Analysis Report

This report is structured as follows.

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Sample Characteristics

The sample comprises a total of 773 companies. These companies are categorized based on their engagement in foreign sales and the use of foreign currency derivatives.

The categorization of companies by foreign sales indicates that 220 companies (28.46%) do not engage in foreign sales, whereas 553 companies (71.54%) report having foreign sales.

Regarding the use of foreign currency derivatives, 519 companies (67.1%) do not utilize such derivatives, while 254 companies (32.9%) do employ foreign currency derivatives.

Further breakdown of the data segments the companies by their use of foreign currency derivatives, stratified by whether they engage in foreign sales or not. Among companies that use foreign currency derivatives, 42 companies (5.4%) report having foreign sales, whereas 212 companies (27.4%) do not engage in foreign sales. Conversely, among companies that do not use foreign currency derivatives, 178 companies (23.0%) engage in foreign sales, and 341 companies (44.1%) do not.

Segment	Use of Derivatives = No		Use of Derivatives = Yes	
	N	%	N	%
With Foreign Sales	178	23.0	42	5.4
Without Foreign Sales	341	44.1	212	27.4

Outlier Assessment

Outliers in the dataset were assessed using a threshold of three times the interquartile range (IQR). The following table provides a summary of the outlier analysis for each variable, including the lower and upper extreme values beyond which data points were considered outliers and the count of outliers identified for each variable.

In total, 2,935 cases were identified as having outliers across the specified variables. This substantial number of outliers highlights the presence of extreme values in various financial metrics and operational parameters, which could significantly influence the results of subsequent analyses. The identified outliers will be carefully considered in further statistical modeling and interpretation of results to ensure robustness and validity.

Variable	Lower Extreme	Upper Extreme	Count Outliers
Market.to.book.ratio	-6.801	12.544	552
Market.to.Book.value.per.share	-6.499	11.657	581
Tobins.Q	-2.744	6.514	450
Ln_Total_Asset	7.984	34.073	0
Ln_Revenue	8.242	33.367	0
Long.Term.Debt_Total.Equity._._	-216.790	291.970	328
ROA._._	-52.211	73.388	827
R.D.expense	-136015500.000	181354000.000	1587
Foreign.sales.to.total.sales	-1.437	1.916	0

Descriptive Statistics

Descriptive statistics were calculated for key variables in the dataset, providing a summary of the central tendency, dispersion, and shape of the data distribution. The table below presents the mean, standard error of the mean (SEM), standard deviation (SD), skewness, and kurtosis for each variable.

Variable	Mean	SEM	SD	Skewness	Kurtosis
Market.to.book.ratio	3.092	0.021	2.358	1.571	5.579
Market.to.Book.value.per.share	2.761	0.019	2.168	1.631	5.648
Tobins.Q	1.986	0.010	1.111	1.556	5.380
Ln_Total_Asset	20.944	0.021	2.440	0.023	2.303
Ln_Revenue	20.701	0.021	2.457	-0.355	3.207
Long.Term.Debt_Total.Equity._._	45.808	0.473	54.780	1.633	5.758
ROA._._	10.771	0.157	17.843	-0.322	4.810
R.D.expense	15432047.723	346114.872	33635528.060	2.693	9.999
Foreign.sales.to.total.sales	0.272	0.002	0.283	0.741	2.468

Log-transformation was applied to the following variables to alleviate issues related to non-normality: "Market.to.book.ratio", "Market.to.Book.value.per.share", "Tobins.Q", "Long.Term.Debt_Total.Equity..", "R.D.expense", and "Foreign.sales.to.total.sales". This transformation helps in stabilizing the variance and making the data more closely follow a normal distribution, which is a key assumption for many statistical analyses.

The descriptive statistics indicate a high degree of skewness and kurtosis in several variables, suggesting the presence of extreme values and deviations from normality. This highlights the importance of applying appropriate transformations and using robust statistical methods to handle such data characteristics in further analyses.

T-tests / Wilcoxon Tests

The tables presented below show mean comparison tests (T-tests) and median comparison tests (Wilcoxon tests) on different levels of aggregation, to compare value indicator across different groups.

Variable	Use of Derivatives = 0		Use of Derivatives = 1		t	df	p
	M	SD	M	SD			
Market.to.book.ratio	3.009	2.396	3.258	2.272	-5.725	13227.000	0.000
Market.to.Book.value.per.share	2.725	2.198	2.831	2.104	-2.640	13179.000	0.008
Tobins.Q	2.009	1.173	1.941	0.977	3.345	13368.000	0.001

Variable	Foreign Sales = 0		Foreign Sales = 1		t	df	p
	M	SD	M	SD			
Market.to.book.ratio	2.711	2.193	3.245	2.405	-11.871	13227.000	0.000
Market.to.Book.value.per.share	2.398	2.015	2.907	2.210	-12.272	13179.000	0.000
Tobins.Q	1.765	1.011	2.075	1.136	-14.679	13368.000	0.000

Variable	Use of Derivatives = 0	Use of Derivatives = 1	W	p
	Median	Median		
Market.to.book.ratio	2.251	2.569	17235521.000	0.000
Market.to.Book.value.per.share	2.016	2.180	18098057.000	0.000
Tobins.Q	1.629	1.656	19648668.500	0.063

Variable	Foreign Sales = 0	Foreign Sales = 1	W	p
	Median	Median		
Market.to.book.ratio	2.251	2.569	17235521.000	0.000
Market.to.Book.value.per.share	2.016	2.180	18098057.000	0.000
Tobins.Q	1.629	1.656	19648668.500	0.063

Variable	Foreign Sales = 0						
	Use of Derivatives = 0		Use of Derivatives = 1		t	df	p
	M	SD	M	Sd			
Market.to.book.ratio	2.750	2.311	2.593	1.788	1.910	3805.000	0.056
Market.to.Book.value.per.share	2.475	2.122	2.171	1.637	4.038	3795.000	0.000
Tobins.Q	1.850	1.097	1.517	0.636	8.959	3826.000	0.000

Variable	Foreign Sales = 1						
	Use of Derivatives = 0		Use of Derivatives = 1		t	df	p
	M	SD	M	Sd			
Market.to.book.ratio	3.132	2.426	3.442	2.356	-6.023	9420.000	0.000
Market.to.Book.value.per.share	2.845	2.223	3.015	2.182	-3.582	9382.000	0.000
Tobins.Q	2.086	1.200	2.057	1.021	1.202	9540.000	0.229

| Variable | Foreign Sales = 0 | | | |
| | Use of Derivatives = 0 | Use of Derivatives = 1 | W | p |
	Median	Median		
Market.to.book.ratio	2.031	2.043	1301213.500	0.042
Market.to.Book.value.per.share	1.786	1.661	1405664.500	0.097
Tobins.Q	1.470	1.306	1564073.000	0.000

| Variable | Foreign Sales = 1 | | | |
| | Use of Derivatives = 0 | Use of Derivatives = 1 | W | p |
	Median	Median		
Market.to.book.ratio	3.132	2.767	9073455.000	0.000
Market.to.Book.value.per.share	2.845	2.358	9457633.500	0.000
Tobins.Q	2.086	1.793	10231607.500	0.001

| Variable | Subset | Foreign Sales = 0 | | | | | | |
| | | Use of Derivatives = 0 | | Use of Derivatives = 1 | | t | df | p |
		M	SD	M	Sd			
Market.to.book.ratio	Dollar Depreciation	2.949	2.326	2.527	1.742	3.177	1474	0.002
	Dollar Appreciation	2.623	2.294	2.634	1.817	-0.107	2329	0.915
Market.to.Book.value.per.share	Dollar Depreciation	2.575	2.150	2.032	1.538	4.453	1470	0.000
	Dollar Appreciation	2.411	2.102	2.256	1.691	1.618	2323	0.106
Tobins.Q	Dollar Depreciation	1.941	1.110	1.505	0.628	7.159	1474	0.000
	Dollar Appreciation	1.792	1.084	1.523	0.641	5.733	2350	0.000

| Variable | Subset | Foreign Sales = 1 | | | | | | |
| | | Use of Derivatives = 0 | | Use of Derivatives = 1 | | t | df | p |
		M	SD	M	Sd			
Market.to.book.ratio	Dollar Depreciation	3.347	2.451	3.428	2.217	-0.969	3663	0.332
	Dollar Appreciation	2.981	2.396	3.449	2.427	-7.181	5755	0.000
Market.to.Book.value.per.share	Dollar Depreciation	2.972	2.224	2.939	2.064	0.425	3648	0.671
	Dollar Appreciation	2.757	2.219	3.055	2.242	-4.950	5732	0.000
Tobins.Q	Dollar Depreciation	2.195	1.205	2.074	1.006	3.036	3678	0.002
	Dollar Appreciation	2.010	1.191	2.047	1.028	-1.245	5860	0.213

| Variable | Subset | Foreign Sales = 0 | | | |
| | | Use of Derivatives = 0 | Use of Derivatives = 1 | W | p |
		Median	Median		
Market.to.book.ratio	Dollar Depreciation	2.160	2.038	212442.000	0.154
	Dollar Appreciation	1.916	2.051	461260.500	0.000
Market.to.Book.value.per.share	Dollar Depreciation	1.873	1.580	227749.000	0.000
	Dollar Appreciation	1.724	1.703	501571.000	0.396
Tobins.Q	Dollar Depreciation	1.567	1.298	250900.500	0.000
	Dollar Appreciation	1.410	1.314	560888.500	0.016

| Variable | Subset | Foreign Sales = 1 | | | |
| | | Use of Derivatives = 0 | Use of Derivatives = 1 | W | p |
		Median	Median		
Market.to.book.ratio	Dollar Depreciation	2.614	2.825	1382648.500	0.001
	Dollar Appreciation	2.209	2.742	3316736.500	0.000
Market.to.Book.value.per.share	Dollar Depreciation	2.306	2.334	1443850.500	0.382
	Dollar Appreciation	2.046	2.387	3474177.500	0.000
Tobins.Q	Dollar Depreciation	1.838	1.808	1540467.000	0.353
	Dollar Appreciation	1.624	1.786	3776080.500	0.000

The t-test results show significant differences in the Market.to.book.ratio, Market.to.Book.value.per.share, and Tobins.Q between companies using and not using foreign currency derivatives. Companies using derivatives had significantly higher mean Market.to.book.ratio (M = 3.258, SD = 2.272) compared to those not using derivatives (M = 3.009, SD = 2.396), $t(13227)$ = -5.725, $p < .001$. Similarly, the Market.to.Book.value.per.share was also significantly higher for derivative users, $t(13179)$ = -2.640, p = .008. However, Tobins.Q was lower for derivative users, $t(13368)$ = 3.345, p = .001, suggesting a nuanced relationship between derivative usage and firm valuation metrics.

Wilcoxon tests confirmed these findings, showing significant differences in medians for Market.to.book.ratio and Market.to.Book.value.per.share, but not for Tobins.Q. These results underscore the robustness of the observed differences despite non-normal data distributions.

Further analysis segmented by foreign sales status and dollar appreciation periods revealed consistent patterns. Companies with foreign sales had significantly higher mean Market.to.book.ratio (M = 3.245, SD = 2.405) than those without (M = 2.711, SD = 2.193), $t(13227)$ = -11.871, $p < .001$. This trend was observed for other valuation metrics as well.

Subsequent analyses by dollar appreciation periods indicated that the differences in firm value metrics were more pronounced during periods of dollar appreciation. For example, in periods of dollar appreciation, companies with foreign sales using derivatives had significantly higher Market.to.book.ratio (M = 3.449, SD = 2.427) compared to those not using derivatives (M = 2.981, SD = 2.396), t(5755) = -7.181, p < .001.

Linear Mixed Models

A linear mixed-effects model was employed to analyze the relationship between firm value measures and several predictor variables. The model included both fixed effects and random effects, specified with the formula:

Market.to.book.ratio ~ Use.of.foreign.currency.derivatives + Ln_Total_Asset + Ln_Revenue + log_Long.Term.Debt.Total.Equity._._ + ROA._._ + R.D.expense + log_Foreign.sales.to.total.sales + Dividend + (1|Year) + (1|Ticker).

The use of Year and Ticker as random effects accounts for the hierarchical structure of the data, where multiple observations are nested within each year and ticker (company). The inclusion of company sector as an additional random effect is not needed since we are already accounting for company variability.

Residual normality and dispersion were evaluated through the use of scatterplots and QQplots.

Market to Book Ratio

The model fit indices indicated a satisfactory fit, with an AIC of 27464.60, BIC of 27548.03, Log-Likelihood of -13720.30, and based on 7726 observations. Significant predictors included Ln_Total_Asset (B = -0.819, SE = 0.122, p < .001), Ln_Revenue (B = 0.570, SE = 0.120, p < .001), log_Long.Term.Debt_Total.Equity.. (B = 0.289, SE = 0.030, p < .001), ROA (B = 0.620, SE = 0.022, p < .001), log_R.D.expense (B = 0.101, SE = 0.048, p = .035), log_Foreign.sales.to.total.sales (B = 0.145, SE = 0.050, p = .004), and Dividend (B = 0.227, SE = 0.061, p < .001). The use of foreign currency derivatives was also significant (B = -0.193, SE = 0.057, p = .001). These results suggest that larger firms, those with higher revenues, higher debt relative to equity, greater return on assets, higher R&D expenses, greater foreign sales, and those paying dividends have higher Market to Book Ratios. The negative coefficient for the use of foreign currency derivatives suggests that firms using these derivatives tend to have a lower Market to Book Ratio.

Term	B	std.error	F	df	p
(Intercept)	3.031	0.125	24.284	46.383	0.000
Use.of.foreign.currency.derivatives	-0.193	0.057	-3.351	7713.044	0.001
Ln_Total_Asset	-0.819	0.122	-6.704	4747.271	0.000
Ln_Revenue	0.570	0.120	4.772	5124.985	0.000
log_Long.Term.Debt_Total.Equity._._	0.289	0.030	9.711	7711.611	0.000
ROA._._	0.620	0.022	28.360	7427.778	0.000
log_R.D.expense	0.101	0.048	2.107	4088.283	0.035
log_Foreign.sales.to.total.sales	0.145	0.050	2.915	3433.080	0.004
Dividend	0.227	0.061	3.720	7657.774	0.000

Market to Book Value per Share

The model examining the Market to Book Value per Share yielded significant results, with an AIC of 26276.22, BIC of 26359.59, and Log-Likelihood of -13126.11, based on 7693 observations. Significant predictors included Ln_Total_Asset (B = -0.879, SE = 0.115, p < .001), Ln_Revenue (B = 0.543, SE = 0.112, p < .001), log_Long.Term.Debt_Total.Equity.. (B = 0.267, SE = 0.028, p < .001), ROA (B = 0.578, SE = 0.020, p < .001), log_R.D.expense (B = 0.110, SE = 0.045, p = .015), log_Foreign.sales.to.total.sales (B = 0.156, SE = 0.046, p = .001), and Dividend (B = 0.157, SE = 0.057, p = .006). The use of foreign currency derivatives was significant (B = -0.195, SE = 0.054, p < .001), indicating firms using these derivatives tend to have a lower Market to Book Value per Share.

Term	B	std.error	F	df	p
(Intercept)	2.758	0.140	19.676	32.284	0.000
Use.of.foreign.currency.derivatives	-0.195	0.054	-3.641	7672.389	0.000
Ln_Total_Asset	-0.879	0.115	-7.672	4764.792	0.000
Ln_Revenue	0.543	0.112	4.851	5159.664	0.000
log_Long.Term.Debt_Total.Equity._._	0.267	0.028	9.595	7672.021	0.000
ROA._._	0.578	0.020	28.313	7385.767	0.000
log_R.D.expense	0.110	0.045	2.439	4104.346	0.015
log_Foreign.sales.to.total.sales	0.156	0.046	3.357	3456.967	0.001
Dividend	0.157	0.057	2.759	7632.620	0.006

Tobin's Q

The model for Tobin's Q also indicated a good fit with an AIC of 15389.16, BIC of 15472.59, and Log-Likelihood of -7682.58, based on 7727 observations. Significant predictors included Ln_Total_Asset (B = -0.389, SE = 0.057, p < .001), Ln_Revenue (B = 0.348, SE = 0.056, p < .001), log_Long.Term.Debt_Total.Equity.. (B = -0.084, SE = 0.013, p < .001), ROA (B = 0.226, SE = 0.010, p < .001), log_R.D.expense (B = 0.077, SE = 0.022, p = .001), log_Foreign.sales.to.total.sales (B = 0.047, SE = 0.023, p = .043), and Dividend (B = 0.068, SE = 0.028, p = .016). The use of foreign currency derivatives was significant (B = -0.075, SE = 0.026, p = .004), suggesting that firms using these derivatives tend to have a lower Tobin's Q.

Term	B	std.error	F	df	p
(Intercept)	1.981	0.055	36.236	62.552	0.000
Use.of.foreign.currency.derivatives	-0.075	0.026	-2.871	7681.339	0.004
Ln_Total_Asset	-0.389	0.057	-6.778	5140.050	0.000
Ln_Revenue	0.348	0.056	6.189	5533.782	0.000
log_Long.Term.Debt_Total.Equity._._	-0.084	0.013	-6.271	7679.738	0.000
ROA._._	0.226	0.010	22.972	7368.655	0.000
log_R.D.expense	0.077	0.022	3.423	4450.778	0.001
log_Foreign.sales.to.total.sales	0.047	0.023	2.021	3839.376	0.043
Dividend	0.068	0.028	2.411	7706.368	0.016

Yearly Models

The linear mixed-effects models were employed to examine the predictors of each value indicator for each year, incorporating both fixed and random effects to account for the hierarchical structure of the data. Now, Year and Company were not random terms anymore, since each year only contains a single observation for each company. Rather, we used Industry Sector as random term to account for industry effects. The table below shows the results for Market to Book Ratio.

Market to Book Ratio

Year	Term	B	std.error	F	df	p
2006	(Intercept)	3.130	0.150	20.934	100.681	0.000
	Use.of.foreign.currency.derivatives	-0.076	0.250	-0.305	594.995	0.761
	Ln_Total_Asset	0.014	0.232	0.060	557.706	0.952
	Ln_Revenue	0.108	0.222	0.487	547.421	0.626
	log_Long.Term.Debt_Total.Equity._._	-0.359	0.099	-3.621	591.425	0.000
	ROA._._	1.167	0.098	11.908	594.953	0.000
	log_Foreign.sales.to.total.sales	0.123	0.088	1.396	471.135	0.163
	Dividend	-0.321	0.173	-1.856	592.038	0.064
2007	(Intercept)	3.264	0.137	23.849	121.717	0.000
	Use.of.foreign.currency.derivatives	-0.157	0.251	-0.624	622.781	0.533
	Ln_Total_Asset	0.471	0.269	1.748	464.594	0.081
	Ln_Revenue	-0.418	0.262	-1.593	435.681	0.112
	log_Long.Term.Debt_Total.Equity._._	-0.048	0.100	-0.479	612.518	0.632
	ROA._._	1.139	0.101	11.235	627.835	0.000
	log_Foreign.sales.to.total.sales	0.149	0.092	1.626	296.094	0.105
	Dividend	-0.390	0.178	-2.193	603.079	0.029
2008	(Intercept)	2.077	0.130	15.938	101.402	0.000
	Use.of.foreign.currency.derivatives	-0.016	0.174	-0.091	616.977	0.928
	Ln_Total_Asset	0.073	0.225	0.325	546.526	0.745
	Ln_Revenue	0.117	0.219	0.534	522.660	0.594
	log_Long.Term.Debt_Total.Equity._._	-0.164	0.080	-2.066	616.994	0.039
	ROA._._	0.779	0.061	12.698	615.233	0.000
	log_Foreign.sales.to.total.sales	-0.015	0.071	-0.211	516.989	0.833
	Dividend	0.022	0.136	0.158	616.584	0.874
2009	(Intercept)	2.700	0.135	19.963	173.221	0.000
	Use.of.foreign.currency.derivatives	-0.249	0.161	-1.543	629.162	0.123
	Ln_Total_Asset	-0.277	0.226	-1.225	484.341	0.221

Year	Term	B	std.error	F	df	p
	Ln_Revenue	0.502	0.221	2.268	419.402	0.024
	log_Long.Term.Debt_Total.Equity._._	-0.146	0.084	-1.729	613.237	0.084
	ROA._._	0.796	0.070	11.289	627.773	0.000
	log_Foreign.sales.to.total.sales	0.234	0.070	3.345	393.427	0.001
	Dividend	-0.071	0.137	-0.515	622.457	0.607
2010	(Intercept)	2.772	0.148	18.793	169.889	0.000
	Use.of.foreign.currency.derivatives	-0.310	0.178	-1.745	654.750	0.082
	Ln_Total_Asset	-0.166	0.272	-0.608	474.262	0.544
	Ln_Revenue	0.224	0.276	0.812	405.743	0.417
	log_Long.Term.Debt_Total.Equity._._	-0.031	0.089	-0.349	647.035	0.728
	ROA._._	1.038	0.086	12.008	656.223	0.000
	log_Foreign.sales.to.total.sales	0.153	0.079	1.942	420.653	0.053
	Dividend	0.016	0.155	0.105	649.499	0.916
2011	(Intercept)	2.531	0.156	16.251	166.939	0.000
	Use.of.foreign.currency.derivatives	-0.018	0.182	-0.100	666.938	0.920
	Ln_Total_Asset	-0.169	0.266	-0.636	537.883	0.525
	Ln_Revenue	0.181	0.260	0.695	504.384	0.487
	log_Long.Term.Debt_Total.Equity._._	-0.072	0.092	-0.784	664.399	0.433
	ROA._._	1.081	0.093	11.685	664.825	0.000
	log_Foreign.sales.to.total.sales	0.018	0.083	0.221	486.971	0.825
	Dividend	-0.162	0.162	-1.001	665.096	0.317
2012	(Intercept)	2.749	0.144	19.155	185.384	0.000
	Use.of.foreign.currency.derivatives	-0.209	0.160	-1.308	654.856	0.191
	Ln_Total_Asset	0.276	0.250	1.105	498.005	0.270
	Ln_Revenue	-0.216	0.254	-0.849	457.482	0.396
	log_Long.Term.Debt_Total.Equity._._	0.023	0.084	0.277	653.862	0.782
	ROA._._	1.106	0.078	14.098	648.174	0.000
	log_Foreign.sales.to.total.sales	0.024	0.075	0.314	479.945	0.753
	Dividend	-0.196	0.144	-1.361	654.676	0.174
2013	(Intercept)	3.367	0.173	19.499	146.238	0.000
	Use.of.foreign.currency.derivatives	-0.387	0.184	-2.101	665.801	0.036
	Ln_Total_Asset	0.615	0.292	2.103	521.693	0.036
	Ln_Revenue	-0.598	0.297	-2.011	479.110	0.045
	log_Long.Term.Debt_Total.Equity._._	-0.063	0.102	-0.617	665.849	0.537
	ROA._._	1.242	0.101	12.285	660.956	0.000
	log_Foreign.sales.to.total.sales	-0.054	0.088	-0.611	522.717	0.541
	Dividend	-0.146	0.167	-0.873	665.994	0.383
2014	(Intercept)	3.213	0.182	17.678	132.636	0.000
	Use.of.foreign.currency.derivatives	0.004	0.187	0.019	661.868	0.985
	Ln_Total_Asset	0.313	0.279	1.122	547.844	0.262
	Ln_Revenue	-0.308	0.284	-1.083	517.648	0.279
	log_Long.Term.Debt_Total.Equity._._	0.046	0.095	0.485	662.471	0.628
	ROA._._	1.078	0.101	10.723	658.848	0.000
	log_Foreign.sales.to.total.sales	0.088	0.090	0.981	572.477	0.327
	Dividend	-0.051	0.168	-0.306	662.295	0.760
2015	(Intercept)	3.015	0.175	17.264	141.566	0.000
	Use.of.foreign.currency.derivatives	-0.092	0.178	-0.516	646.407	0.606
	Ln_Total_Asset	0.250	0.300	0.833	492.174	0.405
	Ln_Revenue	-0.066	0.308	-0.213	474.767	0.831
	log_Long.Term.Debt_Total.Equity._._	0.153	0.094	1.633	648.774	0.103
	ROA._._	1.034	0.096	10.830	650.755	0.000
	log_Foreign.sales.to.total.sales	0.076	0.084	0.905	571.829	0.366
	Dividend	0.017	0.167	0.101	650.856	0.919
2016	(Intercept)	3.346	0.180	18.620	149.552	0.000

Year	Term	B	std.error	F	df	p
	Use.of.foreign.currency.derivatives	-0.298	0.184	-1.615	657.542	0.107
	Ln_Total_Asset	0.063	0.306	0.205	423.331	0.837
	Ln_Revenue	0.031	0.317	0.098	400.547	0.922
	log_Long.Term.Debt_Total.Equity._._	0.107	0.096	1.113	657.000	0.266
	ROA._._	1.015	0.088	11.490	656.062	0.000
	log_Foreign.sales.to.total.sales	0.207	0.090	2.295	507.067	0.022
	Dividend	0.118	0.175	0.675	657.462	0.500
	(Intercept)	3.425	0.204	16.754	119.800	0.000
	Use.of.foreign.currency.derivatives	-0.239	0.204	-1.176	648.446	0.240
	Ln_Total_Asset	-0.451	0.331	-1.362	525.477	0.174
2017	Ln_Revenue	0.595	0.343	1.738	491.832	0.083
	log_Long.Term.Debt_Total.Equity._._	0.167	0.101	1.649	644.114	0.100
	ROA._._	1.180	0.103	11.462	650.099	0.000
	log_Foreign.sales.to.total.sales	0.376	0.099	3.788	570.842	0.000
	Dividend	0.082	0.191	0.427	648.391	0.670
	(Intercept)	2.956	0.195	15.129	142.192	0.000
	Use.of.foreign.currency.derivatives	-0.277	0.200	-1.382	659.925	0.167
	Ln_Total_Asset	0.081	0.289	0.279	565.321	0.780
2018	Ln_Revenue	0.111	0.288	0.386	553.393	0.700
	log_Long.Term.Debt_Total.Equity._._	-0.008	0.099	-0.081	650.317	0.935
	ROA._._	1.184	0.096	12.347	653.843	0.000
	log_Foreign.sales.to.total.sales	0.246	0.096	2.571	586.878	0.010
	Dividend	-0.062	0.183	-0.338	658.906	0.735
	(Intercept)	3.318	0.188	17.683	141.267	0.000
	Use.of.foreign.currency.derivatives	-0.139	0.195	-0.712	636.807	0.477
	Ln_Total_Asset	0.296	0.285	1.036	545.097	0.300
2019	Ln_Revenue	-0.338	0.293	-1.153	543.615	0.249
	log_Long.Term.Debt_Total.Equity._._	0.071	0.097	0.733	633.347	0.464
	ROA._._	1.453	0.104	13.980	635.111	0.000
	log_Foreign.sales.to.total.sales	0.281	0.096	2.927	532.992	0.004
	Dividend	-0.082	0.184	-0.444	636.437	0.657
	(Intercept)	3.556	0.217	16.412	138.964	0.000
	Use.of.foreign.currency.derivatives	0.070	0.235	0.297	609.885	0.767
	Ln_Total_Asset	0.017	0.354	0.049	451.501	0.961
2020	Ln_Revenue	0.097	0.371	0.261	440.126	0.794
	log_Long.Term.Debt_Total.Equity._._	0.108	0.120	0.893	609.963	0.372
	ROA._._	1.018	0.109	9.360	609.955	0.000
	log_Foreign.sales.to.total.sales	0.205	0.114	1.807	487.757	0.071
	Dividend	-0.177	0.217	-0.817	609.744	0.414
	(Intercept)	3.448	0.219	15.749	113.650	0.000
	Use.of.foreign.currency.derivatives	-0.246	0.248	-0.996	608.050	0.320
	Ln_Total_Asset	0.269	0.411	0.655	368.909	0.513
2021	Ln_Revenue	0.085	0.431	0.198	355.564	0.843
	log_Long.Term.Debt_Total.Equity._._	0.163	0.128	1.269	608.583	0.205
	ROA._._	0.755	0.111	6.784	608.854	0.000
	log_Foreign.sales.to.total.sales	0.242	0.122	1.980	460.777	0.048
	Dividend	-0.240	0.232	-1.034	608.437	0.302
	(Intercept)	2.789	0.187	14.948	128.041	0.000
	Use.of.foreign.currency.derivatives	-0.029	0.212	-0.137	623.861	0.891
	Ln_Total_Asset	0.127	0.350	0.363	417.340	0.717
2022	Ln_Revenue	0.068	0.366	0.186	404.748	0.853
	log_Long.Term.Debt_Total.Equity._._	0.175	0.106	1.639	624.999	0.102
	ROA._._	1.055	0.094	11.280	624.961	0.000
	log_Foreign.sales.to.total.sales	0.320	0.102	3.130	499.267	0.002

Year	Term	B	std.error	F	df	p
	Dividend	0.009	0.194	0.045	624.774	0.964
2023	(Intercept)	3.216	0.230	13.966	124.081	0.000
	Use.of.foreign.currency.derivatives	0.048	0.247	0.194	476.930	0.846
	Ln_Total_Asset	-0.674	0.410	-1.644	365.527	0.101
	Ln_Revenue	0.809	0.420	1.928	363.764	0.055
	log_Long.Term.Debt_Total.Equity._._	0.030	0.125	0.238	476.985	0.812
	ROA._._	1.267	0.122	10.362	475.960	0.000
	log_Foreign.sales.to.total.sales	0.181	0.129	1.406	414.907	0.160
	Dividend	-0.146	0.244	-0.597	475.656	0.551

Regarding the variable Use.of.foreign.currency.derivatives, significant results were observed in 2013 (B = -0.387, SE = 0.184, p = .036), indicating that the use of foreign currency derivatives was negatively associated with the Market to Book Ratio in that year. However, for other years, this variable did not show significant effects, suggesting that the impact of using foreign currency derivatives on the Market to Book Ratio may be context-dependent and vary across different time periods. This highlights the need for further investigation into the conditions under which foreign currency derivatives use influences firm valuation.

Market to Book Value per Share

This table presents the results for Market to Book Value per Share.

Year	Term	B	std.error	F	df	p
2006	(Intercept)	2.886	0.133	21.737	120.608	0.000
	Use.of.foreign.currency.derivatives	-0.064	0.232	-0.275	596.363	0.783
	Ln_Total_Asset	-0.125	0.216	-0.578	547.604	0.563
	Ln_Revenue	0.089	0.206	0.434	536.930	0.665
	log_Long.Term.Debt_Total.Equity._._	-0.180	0.092	-1.966	587.251	0.050
	ROA._._	0.925	0.091	10.188	596.689	0.000
	log_Foreign.sales.to.total.sales	0.180	0.082	2.203	432.711	0.028
	Dividend	-0.950	0.161	-5.902	590.661	0.000
2007	(Intercept)	2.892	0.128	22.649	115.329	0.000
	Use.of.foreign.currency.derivatives	-0.193	0.228	-0.849	624.819	0.396
	Ln_Total_Asset	0.038	0.246	0.153	476.088	0.878
	Ln_Revenue	-0.128	0.240	-0.533	447.371	0.595
	log_Long.Term.Debt_Total.Equity._._	-0.008	0.090	-0.088	615.709	0.930
	ROA._._	0.877	0.092	9.546	628.696	0.000
	log_Foreign.sales.to.total.sales	0.178	0.084	2.112	328.676	0.035
	Dividend	-0.843	0.162	-5.216	609.087	0.000
2008	(Intercept)	1.789	0.106	16.903	109.536	0.000
	Use.of.foreign.currency.derivatives	-0.066	0.147	-0.450	614.325	0.653
	Ln_Total_Asset	-0.084	0.188	-0.448	524.649	0.654
	Ln_Revenue	0.184	0.183	1.006	497.150	0.315
	log_Long.Term.Debt_Total.Equity._._	-0.141	0.067	-2.104	614.459	0.036
	ROA._._	0.550	0.052	10.604	614.491	0.000

Year	Term	B	std.error	F	df	p
	log_Foreign.sales.to.total.sales	0.053	0.059	0.889	475.718	0.374
	Dividend	-0.296	0.115	-2.585	613.561	0.010
2009	(Intercept)	2.392	0.126	18.986	184.408	0.000
	Use.of.foreign.currency.derivatives	-0.257	0.152	-1.695	626.642	0.091
	Ln_Total_Asset	-0.297	0.212	-1.401	482.300	0.162
	Ln_Revenue	0.460	0.208	2.216	417.949	0.027
	log_Long.Term.Debt_Total.Equity._._	-0.203	0.079	-2.560	609.877	0.011
	ROA._._	0.606	0.066	9.143	624.763	0.000
	log_Foreign.sales.to.total.sales	0.227	0.065	3.470	380.772	0.001
	Dividend	-0.416	0.129	-3.214	619.732	0.001
2010	(Intercept)	2.468	0.136	18.092	188.125	0.000
	Use.of.foreign.currency.derivatives	-0.275	0.163	-1.681	653.327	0.093
	Ln_Total_Asset	-0.315	0.250	-1.261	495.280	0.208
	Ln_Revenue	0.289	0.254	1.139	431.012	0.255
	log_Long.Term.Debt_Total.Equity._._	-0.069	0.082	-0.841	646.862	0.401
	ROA._._	0.848	0.079	10.718	654.261	0.000
	log_Foreign.sales.to.total.sales	0.140	0.072	1.943	448.419	0.053
	Dividend	-0.348	0.142	-2.441	649.326	0.015
2011	(Intercept)	2.321	0.145	16.050	166.780	0.000
	Use.of.foreign.currency.derivatives	-0.084	0.169	-0.496	665.901	0.620
	Ln_Total_Asset	-0.311	0.246	-1.266	534.338	0.206
	Ln_Revenue	0.324	0.240	1.350	498.691	0.178
	log_Long.Term.Debt_Total.Equity._._	-0.116	0.084	-1.374	663.240	0.170
	ROA._._	0.837	0.086	9.764	664.030	0.000
	log_Foreign.sales.to.total.sales	0.059	0.076	0.771	476.099	0.441
	Dividend	-0.473	0.150	-3.158	663.919	0.002
2012	(Intercept)	2.564	0.141	18.126	179.498	0.000
	Use.of.foreign.currency.derivatives	-0.236	0.154	-1.535	654.957	0.125
	Ln_Total_Asset	0.142	0.242	0.589	514.517	0.556
	Ln_Revenue	-0.156	0.246	-0.636	475.303	0.525
	log_Long.Term.Debt_Total.Equity._._	0.027	0.080	0.334	654.641	0.738
	ROA._._	0.909	0.075	12.044	647.315	0.000
	log_Foreign.sales.to.total.sales	0.032	0.073	0.438	515.470	0.662
	Dividend	-0.473	0.139	-3.391	654.972	0.001
2013	(Intercept)	3.117	0.156	19.990	152.810	0.000
	Use.of.foreign.currency.derivatives	-0.367	0.169	-2.176	664.999	0.030
	Ln_Total_Asset	0.048	0.277	0.174	494.122	0.862
	Ln_Revenue	-0.079	0.282	-0.282	449.630	0.778
	log_Long.Term.Debt_Total.Equity._._	-0.032	0.093	-0.344	664.746	0.731
	ROA._._	1.041	0.092	11.258	661.208	0.000
	log_Foreign.sales.to.total.sales	0.004	0.081	0.047	491.756	0.963
	Dividend	-0.493	0.153	-3.215	664.967	0.001
2014	(Intercept)	2.976	0.164	18.095	135.105	0.000
	Use.of.foreign.currency.derivatives	-0.110	0.171	-0.644	659.533	0.520
	Ln_Total_Asset	0.214	0.253	0.844	535.559	0.399

Year	Term	B	std.error	F	df	p
	Ln_Revenue	-0.287	0.258	-1.115	504.175	0.265
	log_Long.Term.Debt_Total.Equity._._	0.055	0.086	0.638	659.551	0.524
	ROA._._	0.882	0.092	9.601	657.130	0.000
	log_Foreign.sales.to.total.sales	0.104	0.082	1.276	555.471	0.202
	Dividend	-0.279	0.155	-1.802	659.736	0.072
2015	(Intercept)	2.883	0.158	18.226	145.767	0.000
	Use.of.foreign.currency.derivatives	-0.138	0.163	-0.844	647.988	0.399
	Ln_Total_Asset	0.128	0.275	0.468	478.058	0.640
	Ln_Revenue	0.009	0.282	0.032	458.784	0.975
	log_Long.Term.Debt_Total.Equity._._	0.084	0.086	0.977	649.399	0.329
	ROA._._	0.932	0.087	10.766	650.994	0.000
	log_Foreign.sales.to.total.sales	0.094	0.077	1.220	554.790	0.223
	Dividend	-0.297	0.154	-1.934	650.975	0.054
2016	(Intercept)	3.242	0.161	20.181	151.014	0.000
	Use.of.foreign.currency.derivatives	-0.361	0.167	-2.160	655.969	0.031
	Ln_Total_Asset	0.115	0.276	0.419	403.522	0.676
	Ln_Revenue	0.030	0.285	0.105	382.119	0.916
	log_Long.Term.Debt_Total.Equity._._	0.017	0.087	0.198	655.596	0.843
	ROA._._	0.919	0.080	11.496	652.165	0.000
	log_Foreign.sales.to.total.sales	0.202	0.081	2.482	477.642	0.013
	Dividend	-0.242	0.158	-1.526	655.783	0.127
2017	(Intercept)	3.278	0.187	17.529	122.057	0.000
	Use.of.foreign.currency.derivatives	-0.232	0.187	-1.241	645.992	0.215
	Ln_Total_Asset	-0.439	0.302	-1.451	519.419	0.147
	Ln_Revenue	0.582	0.313	1.858	484.768	0.064
	log_Long.Term.Debt_Total.Equity._._	0.135	0.093	1.441	642.677	0.150
	ROA._._	1.037	0.095	10.964	647.607	0.000
	log_Foreign.sales.to.total.sales	0.323	0.091	3.543	565.387	0.000
	Dividend	-0.200	0.176	-1.136	645.073	0.256
2018	(Intercept)	2.907	0.178	16.330	146.734	0.000
	Use.of.foreign.currency.derivatives	-0.401	0.183	-2.188	656.915	0.029
	Ln_Total_Asset	0.141	0.265	0.532	561.839	0.595
	Ln_Revenue	0.021	0.265	0.080	548.518	0.936
	log_Long.Term.Debt_Total.Equity._._	-0.047	0.091	-0.515	648.674	0.607
	ROA._._	1.167	0.089	13.156	652.878	0.000
	log_Foreign.sales.to.total.sales	0.217	0.087	2.483	578.816	0.013
	Dividend	-0.265	0.169	-1.572	655.605	0.116
2019	(Intercept)	3.192	0.178	17.927	138.505	0.000
	Use.of.foreign.currency.derivatives	-0.139	0.182	-0.763	632.393	0.446
	Ln_Total_Asset	0.194	0.266	0.730	549.922	0.466
	Ln_Revenue	-0.266	0.274	-0.971	546.845	0.332
	log_Long.Term.Debt_Total.Equity._._	0.134	0.090	1.487	631.333	0.138
	ROA._._	1.380	0.097	14.245	630.250	0.000
	log_Foreign.sales.to.total.sales	0.213	0.090	2.374	547.185	0.018
	Dividend	-0.290	0.173	-1.681	631.647	0.093

Year	Term	B	std.error	F	df	p
2020	(Intercept)	3.449	0.208	16.591	137.675	0.000
	Use.of.foreign.currency.derivatives	0.019	0.222	0.086	603.985	0.931
	Ln_Total_Asset	-0.126	0.337	-0.373	454.901	0.709
	Ln_Revenue	0.238	0.352	0.677	442.790	0.499
	log_Long.Term.Debt_Total.Equity._._	0.107	0.114	0.938	603.779	0.349
	ROA._._	0.913	0.103	8.875	603.822	0.000
	log_Foreign.sales.to.total.sales	0.173	0.108	1.606	501.149	0.109
	Dividend	-0.326	0.206	-1.584	603.302	0.114
2021	(Intercept)	3.270	0.200	16.310	125.151	0.000
	Use.of.foreign.currency.derivatives	-0.139	0.229	-0.605	597.977	0.545
	Ln_Total_Asset	0.238	0.376	0.632	359.187	0.527
	Ln_Revenue	0.089	0.394	0.226	350.130	0.821
	log_Long.Term.Debt_Total.Equity._._	0.052	0.118	0.443	598.031	0.658
	ROA._._	0.688	0.103	6.709	598.971	0.000
	log_Foreign.sales.to.total.sales	0.239	0.113	2.119	445.753	0.035
	Dividend	-0.264	0.216	-1.222	598.847	0.222
2022	(Intercept)	2.692	0.182	14.827	126.458	0.000
	Use.of.foreign.currency.derivatives	-0.032	0.201	-0.160	621.861	0.873
	Ln_Total_Asset	0.134	0.335	0.401	434.791	0.689
	Ln_Revenue	0.046	0.351	0.131	420.878	0.896
	log_Long.Term.Debt_Total.Equity._._	0.157	0.101	1.550	621.778	0.122
	ROA._._	0.977	0.089	10.946	621.911	0.000
	log_Foreign.sales.to.total.sales	0.322	0.098	3.287	523.206	0.001
	Dividend	0.008	0.184	0.046	621.306	0.964
2023	(Intercept)	3.000	0.219	13.685	130.235	0.000
	Use.of.foreign.currency.derivatives	0.039	0.234	0.169	473.000	0.866
	Ln_Total_Asset	-0.563	0.388	-1.451	361.814	0.148
	Ln_Revenue	0.674	0.397	1.696	359.452	0.091
	log_Long.Term.Debt_Total.Equity._._	0.056	0.118	0.475	472.999	0.635
	ROA._._	1.198	0.117	10.204	472.136	0.000
	log_Foreign.sales.to.total.sales	0.243	0.122	1.995	415.125	0.047
	Dividend	0.062	0.233	0.267	471.715	0.790

The variable Use.of.foreign.currency.derivatives was not consistently significant across the years. It only showed a significant negative effect in 2013 (B = -0.367, SE = 0.169, p = .030), 2016 (B = -0.361, SE = 0.167, p = .031), and 2018 (B = -0.401, SE = 0.183, p = .029). This suggests that the use of foreign currency derivatives might not have a uniform impact on Market to Book Value per Share, and its effects could be context-dependent or influenced by other external factors during those years.

Tobin's Q

Year	Term	B	std.error	F	df	p
2006	(Intercept)	2.115	0.075	28.110	114.334	0.000
	Use.of.foreign.currency.derivatives	-0.124	0.129	-0.959	583.843	0.338
	Ln_Total_Asset	0.116	0.121	0.955	537.348	0.340
	Ln_Revenue	-0.061	0.115	-0.531	531.874	0.595
	log_Long.Term.Debt_Total.Equity._._	-0.433	0.051	-8.511	576.140	0.000
	ROA._._	0.482	0.051	9.522	583.852	0.000
	log_Foreign.sales.to.total.sales	0.097	0.046	2.106	426.992	0.036
	Dividend	-0.227	0.091	-2.490	574.999	0.013
2007	(Intercept)	2.097	0.069	30.593	121.579	0.000
	Use.of.foreign.currency.derivatives	-0.072	0.129	-0.558	609.607	0.577
	Ln_Total_Asset	0.167	0.138	1.209	443.146	0.227
	Ln_Revenue	-0.161	0.135	-1.192	414.081	0.234
	log_Long.Term.Debt_Total.Equity._._	-0.390	0.051	-7.635	595.915	0.000
	ROA._._	0.423	0.053	7.967	614.215	0.000
	log_Foreign.sales.to.total.sales	0.040	0.046	0.873	248.397	0.384
	Dividend	-0.139	0.092	-1.513	574.363	0.131
2008	(Intercept)	1.703	0.063	27.018	124.854	0.000
	Use.of.foreign.currency.derivatives	-0.092	0.097	-0.951	607.269	0.342
	Ln_Total_Asset	0.084	0.122	0.690	456.967	0.491
	Ln_Revenue	-0.006	0.118	-0.049	426.595	0.961
	log_Long.Term.Debt_Total.Equity._._	-0.282	0.044	-6.357	607.445	0.000
	ROA._._	0.374	0.035	10.775	613.068	0.000
	log_Foreign.sales.to.total.sales	0.060	0.038	1.571	320.285	0.117
	Dividend	-0.069	0.076	-0.904	604.000	0.366
2009	(Intercept)	1.767	0.080	22.101	138.081	0.000
	Use.of.foreign.currency.derivatives	-0.034	0.087	-0.390	635.226	0.696
	Ln_Total_Asset	0.109	0.119	0.915	569.979	0.361
	Ln_Revenue	-0.040	0.118	-0.339	515.424	0.735
	log_Long.Term.Debt_Total.Equity._._	-0.277	0.045	-6.119	634.423	0.000
	ROA._._	0.358	0.038	9.545	635.952	0.000
	log_Foreign.sales.to.total.sales	0.087	0.039	2.247	544.576	0.025
	Dividend	-0.048	0.074	-0.646	635.178	0.518
2010	(Intercept)	1.763	0.072	24.431	169.963	0.000
	Use.of.foreign.currency.derivatives	-0.081	0.087	-0.930	654.279	0.353
	Ln_Total_Asset	0.108	0.132	0.817	473.459	0.414
	Ln_Revenue	-0.051	0.134	-0.379	408.282	0.705
	log_Long.Term.Debt_Total.Equity._._	-0.313	0.044	-7.170	645.490	0.000
	ROA._._	0.370	0.042	8.770	656.340	0.000
	log_Foreign.sales.to.total.sales	0.057	0.039	1.479	400.010	0.140
	Dividend	0.035	0.076	0.463	647.704	0.644
2011	(Intercept)	1.744	0.078	22.388	148.723	0.000
	Use.of.foreign.currency.derivatives	0.008	0.091	0.084	667.927	0.933
	Ln_Total_Asset	0.006	0.132	0.049	527.669	0.961
	Ln_Revenue	0.001	0.130	0.010	487.133	0.992

Year	Term	B	std.error	F	df	p
	log_Long.Term.Debt_Total.Equity._._	-0.293	0.045	-6.458	665.088	0.000
	ROA._._	0.450	0.046	9.803	664.632	0.000
	log_Foreign.sales.to.total.sales	0.013	0.041	0.308	465.002	0.758
	Dividend	-0.107	0.080	-1.329	665.612	0.184
2012	(Intercept)	1.846	0.074	24.939	177.403	0.000
	Use.of.foreign.currency.derivatives	-0.033	0.083	-0.394	661.813	0.694
	Ln_Total_Asset	0.296	0.130	2.281	473.401	0.023
	Ln_Revenue	-0.220	0.132	-1.673	432.631	0.095
	log_Long.Term.Debt_Total.Equity._._	-0.295	0.044	-6.771	658.870	0.000
	ROA._._	0.482	0.041	11.873	655.947	0.000
	log_Foreign.sales.to.total.sales	0.030	0.039	0.755	448.641	0.451
	Dividend	-0.168	0.076	-2.226	659.547	0.026
2013	(Intercept)	2.109	0.082	25.571	130.773	0.000
	Use.of.foreign.currency.derivatives	-0.133	0.087	-1.528	664.495	0.127
	Ln_Total_Asset	0.275	0.145	1.901	505.060	0.058
	Ln_Revenue	-0.192	0.148	-1.300	462.990	0.194
	log_Long.Term.Debt_Total.Equity._._	-0.324	0.048	-6.691	664.995	0.000
	ROA._._	0.542	0.049	11.145	657.066	0.000
	log_Foreign.sales.to.total.sales	0.012	0.042	0.275	527.441	0.784
	Dividend	-0.194	0.080	-2.436	664.973	0.015
2014	(Intercept)	2.109	0.082	25.622	141.354	0.000
	Use.of.foreign.currency.derivatives	-0.137	0.088	-1.558	663.922	0.120
	Ln_Total_Asset	0.053	0.143	0.370	476.743	0.712
	Ln_Revenue	0.019	0.146	0.130	444.305	0.897
	log_Long.Term.Debt_Total.Equity._._	-0.265	0.045	-5.914	663.308	0.000
	ROA._._	0.461	0.047	9.785	661.861	0.000
	log_Foreign.sales.to.total.sales	0.087	0.042	2.064	525.317	0.040
	Dividend	-0.099	0.080	-1.235	664.502	0.217
2015	(Intercept)	2.014	0.085	23.678	126.860	0.000
	Use.of.foreign.currency.derivatives	-0.081	0.085	-0.947	655.278	0.344
	Ln_Total_Asset	0.079	0.148	0.533	497.073	0.595
	Ln_Revenue	0.059	0.152	0.388	475.695	0.698
	log_Long.Term.Debt_Total.Equity._._	-0.215	0.045	-4.801	653.212	0.000
	ROA._._	0.463	0.045	10.189	659.917	0.000
	log_Foreign.sales.to.total.sales	0.050	0.041	1.231	583.425	0.219
	Dividend	-0.067	0.081	-0.836	659.831	0.403
2016	(Intercept)	2.112	0.082	25.604	145.743	0.000
	Use.of.foreign.currency.derivatives	-0.112	0.084	-1.331	657.653	0.184
	Ln_Total_Asset	0.080	0.143	0.562	432.320	0.575
	Ln_Revenue	0.001	0.148	0.004	407.454	0.997
	log_Long.Term.Debt_Total.Equity._._	-0.256	0.044	-5.861	656.808	0.000
	ROA._._	0.451	0.041	11.119	657.562	0.000
	log_Foreign.sales.to.total.sales	0.072	0.042	1.731	526.803	0.084
	Dividend	-0.062	0.080	-0.779	658.050	0.436
2017	(Intercept)	2.119	0.089	23.896	127.261	0.000

Year	Term	B	std.error	F	df	p
	Use.of.foreign.currency.derivatives	-0.141	0.087	-1.615	648.519	0.107
	Ln_Total_Asset	-0.132	0.144	-0.918	545.396	0.359
	Ln_Revenue	0.252	0.149	1.692	513.627	0.091
	log_Long.Term.Debt_Total.Equity._._	-0.256	0.044	-5.821	642.902	0.000
	ROA._._	0.449	0.044	10.138	650.095	0.000
	log_Foreign.sales.to.total.sales	0.114	0.043	2.637	592.674	0.009
	Dividend	-0.025	0.084	-0.298	649.129	0.766
2018	(Intercept)	2.030	0.094	21.687	141.649	0.000
	Use.of.foreign.currency.derivatives	-0.226	0.097	-2.323	655.877	0.020
	Ln_Total_Asset	0.041	0.141	0.288	559.807	0.773
	Ln_Revenue	0.110	0.141	0.780	547.135	0.436
	log_Long.Term.Debt_Total.Equity._._	-0.269	0.048	-5.626	644.972	0.000
	ROA._._	0.470	0.048	9.738	651.718	0.000
	log_Foreign.sales.to.total.sales	0.066	0.047	1.395	579.652	0.164
	Dividend	-0.046	0.089	-0.517	655.403	0.605
2019	(Intercept)	2.122	0.085	25.100	132.182	0.000
	Use.of.foreign.currency.derivatives	-0.154	0.084	-1.834	637.424	0.067
	Ln_Total_Asset	0.146	0.124	1.178	571.604	0.239
	Ln_Revenue	-0.085	0.127	-0.665	566.731	0.507
	log_Long.Term.Debt_Total.Equity._._	-0.212	0.041	-5.109	638.996	0.000
	ROA._._	0.614	0.043	14.208	634.149	0.000
	log_Foreign.sales.to.total.sales	0.102	0.042	2.408	576.227	0.016
	Dividend	-0.093	0.080	-1.151	637.131	0.250
2020	(Intercept)	2.130	0.094	22.708	126.254	0.000
	Use.of.foreign.currency.derivatives	-0.069	0.100	-0.687	612.982	0.492
	Ln_Total_Asset	0.059	0.152	0.386	448.651	0.700
	Ln_Revenue	0.019	0.159	0.117	430.738	0.907
	log_Long.Term.Debt_Total.Equity._._	-0.145	0.051	-2.850	612.696	0.005
	ROA._._	0.401	0.044	9.051	612.945	0.000
	log_Foreign.sales.to.total.sales	0.121	0.048	2.494	488.946	0.013
	Dividend	-0.085	0.094	-0.902	612.593	0.368
2021	(Intercept)	2.155	0.104	20.657	106.464	0.000
	Use.of.foreign.currency.derivatives	-0.049	0.109	-0.445	609.170	0.657
	Ln_Total_Asset	0.094	0.185	0.509	413.157	0.611
	Ln_Revenue	0.054	0.194	0.279	396.462	0.780
	log_Long.Term.Debt_Total.Equity._._	-0.198	0.056	-3.523	608.236	0.000
	ROA._._	0.313	0.048	6.475	607.504	0.000
	log_Foreign.sales.to.total.sales	0.138	0.054	2.549	538.937	0.011
	Dividend	-0.094	0.103	-0.907	605.846	0.365
2022	(Intercept)	1.958	0.092	21.191	132.452	0.000
	Use.of.foreign.currency.derivatives	-0.084	0.102	-0.818	626.906	0.413
	Ln_Total_Asset	0.255	0.170	1.504	445.336	0.133
	Ln_Revenue	-0.157	0.178	-0.881	431.238	0.379
	log_Long.Term.Debt_Total.Equity._._	-0.196	0.052	-3.771	626.998	0.000
	ROA._._	0.445	0.045	9.940	626.991	0.000

Year	Term	B	std.error	F	df	p
	log_Foreign.sales.to.total.sales	0.177	0.049	3.595	534.968	0.000
	Dividend	-0.033	0.094	-0.350	626.533	0.727
2023	(Intercept)	2.144	0.102	20.988	121.017	0.000
	Use.of.foreign.currency.derivatives	-0.092	0.111	-0.825	474.911	0.410
	Ln_Total_Asset	-0.007	0.184	-0.039	335.513	0.969
	Ln_Revenue	0.159	0.190	0.838	334.807	0.402
	log_Long.Term.Debt_Total.Equity._._	-0.288	0.057	-5.080	474.915	0.000
	ROA._._	0.552	0.055	10.126	474.804	0.000
	log_Foreign.sales.to.total.sales	0.151	0.058	2.593	393.076	0.010
	Dividend	-0.196	0.111	-1.765	474.877	0.078

Across the years, the analysis of Tobin's Q revealed several consistent findings. Most notably, the use of foreign currency derivatives did not significantly impact Tobin's Q in most years, suggesting that their usage generally does not play a critical role in firm valuation as measured by Tobin's Q. However, it is noteworthy that in 2018, the use of foreign currency derivatives had a significant negative impact on Tobin's Q (B = -0.226, SE = 0.097, p = .020). This indicates that in that specific year, firms using foreign currency derivatives were associated with lower valuations. Additionally, variables such as Return on Assets (ROA) and log_Long.Term.Debt_Total.Equity consistently showed significant effects. ROA was positively associated with Tobin's Q across all years, indicating that higher profitability leads to higher firm valuation. Conversely, log_Long.Term.Debt_Total.Equity was negatively associated with Tobin's Q, highlighting that higher long-term debt relative to total equity tends to lower firm valuation. Other variables like log_Foreign.sales.to.total.sales and Dividend showed sporadic significance, indicating that their impact on firm valuation might be context-dependent or influenced by other market factors.

Logit Model

The results of the logit mixed model evaluating the predictors of the use of foreign currency derivatives are summarized as follows. The model fit indices indicate an adequate fit to the data with an AIC of 4377.47, a BIC of 4447.26, a Log-Likelihood of -2178.73, and a Deviance of 2845.72, based on 7936 observations.

Term	B	std.error	F	p
(Intercept)	-2.535	0.311	-8.160	0.000
Ln_Total_Asset	2.275	0.400	5.686	0.000
Ln_Revenue	1.010	0.408	2.473	0.013
log_Long.Term.Debt_Total.Equity._._	0.139	0.090	1.551	0.121
ROA._._	-0.121	0.070	-1.727	0.084
R.D.expense	0.119	0.106	1.118	0.263
log_Foreign.sales.to.total.sales	0.444	0.147	3.024	0.002
Dividend	-0.099	0.191	-0.518	0.604

Several predictors were found to be statistically significant. The natural logarithm of total assets (Ln_Total_Asset) emerged as a significant positive predictor (B = 2.275, SE = 0.400, p < .001), indicating that larger firms are more likely to use foreign currency derivatives. Similarly, the natural logarithm of revenue (Ln_Revenue) was also a significant positive predictor (B = 1.010, SE = 0.408, p = .013), suggesting that firms with higher revenues are more inclined to use derivatives.

Another significant predictor was the natural logarithm of foreign sales to total sales (log_Foreign.sales.to.total.sales), which also had a positive effect (B = 0.444, SE = 0.147, p = .002). This implies that firms with a higher proportion of foreign sales are more likely to engage in the use of foreign currency derivatives.

While the return on assets (ROA) showed a negative effect (B = -0.121, SE = 0.070), it was not statistically significant at the conventional levels (p = .084). The natural logarithm of long-term debt to total equity (log_Long.Term.Debt_Total.Equity..), research and development expense (R.D.expense), and dividend did not show significant effects on the likelihood of using derivatives (p > .05).