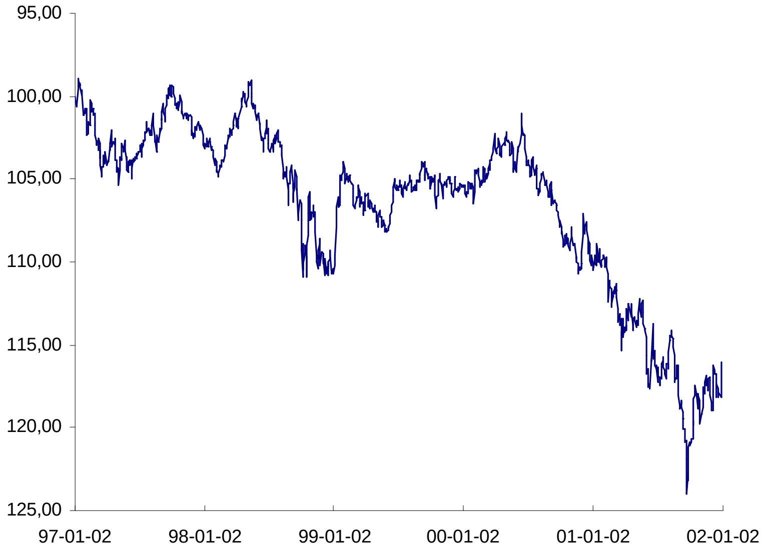

Figure 1: The Swedish TCW (Total Competitive Weights) Index for the period January 1997 until December 2002. Value on January 2, 1997 = 100 (inverted scale). The TCW index is the o¢cial trade weighted currency index provided by the Swedish central bank and is based on the IMF Total Competitive Weights.