The Use of Foreign Currency Derivatives and Industry Structure

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Introduction

Does competition within an industry affect the demand for hedging? Under models of perfect competition, firms may hedge to mitigate losses that could put them at a competitive disadvantage. At the other extreme, a monopolist may not need to hedge at all if he is able to pass off risk to other parties through pricing power. Clearly, the competitive structure of an industry could have an impact on a firms' decision to hedge risk. In the well-known case describing Merck's philosophy on managing currency exposure, Lewent and Kearney (1990) argue that given the strict regulatory environment in the pharmaceutical industry, there is much less flexibility in strategic pricing; hence, the need to hedge risks using financial derivatives is intensified.

This article investigates the relationship between industry structure and risk management in the context of currency hedging for a sample of 916 large U.S. firms between 1994-1995. We focus on the demand for currency hedging for the following reasons: a) exchange-rate risk is an important source of risk for a firm, which is also revealed by the fact that currency derivatives are the most commonly used derivatives; and b) we would like to isolate a source of risk for which a theoretical framework exists to guide our thinking.

Earlier empirical work by Geczy, Minton, and Schrand (1997) and Allayannis and Ofek (1998) found that the use of currency derivatives is positively related to a firm's exchange-rate risk. In these studies, exchange-rate risk is proxied by the level of a firm's foreign sales [see, e.g., Jorion (1990) for empirical evidence]. These studies suggest that firms use derivatives to reduce their exposure to risk, rather than to speculate on movements in exchange rates.

In addition to these studies, Allayannis and Ihrig (1999) develop a theoretical model which shows that a firm's exchange-rate risk is directly related to industry structure. Using an industry's markup of price over marginal cost to proxy for industry structure, they find that

in industries with less competition (high markup industries), firms can respond to exchange-rate movements by changing their prices, which results in a lower exchange-rate risk. In contrast, firms which operate in industries with a more competitive structure (low markup industries) price is set close to marginal costs and the effects of exchange-rate movements on a firm's returns can be large.[1]

Allayannis and Ihrig also test the prediction of their model for a sample of U.S. manufacturing industries and find that, consistent with their model, more competitive industries face higher exchange-rate risk. Since the competitiveness of industry structure (as measured by price-cost markup) is positively related to exchange-rate risk and the demand for hedging is positively related to exchange-rate risk, it follows that firms that operate in a more competitive industry should be more likely to hedge.

Using a sample of large U.S. manufacturing firms between 1994-95, we test the above hypothesis using the price-cost margin as a proxy for industry competitiveness. Consistent with our hypothesis, we find that firms that operate in more competitive (low markup) industries are more likely to use currency derivatives than firms that operate in industries with high markups. Our results also complement earlier findings in Geczy et. al (1997) and Allayannis and Ofek (1998) in which the decision to use currency derivatives is found to be related to exposure factors (i.e., foreign sales) and to variables largely associated with theories of optimal hedging (i.e., size, R&D expenditures).

The remainder of the paper is organized as follows. Section 1 describes theories of optimal hedging and reviews previous empirical research on the use of derivatives. Section 2 describes our sample and develops our hypothesis. Section 3 presents the tests of the relationship

[1]See also earlier work by Ungern-Sternberg and Von Weizsaecker (1990) and by Adler and Prasad (1993) on competitive exposure. Froot, Scharfstein and Stein (1993) also discuss competitive hedging, but distinguish between strategic complements and substitutes, rather than between competitive and oligopolistic industries.

between the decision to use currency derivatives and firm industry structure. Section 4 concludes.

1. Related Literature

There are several theories of optimal hedging, most of which derive optimal hedging policies by introducing some friction to the classical Modigliani and Miller paradigm. For example, in Stulz (1984), corporate hedging is an outcome of managers' risk aversion. In Smith and Stulz (1985), the progressivity of the tax code or the transaction costs of financial distress could prompt firms to undertake hedging activities. In Stulz (1996) and Leland (1998), it is argued that, since hedging may reduce the probability of financial distress, it may enable firms to increase their leverage. This increase in debt results in greater tax benefits for the hedging firm. In Froot, Scharfstein, and Stein (1993), hedging is optimal because it helps mitigate the underinvestment problem that would result from variation in cash flow and costly access to external financing. Finally, in DeMarzo and Duffie (1995) corporate hedging is optimal even though shareholders can hedge on their own, when managers have private information on the firm's expected payoff. In that case, hedging would allow the market to draw better inferences on management ability.

Until the beginning of the 1990s firms were not required to disclose whether they used derivatives or not and as a result, earlier empirical studies had to rely on survey data. For example, Nance, Smith, and Smithson (1993) used such survey data on Fortune 500 firms' use of forwards, futures, swaps, and options to examine what prompts firms to use derivatives. They found that firms that hedged faced more convex tax functions, had less coverage of fixed claims, were larger, and had more growth options in their investment opportunity set. Dolde (1993) using also survey data on large U.S. firms finds that hedgers are on average larger and have higher leverage than nonhedgers. The larger size of hedgers may be due

to large upfront investment in risk management professionals as well as technical software which may have dissuaded smaller firms.[2]

Since the beginning of the 1990's corporations have been required to disclose in footnotes in their annual reports, the notional amount of derivatives they are using. However, the reporting was still less uniform and many early studies used only a binary variable indicating whether a firm used derivatives or not. Recent studies have focused on the alternative types of hedging (currency, interest rate, or commodity), recognizing that different factors can be important for each type of hedging. In particular, Geczy, Minton, and Schrand (1997) examine currency hedging activities for a sample of Fortune 500 firms. They find that firms' use of currency derivatives is positively related to a) the amount of R&D expenditures, which is consistent with the use of hedging to reduce underinvestment, in line with Froot, Scharfstein, and Stein (1993); b) size, which is consistent with fixed-costs of hedging explanations; and, c) exposure factors (foreign income and trade). Tufano (1996) examines commodity hedging activities of gold mining firms. He finds that firms' use of gold derivatives is negatively related to the number of options their managers and directors hold, and positively related to the value of their stock holdings, evidence consistent with theories of managerial risk aversion (e.g., Stulz, 1984). Haushalter (1998) examines the hedging activities of oil and gas producers. He finds that the percentage of production hedged is positively related to total debt, which is consistent with theories of transaction costs of financial distress. Visvanathan (1995) examines the use of interest rate swaps by S&P 500 nonfinancial firms, and finds also evidence supporting theories of transaction costs of financial distress (e.g., Smith and Stulz, 1985). More specifically, Simkins (1997) examines whether firms' use of interest-rate swaps is in line with Titman's (1992) theory that firms use interest rate swaps due to asymmetric

[2]Rawls and Smithson (1990) examine strategic risk management (why hedge and how to hedge) and provide several examples of actual risk management practices by corporations.

information about their credit quality; she finds evidence supporting his theory.[3]

Finally, Mian (1996) investigates all three types of hedging activities for a sample of 3,022 firms and finds mixed evidence for theories of managerial risk aversion and taxes and evidence that uniformly supports the hypothesis that hedging activities exhibit economies of scale (i.e., that larger firms are more likely to hedge).

While most of the above studies examine the factors that are associated with the probability that a firm hedges, Allayannis and Ofek (1998) and Graham and Rogers (1998) also examine the factors that are associated with the extent of hedging, using respectively, the notional values of currency derivatives and the notional values of all types of derivatives. Allayannis and Ofek find that the decision on how much to hedge depends on a firm's exposure through foreign sales and trade. For the entire spectrum of derivatives (interest-rate, currency and commodity), Graham and Rogers find that firms' extent of derivative use reflects a motive to reduce underinvestment and to increase debt capacity.

An alternative direction that the hedging literature has taken is to examine the direct impact of hedging on a firm's risk and value. For example, He and Ng (1998), Allayannis and Ofek (1998), and Simkins and Laux (1997) examine the effect of the use of currency derivatives on a firm's exchange-rate risk and find that on average, firms reduce their exchange-rate risk through the use of currency derivatives. A more complex role for risk management is examined by Schrand and Unal (1998) in which the authors examine the effect of risk management in dealing with multiple risks that are bundled in an asset, as, for example, in interest-rate swaps in which there is both, interest-rate and credit risk. Schrand and Unal seggregate risks into two types, based on a firm's informational advantage. Firms earn positive economic profits for bearing risk related to core-business and zero economic profits for

[3]Earlier studies which examined interest rate-hedging include Booth, Smith, and Stolz (1984); Block and Gallagher (1986); and Wall and Pringle (1989).

homogeneous risks. The authors find that in a sample of thrift institutions, thrifts optimally increase credit risk, but hedge interest-rate risk.

More recently, Allayannis and Weston (1998) examine whether the use of currency derivatives directly affects a firm's value and find that hedging increases firm value. Specifically, they find that in a sample of 720 large U.S. nonfinancial firms between 1990-95, the use of foreign currency derivatives is significantly associated with higher firm value. On average, the hedging premium is 5.7% of firm value. Finally, very recently, Allayannis and Mozumdar (1999) examine whether the use of foreign currency derivatives by S&P 500 firms with significant exposure to exchange-rate risk affects the availability of internal cash flows and allows them to undertake attractive investment opportunities in line with Froot, Scharfstein and Stein's model of optimal hedging. They find that firms that use currency derivatives have a significantly lower investment-cash flow sensitivity than firms that do not use currency derivatives.[4]

In this paper, we augment the former literature on which factors affect the probability to use derivatives. We suggest that an industry factor −the extent of competition in an industry− is an important factor that explains the use of derivatives by firms.

2. Sample description and definition of industry structure

Our sample consists of all manufacturing firms that are in the COMPUSTAT database (firms that belong to industries with 2-digit SICs between 20 and 39), have total assets above 100 million during 1994 and 1995 and have non-missing data on size (total sales). We obtain

[4]While there is substantial amount of work done to explain why firms should hedge, less is known about how firms should hedge. An exception is Brown and Toft (1998) in which optimal hedging strategies are derived using forwards, options and custom exotic derivatives for a profit-maximizing firm which faces both price and quantity risk. The authors show that the optimal strategies are generally very different from the minimum-variance forward hedge.

a total of 916 firms that meet our selection criteria and therefore a total of 1832 firm-year observations between 1994-95.

For the firms in our sample, we obtained data on year-end use of futures, forwards, options and swaps reported in the footnotes of the annual reports for each year during 1994-95. SFAS 105 requires all firms to report information about financial instruments with off-balance sheet risk (e.g., futures, forwards, options, and swaps) for fiscal years ending after June 15, 1990. Firms are classified as "hedgers" in a particular year if they have reported the use of any of the above derivative contracts in their annual reports and as "nonhedgers" otherwise.

Table 1 presents summary statistics of the main variables that we use in our paper. Our sample has a mean value of assets (sales) of \$3,868 (\$3,577) million. For all the firms in our sample, we also obtained data from the geographical segment of the COMPUSTAT database on year-end foreign sales. FASB 14 requires firms to report geographical-segment information for fiscal years ending after December 15, 1977. Firms must report audited footnote information for segments whose sales, assets, or profits exceed 10 percent of consolidated totals. Approximately 68 percent of our sample observations have foreign sales from operations abroad. For the entire sample, foreign sales constitute 23 percent of total sales, while for the sample of firms with foreign sales, foreign sales are, on average, 33 percent of total sales. Approximately 34 percent of the firms in our sample use currency derivatives, while for the firms that have foreign sales from operations abroad, we find that 41 percent of them use currency derivatives.

Our main variable of interest in this paper is the variable that measures industry structure. Similar to Allayannis and Ihrig (1999) and Campa and Goldberg (1995), we use the price-cost margin (PCM) to proxy for industry competitivenes. In particular, we follow the methodology developed by Domowitz, Hubbard and Petersen (1986) to calculate PCMs at

the 3-digit SIC level, as follows:

$$PCM = \frac{Value of Sales + \Delta Inventories - Payroll - Cost of Materials}{Value of Sales + \Delta Inventories}$$

This is identical to (value added - payroll)/(value added + cost of materials), given the Census' definition of value added. The data used to construct this measure are from the Census of Manufactures and from the Annual Survey of Manufactures published by the U.S. Bureau of the Census.

For the 3-digit U.S. manufacturing industries in our sample, we find that they have an average markup of 0.37. A markup value of 0.37 means that on average, U.S. manufacturing industries charge a price of approximately 37 percent above their marginal costs. Given that many firms are diversified across several industries, we also construct for each firm an industry-adjusted markup (a weighted-average markup), in which we use as weights the percentage of total assets that are associated with each industrial segment that the firm has operations in.

3. The use of derivatives and industry structure

In this section, we present results of the tests of our hypothesis that firms that operate in more competitive industries are more likely to use currency derivatives. Table 2 presents some descriptive statistics on 2-digit industry classifications, markups and the percentage of firms in the industry that use foreign currency derivatives. Industries are ranked on this table based on their markups. Although we subsequently use markups at a finer level (3-digit SIC) to achieve a larger cross-sectional variation, we present here this information at the 2-digit level to be more concise.

In particular, the Petroleum and Coal Products industry (SIC 29) has a markup of 0.170 between 1994-95 and approximately 58.3 percent of the firms in the industry use

currency derivatives. The Lumber and Wood Products industry (SIC 24) has a markup of 0.235 and approximately 27 percent of the firms in the industry use currency derivatives, while the Transportation Equipment industry (SIC 37), which has a markup of 0.240, has approximately 42 percent of the 55 firms in the sample using currency derivatives. On the other hand, the Printing and Publishing industry (SIC 27) has a markup of 0.436 and only 8 percent of the firms in that industry use currency derivatives. The industry with the largest markup is the Tobacco Products industry (SIC 21): its markup is 0.696, which means that on average, the Tobacco Products firms charge a price of approximately 69 percent above their marginal costs. On the whole, the five most competitive industries have an average of 40 percent of their firms using currency derivatives, while the five industries with the largest markups have only 27 percent of their firms using currency derivatives.

Note that the markups that we have calculated for the various industries are broadly consistent with our expectations. For example, Petroleum, Lumber and Transportation are very competitive industries with relatively small markups. In contrast, Printing, Chemicals and Tobacco Products are quite oligopolistic industries enjoying high markups. Note also that markups are not always reflecting the number of firms in an industry. For example, the Lumber and Woods industry (SIC 24) has only 7 firms in our sample but has a relatively small markup, while the opposite is true for the Chemicals industry (SIC 28), which has 131 firms but relatively large markup.

As shown in Table 2, there seems to be a negative relationship between the number of firms that use currency derivatives and industry structure as proxied by markups at the 2-digit SIC level. Next, we want to examine whether industry structure is a determinant factor in the decision of a firm to use currency derivatives. Table 3 presents correlations between the use of foreign currency derivatives and alternative factors that theory suggests should be influencing the decision to use them. For example, if there are large scale economies in

hedging, then larger firms should use more derivatives. Table 3, second row shows that there is a positive correlation (0.400) between the use of currency derivatives and size as measured by the log of total assets. More importantly, the correlation between industry structure and the use of currency derivatives is negative (-0.078) which suggests that firms that operate in a more competitive (low markup) industry tend to use more currency derivatives. In these tests we have used markups at the 3-digit level. Clearly, since there are factors that may be correlated with both markups and the decision to hedge, we need to examine the issue using a multivariate framework.

Table 4 presents the results of the multivariate tests. We follow the framework of Geczy, Minton and Schrand (1997) in these tests and use a probit estimation. The dependent variable is a binary variable which equals 1 if the firm uses currency forwards, futures, options or swaps and zero otherwise. We use a variety of variables as independent variables that proxy for optimal hedging theories and exposure to exchange-rate movements. Specifically, to test theories of hedging related to agency costs (underinvestment), we use R&D expenditures, defined as the ratio of R&D to total sales and a dividend dummy, an indicator variable denoting the payment of dividends in the fiscal year, as proxies for growth options in the firm's investment opportunity set. We use a tax dummy variable which equals one if the firm has a tax-loss carryforward or investment tax credits, and zero otherwise, to test theories related to the reduction in expected taxes. We use ROA, defined as the ratio of earnings before interest, taxes, and dividends (EBITD) to total assets and leverage, defined as the ratio of total debt to total assets to test theories related to expected costs of financial distress. We use the quick ratio defined as the current assets (excluding stocks) divided by current liabilities and the dividend dummy to test for the hypothesis that hedging is less likely, if the firm has hedging substitutes in place [see, e.g., Nance, Smith and Smithson (1993)]. We also control for the size of the firm (the logarithm of total assets), a factor that most previous

studies found was positively related to a firm's decision to hedge. This is consistent with arguments related to the existence of large fixed start-up costs of hedging. Finally, we use the ratio of foreign sales to total sales to control for exposure factors. Our tests also include industry controls at the 2-digit level.[5]

In our tests, we use both primary-industry markups and industry-adjusted markups at the 3-digit level [regressions (1 and 3) and (2 and 4) respectively]. Regressions 1 and 2 provide results for 1994, while regressions 3 and 4 provide results for 1995. Our hypothesis is that firms that operate in more competitive industries (low markup industries) are more likely to use currency derivatives. We therefore expect a negative sign on the coefficient of industry markup. Consistent with our hypothesis, we find that industry structure is inversely related to a firm's decision to use currency derivatives: firms in more competitive (low markup) industries are more likely to use derivatives, given that they are more exposed to exchange-rate movements, due to their inability to pass-through exposure by changing prices. Our results are also statistically significant and especially so, when we use the industry-adjusted markups (regressions 2 and 4).

The remaining findings are very similar to those obtained by Geczy, Minton, and Schrand (1997): firm size, R&D expenditures, and exposure to exchange rates as proxied by foreign sales are important determinants in a firm's decision to use foreign currency derivatives. The size of the firm is positively related to the decision to hedge, indicating that larger firms are more likely to hedge than smaller firms. R&D expenditures can proxy for the growth options in the firm's investment opportunity set. In the absence of hedging, firms with high R&D expenditures could be more prone to underinvestment than those with low R&D expenditures. Hence, firms with higher R&D expenditures benefit more from the use of

[5]Since we use industry markups at the 3-digit level, we have to use industry controls at a higher level to be able to run our estimation.

derivatives. Foreign sales are significantly and positively related to a firm's decision to hedge, indicating that firms with higher exposure to exchange rates are more likely to use currency derivatives. Finally, we find the quick ratio to be negatively and significantly related to the use of currency derivatives, indicating that the higher the liquidity of a firm, the smaller the likelihood to use currency derivatives. In contrast, the positive sign on ROA is inconsistent with our hypothesis that firms with a lower probability of bankruptcy should hedge less. None of the other variables are important in explaining a firm's decision to use currency derivatives.

4. Conclusions

In this paper, we augment the literature on what prompts corporations to use derivatives by examining the role of industry structure in influencing a firm's decision to use derivatives. There are theoretical reasons that suggest why industry structure may affect such a decision: a firm's use of derivatives is related to its exposure. In turn, exchange-rate exposure is positively related to an industry's competitiveness, as found in Allayannis and Ihrig (1999), because firms in more competitive industries are less able to pass-through their exposure by changing prices. This suggests that firms in more competitive industries are more exposed to exchange-rate movements and would therefore have a higher demand for hedging.

Using data on a sample of large U.S. manufacturing firms during 1994-95, we find that, consistent with our hypothesis, firms that belong to more competitive industries are more likely to use currency derivatives than firms that belong to more oligopolistic industries. Our results complement earlier work by Geczy et al., which find that factors related to the reduction of underinvestment and large fixed costs of hedging are the primary determinants of the decision to use currency derivatives. Our results suggest that managers should pay attention to the firm's exposure which is directly -and inversely- related to the industry

structure that the firm operates in.

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Table 1
Summary Statistics

Table 1 provides descriptive statistics for our sample of firms. The sample includes all COMPUSTAT firms with assets>$100M for 1994-1995. FCD dummy equals 1 if the company reports the use of foreign currency forwards, futures, options, or swaps. Markups are calculated as *(Value of sales + change in inventories – payroll - cost of materials) / (value of sales + change in inventories)* as in Domowitz, Hubbard and Petersen (1986). Return on Assets is the annually compounded net income divided by total assets. The Quick ratio is current assets (excluding stock) divided by current liabilities; Dividend dummy is an indicator variable denoting the payment of dividends in the fiscal year. Tax Loss, Carry Forward, is an indicator variable denoting a positive tax loss or carry forward. Debt to equity is the ratio of total debt to shareholder equity times 100.

	No. obs.	Mean	Std. Dev.	Median
Sample Description				
Total assets (millions)	1832	3868	16110	496
Total Sales (millions)	1830	3577	11510	566
Foreign Sales Dummy[1]	1583	0.68	0.47	1
Total foreign sales (millions)	1583	1365	5989	74
Foreign Sales/Total Sales				
All Firms	1579	0.23	0.23	0.17
Firms with foreign sales>0	1083	0.33	0.21	0.31
Derivatives use				
FCD dummy[3]				
All Firms	1673	0.34	0.47	0
Firms with foreign sales>0	1083	0.41	0.49	0
Markups[4]				
3-digit-SIC level Markups	1772	0.37	0.11	0.35
Industry-adjusted Markups	1786	0.35	0.10	0.33
Controls[5]				
Return on Assets	1754	5.27	9.99	6.32
Debt to Equity Ratio	1776	89	326	39.89
(R&D/Total Assets)	1711	0.06	0.08	0.03
Tax loss / Carry Forward Dummy	1832	0.23	0.18	0.00
Dividend Yield	1832	1.07	2.02	0.10
Quick Ratio	1720	1.79	2.12	1.14

Table 2

Profile of Markups by Industry

Table 2 provides a description of industry markups according to 2-digit standard industrial classification. Markups are calculated as *(Value of sales + change in inventories – payroll – cost of materials) / (value of sales + change in inventories)*. These data are collected from the Census Bureaus' Annual Survey of Maufactures. Firms that hedge are defined to be any firm that reports the use of foreign currency forwards, futures, options, or swaps in the footnotes of their annual reports.

2-digit SIC code	2-digit Markup	Indusrty Description	Number of firms in sample	Percentage of firms that hedge
29	0.170	Petroleum And Coal Products	18	0.583
24	0.235	Lumber And Wood Products	7	0.273
37	0.240	Transportation Equipment (Auto)	55	0.426
22	0.244	Textile Mill Products	11	0.400
33	0.248	Primary Metal Industries	42	0.345
25	0.272	Furniture And Fixtures	13	0.292
34	0.284	Fabricated Metal Products	28	0.267
31	0.288	Leather And Leather Products	2	0.000
23	0.301	Apparel And Other Textile Products	2	0.500
35	0.304	Industrial Machinery And Equipment	173	0.300
26	0.311	Paper And Allied Products	30	0.300
20	0.312	Food And Kindred Products	29	0.592
30	0.318	Rubber And Misc. Plastics Products	40	0.350
39	0.343	Miscellaneous Manufacturing Industries	21	0.214
32	0.358	Stone, Clay, And Glass Products	14	0.179
36	0.398	Electronic & Other Electric Equipment	168	0.238
27	0.436	Printing And Publishing	18	0.083
38	0.436	Instruments And Related Products	111	0.329
28	0.443	Chemicals And Allied Products	131	0.385
21	0.696	Tobacco Products	3	0.333

Table 3

Correlation Table

Table 3 provides pearson correlations for our sample of firms. The sample includes all COMPUSTAT firms with assets>$100M for 1994-1995. FCD dummy equals 1 if the company reports the use of foreign currency forwards, futures, options, or swaps. Markups are calculated as *(Value of sales + change in inventories – payroll - cost of materials) / (value of sales + change in inventories)* as in Domowitz, Hubbard and Petersen (1986). Return on Assets is annually compounded net income, divided by total assets. The Quick ratio is current assets (excluding stock) divided by current liabilities; Debt ratio is the total book value of long-term debt divided by the book value of total assets. Significant correlations are presented in bold.

	3-digit-SIC Markup	FCD dummy	Size	Exposure	R&D/Assets	Debt ratio
3-digit-SIC Markup	1	.	.	.	.	.
FCD dummy	**-0.097**	1	.	.	.	.
Size (log of total assets)	**-0.140**	**0.488**	1	.	.	.
Exposure (Foreign Sales / Total Sales)	**0.039**	**0.280**	**0.326**	1	.	.
R&D/Assets	**0.320**	**-0.070**	**-0.288**	**-0.066**	1	.
Debt ratio (Total Debt / Total Assets)	0.003	0.130	0.011	-0.041	-0.001	1

Table 4

Table 4 shows the results of four probit regressions of FCDDUM, an indicator variable specifying whether a firm used foreign currency derivatives (forwards, futures, options or swaps), on the following explanatory variables: 3-Digit-SIC level Markup (using either primary industry [columns 1 & 3] or an industry-adjusted measure of markups based on a weighted average of firms' business segment activity [columns 2 & 4] ; Size, the log of the book value of total assets; Exposure, the ratio of total foreign sales to total sales; R&D / Assets, total expenditures on research and development scaled by book value of assets; ROA, annually compounded net income divided by total assets; Quick ratio, current assets (excluding stock) divided by current liabilities; Dividend dummy, an indicator variable denoting the payment of dividends in the fiscal year; Tax Loss, Carry Forward, is an indicator variable denoting a positive tax loss or carry forward . The regressions also include 2-digit primary SIC code dummy variables. The sample contains all COMPUSTAT manufacturing firms (2000 < primary SIC code < 4000) with assets greater than $100M in 1994 and 1995. All data is collected from COMPUSTAT except FCDDUM which is collected from the footnotes to firms' annual 10-K reports and markups which are computed as described above using data from the Annual Survey of Manufacturers. Reported coefficients present the change in probability for a small change in each of the continuous variables and the discrete change in probability for indicator variables rather than the estimated maximum likelihood coefficients from the probit model. Standard errors are reported below each coefficient. ***, **, * denote significance at the 1%, 5% and 10% levels, respectively.

Year	94		95	
Number of Observations	829	834	824	830
Number of firms that use derivatives	247	265	256	274
Number of firms that do not use derivatives	582	569	568	556
Pseudo R^2	0.18	0.18	0.17	0.17
Primary Industry 3-Digit-SIC level Markup	-0.320	.	-0.555	.
	0.276		0.281 **	
Industry Adjusted 3-Digit-SIC level Markup	.	-0.527	.	-0.657
		0.257 **		0.262 ***
Size (log of total assets)	0.096	0.100	0.106	0.109
	0.014 ***	0.013 ***	0.014 ***	0.014 ***
Exposure (Foreign Sales / Total Sales)	0.295	0.298	0.294	0.291
	0.078 ***	0.080 ***	0.079 ***	0.080 ***
R&D/Assets	0.599	0.648	0.772	0.771
	0.217 ***	0.229 ***	0.309 ***	0.345 ***
ROA	0.006	0.006	0.007	0.007
	0.002 ***	0.002 ***	0.002 ***	0.002 ***
Debt ratio (Total Debt / Total Assets)	-0.020	-0.008	-0.061	-0.036
	0.105	0.107	0.114	0.117
Quick Ratio	-0.029	-0.027	-0.027	-0.025
	0.014 **	0.015 *	0.012 **	0.014 *
Dividend Dummy	0.005	0.007	-0.030	-0.032
	0.037	0.038	0.038	0.040
Tax Loss / Carry Forward	0.058	0.061	0.044	0.034
	0.041	0.042	0.041	0.041