

## **The Variability of Earnings Across Foreign Currency Translation Methodologies: An Empirical Comparison**

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### **Abstract**

*This paper compares the variability of reported earnings resulting from eight foreign currency translation methodologies. The purpose of the study is to empirically identify significant differences in variability across these methodologies. The current rate method with non-deferral of translation gains and losses results in the highest average variability of earnings, and price parity methodologies result in lower variability than exchange rate methodologies as reflected by the average coefficients of variation of the study companies. However, results are highly firm specific. Some previous perceptions about variability of earnings and the effect of deferral of gains and losses are found to be erroneous, while others are confirmed.*

### **I. Introduction and Purpose**

Reported earnings variability is an indicator of the degree of risk associated with the earnings series. Material differences in variability of subsidiary earnings across translation methodologies does matter to assessment of earnings risk. Managers can be expected to prefer that their companies be perceived as less risky rather than more risky. Companies with significant foreign operations could therefore be expected to prefer translation methodologies that result in lower variability of translated subsidiary earnings which would result in lower variability of consolidated earnings. Accounting policy makers, managers, and analysts prefer meaningful accounting information to "noise." If one translation methodology results in greater variability of earnings than another, either one methodology's earnings stream contains some noise, or one methodology's earnings stream does not reflect as much useful information as it might. Accordingly, the purpose of this paper is to empirically identify significant differences in variability of earnings across foreign currency translation methodologies.

### **II. Literature Review**

Little empirical research has been done to describe differences in information content of translated financial statements when different translation methodologies are applied. The translation policy choices for GAAP, in the U.S. as well as in other countries, have always been made with virtually no empirical knowledge of just what happens to consolidated financial statements when foreign accounts are translated by different methodologies.

The foreign currency translation literature can be divided into four general categories: (1) studies which are surveys of management perceptions and studies of changes in management behavior, (2) studies of the impact of alternative translation methods on financial statements, including variability of earnings, (3) market studies, and

(4) studies which reveal preferences for translation methods by studying events such as early adoption of SFAS #52 and lobbying. Among the category (1) studies, Rodriguez (1980) surveyed 70 U.S. MNCs and found that managements were non-speculative, defensive with respect to exchange rate variations, and reluctant to report translation losses. As a result, they were willing to pay a hedging cost higher than the average exchange depreciation. Houston (1986) found that managements decreased their financial exposure hedging when adopting SFAS #52. A number of studies reflect managements' displeasure with currency translation rules. Examples are Choi et al's (1979) survey, Stanley and Block (1979a and 1979b) and Cooper et al. (1978).

Among the category (2) studies are Aggarwal (1978), Biel (1976), Teck (1976), Porter (1983), and Selling and Sorter (1983), all of which criticize accounting rules for currency translation. Aggarwal (1978) and Reckers (1978) expressed the opinion that SFAS #8 resulted in financial statements that, in one way or another, did not reflect economic reality. In a simulation study, Rupp (1982) concluded that the temporal method of SFAS #8 was extremely sensitive to the proportion of debt in the capital structure. Among the category (3) studies, Griffin and Castanias (1987) observed that managers were motivated to enter the currency futures markets to reduce the fluctuations in reported translation gains and losses. This behavior, while functional for managers, can be dysfunctional to the company since currency futures trading is costly. Bryant and Shank (1977) expected that such dysfunctional behavior would result in significant adverse market reactions. Shank et al. (1980) and Ziebart and Kim (1987) did observe various market reactions to currency translation methods. A conclusion to be drawn from category (3) studies is that accounting method does often result in an adverse market effect, although such effects are partially the result of managers' changes in behavior based on changes in accounting method.

A number of articles indicate that SFAS #8 was perceived by many, especially managers, to result in greater variability of earnings than other methodologies (Allan, 1976; Biel, 1976; Herschman, 1976; Mattlin, 1976; Merjos, 1977; Aggarwal, 1978; Porter, 1983; Selling and Sorter, 1983).

Beaver and Wolfson (1982) alleged that SFAS #8 is not likely to always result in higher volatility of earnings than SFAS #52. Duangploy's (1979) simulation showed similar non-systematic effects. Louis (2003) made an economic analysis that compared changes in firm value with the translation adjustment and observed that the translation adjustment is inversely related to an increase in value. Collins and Salatka (1993) concluded that including the translation adjustment in net income (non deferral) under SFAS #8 generated noise that made reported earnings less meaningful. But Soo and Soo (1994) concluded that there was no perceived difference in the market's valuation of the firm related to the foreign exchange adjustment between SFAS #8 and SFAS #52. Bartov (1997) found that the SFAS #52 requirements caused reported earnings to be more relevant for market valuation than SFAS #8.

Among the category (4) studies, Griffin (1983), Ayres, (1986), Berg (1987), Kelly (1985), and others indicate that large companies with low management ownership are more likely to lobby for or against a proposed change in currency translation rules than smaller companies with higher management ownership. Furthermore, managements do change their behavior based on management's perceptions of how different currency translation rules may affect financial statements.

Standard-setting bodies in the United States have required, at different times, four different translation methodologies. First the current-noncurrent method was required, then the monetary-nonmonetary method advocated by Hepworth (1956) was required by

APB Opinion No. 6 in 1965; then the temporal rate method developed by Lorensen (1972) as required in 1975 by SFAS #8; and most recently the current rate method of SFAS #52 (1981) is required. But even this newest standard is criticized widely (for example, Beaver and Wolfson, 1982). Clearly there is no closure on the foreign currency translation and consolidation problem in the United States, let alone worldwide.

### III. Methodology

The purposes of this study were achieved by taking the following steps:

(1) Forty-eight U.S. companies were selected at random from the companies included in Moody's Industrial Manuals to build a data base of pre-translation financial statements. To be eligible for inclusion in the sample, a company must have had annual financial statements available for twenty consecutive years ending in 2002. Twenty years of financial statements were necessary to accurately determine the temporal characteristics of the accounts, as described below.

(2) Before translating financial statements, it was necessary to determine the temporal characteristics of the pre-translation reported accounting numbers. This requirement has always been an enormous barrier to empirical research in currency translation. This study overcame this barrier by estimating the temporal characteristics with a specially-developed and tested estimation method. This critical step is not included in the present paper because of space restraints, but detailed background can be found in Petersen (1971), Davidson et al (1976), Parker (1977), Ketz (1977), Ketz (1978), Holt (1992), and Holt (2004).

(3) The financial statements of each of the forty-eight companies were translated annually for the ten-year period ending in 2002, a period which is representative of various relative exchange rate and price level conditions, using eight translation methodologies. Three exchange rate methodologies which encompass the history of GAAP in the United States were included as well as a price parity methodology. Including the deferral or non deferral of the translation gains and losses factor resulted in eight methodologies as follows:

M1 = CNM/NDF	M5 = CNM/DEF
M2 = TRM/NDF (SFAS #8)	M6 = TRM/DEF
M3 = CRM/NDF	M7 = CRM/DEF (SFAS #52)
M4 = PPM/NDF	M8 = PPM/DEF

Where CNM = current-noncurrent method,  
TRM = temporal rate method,  
CRM = current rate method,  
PPM = price parity method,

And NDF = non deferral of translation gains and losses,  
DEF = deferral of translation gains and losses

The monetary-nonmonetary method, once required by GAAP in the United States, was excluded, because there is little practical difference between the monetary-nonmonetary method and the temporal rate method, and because the pre-translation data needed to make the distinction was not readily available. The translations were made from U.S. dollars to British pounds to generate the post-translation earnings and total assets numbers needed to calculate post-translation return on total assets. Selecting British companies, then translating from British pounds to U.S. dollars, was not practical as it would be necessary to first recast the British financial statements into US GAAP.

(4) The specific questions addressed were:

(i) Are subsidiary reported earnings more variable under one translation methodology than under others, and are differences in variability consistent in different time periods? Differences in variability of subsidiary earnings are not necessarily systematic. Although one methodology may result in greater variability of earnings during one period than another methodology, the results might be very different in a subsequent period because of changes in the time series of exchange rates. Translation methodology choice matters--to firm managers and financial analysts to the extent that variability relates to securities prices and manager compensation, and to lenders who perceive high variability to reflect risk and instability of the firm--if it can be shown that different companies' reported earnings variabilities are affected differently by different translation methodologies. Likewise, if the differences are not consistent from period to period, it is more difficult for managers, analysts, and lenders to have a preference from among possible methodologies and to lobby for or against any particular methodology.

(ii) Does deferral of translation gains and losses reduce the variability of subsidiary reported earnings? FASB changed GAAP from SFAS #8, a non-deferral methodology, to SFAS #52, a deferral methodology, suggesting that deferral is an issue to FASB. But the literature does not answer the question as to whether deferral actually reduces variability of earnings.

(iii) What translation methodology results in the lowest variability of reported subsidiary earnings for the forty-eight sample firms taken together and at the firm level? The answer to this question is of importance to managers and others who perceive low variability of earnings as the normative criterion by which to select the best translation methodology.

(iv) Do subsidiary reported earnings under the eight translation methodologies studied, taken together, appear to converge to the reported subsidiary earnings under any one of the translation methodologies? Because short-term exchange rate changes may be random rather than informational, each of the six exchange rate methodologies studied may produce a reported earnings series that contains an element of variability that does not assist in decision making.

#### **IV. Across-Firms Variability of Earnings Effects**

The average coefficients of variation of the forty-eight companies, rank-ordered by size are shown in Table 1.

CRM results in the highest average variability of earnings and PPM the lowest among the non-deferral methodologies, as reflected by the coefficients of variation averaged for the forty-eight study companies. Likewise, CRM results in the highest average variability of earnings and PPM the lowest among the four deferral methodologies. For each of the four methods (CNM, TRM, CRM, and PPM), deferral of gains and losses clearly results in lower average of coefficients of variation than non-deferral. CRM results in the highest average coefficient of variation. PPM results in the lowest whether translation gains and losses are deferred or not deferred. For those who severely criticized SFAS #8 because of the perceived greater variability of earnings, a PPM methodology may present an agreeable alternative.

The methodologies that result in the least coefficients of variation are M8 and M4, both PPM methodologies. This result is not unexpected since the time series of price parity numbers clearly varies less than the time series of exchange rates (Holt, 1992). According to the PPP theory, the price parity time series represents an equilibrium exchange rate, that exchange rate which maintains the balance of payments in

**Table 1**  
**Average Coefficients of Variation Across Firms, 1993-2002**

<u>Methodology</u>	Average Coefficient of Variation	<u>Rank</u>
M3 (CRM/NDF)	1.504	1
M2 (TRM/NDF)	1.440	2
M7 (CRM/DEF)	1.167	3
M1 (CNM/NDF)	1.157	4
M5 (CNM/DEF)	1.054	5
M6 (TRM/DEF)	0.925	6
M4 (PPM/NDF)	0.917	7
M8 (PPM/DEF)	0.785	8

equilibrium without any net change in the international reserve (Officer, 1982). Actual exchange rates theoretically result from the pressures of international balances of payments and other market factors, but in the short term are affected by numerous disturbances. Translations based on exchange rates reflect these short-term variations which may or may not have any economic significance that needs to be reflected in translated financial statements.

#### V. Firm-Level Variability of Earnings Effects

Table II presents firm-level earnings effects, including the coefficients of variation across translation methodologies for three representative companies. These three companies were selected to exemplify the fact that the effects observed for the forty-eight companies taken together are not necessarily observed for individual companies, and that the effects may vary considerable from company to company. For all three, the coefficient of variation is less for M4 (PPM/DEF) than for the other three non-deferral methodologies and less for M8 (PPM/DEF) than for the other three deferral methodologies. M8 results in the lowest coefficient of variation of the eight methodologies for two of the three firms. M3 (CRM/NDF), which results in the highest average coefficient of the eight methodologies for the forty-eight sample companies, has the highest coefficient for only one of the three companies in Table II. This last observation indicates that conclusions that may be drawn for the forty-eight sample companies taken together are not always valid at the firm level.

Table III shows the coefficients of variations of the forty-eight companies resulting from each of the eight translation methodologies. Although it is generally true that deferral methodologies result in higher variability of reported earnings than their non-deferral counterparts, this is not true for all firms. Although M3 generally results in the highest variability of reported earnings of all the eight methodologies studied and M8 the lowest, this also is not true for all firms.

A perusal of Table III reveals the following (out of forty-eight companies) concerning coefficients of variation:

- For CNM, DEF < NDF for 31 companies
- For TRM, DEF < NDF for 39 companies
- For CRM, DEF < NDF for 43 companies

For PPM,  $DEF < NDF$  for 34 companies

These observations indicate that the differences in variability of reported earnings across methodologies, despite certain generalizations for all sample firms taken together, are not systematic and are firm specific. For example, it is possible to find firms for which all four non-deferral methodologies result in lower variability of earnings than their deferral counterparts (company 31); for which M8 results in the highest variability of all eight methodologies (company 30); and for which M2 results in the least variability of all eight methodologies (companies 8, 11, 13, and 31).

Table IV shows the variability of earnings for two five-year periods (1993-1997 and 1998-2002), as well as for the entire ten-year period. Table IV reveals that, at the firm level, the differences in variability of reported earnings across methodologies are not consistent across time periods.

As reflected in the literature, many managers criticized SFAS #8 for perceived greater variability of earnings. Such managers presumably would lobby for SFAS #52. For company 33, M2 (SFAS #8) resulted in higher variability of earnings than M7 (SFAS #52) for each of the two five-year periods and for the entire ten-year period. If the management of company 33 chose to lobby for or against the continuance of the SFAS #52 methodology, it might do so based on recalculation of its earnings variability for the previous five years using the proposed standard and use the results to predict that SFAS #8 would result in greater earnings variability. The management of company 33 might well then lobby for the continuance of SFAS #52, and do so based upon expectations that appear well-founded.

The managements of companies 15 and 47 however, after restating the first five years under the methodology of SFAS #52 would presumably believe that SFAS #52 makes matters worse by causing variability of reported earnings to be higher than under the SFAS #8 methodology. Yet the results indicate these beliefs would be ill-founded. Both companies would experience lower variability of earnings in the second five-year period (and over the entire ten-year period) under SFAS #52.

At the firm level then, it may be difficult to predict which methodologies result in higher variability of earnings than others, even when past years' earnings are restated and compared. Which methodologies result in greater variability of earnings over any given period is influenced by firm specific factors.

## **VI. Conclusions**

By way of conclusion, an attempt is made to provide answers to the four questions posed at the beginning of the paper:

(i) For the sample companies, M3 (CRM/NDF) results in the highest average variability of earnings and M2 (TRM/NDF) the second highest. At the firm level, twenty-four of forty-eight companies would have experienced higher variability of earnings under M3 than under any of the other seven methodologies. Further, seventeen companies would have experienced the highest variability under M2, and fourteen companies of the forty-eight compared had higher coefficients of variation under SFAS #52 than under SFAS #8, a result that is consistent with Beaver's and Wolfson's (1982) allegation that SFAS #8 is not likely to always result in higher volatility of earnings than SFAS #52, and is consistent as well with Duangploy's (1979) simulation which showed similar non-systematic effects.

A vast amount of translation literature deals with management concerns that SFAS #8 (M2) results in higher variability of earnings than other methodologies.

Although there is some general foundation for this concern, clearly M2 does not always result in higher variability of earnings than other methodologies for all firms. Further, although the methodology of SFAS #8 may result in higher variability of earnings for some firms over a period of several years than some other given methodology, the relationship may reverse in subsequent periods. The instability of relative variability of reported earnings across methodologies and time periods at the firm level is demonstrated dramatically by the relative variabilities of company 47 for which M2 resulted in the lowest variability in the first five-year period and the second highest in the second five-year period. In order for firm managers to intelligently lobby for or against the methodology of SFAS #8, based on perceptions of variability of earnings, it would be necessary to determine what firm specific factors would cause variability of earnings to be different under SFAS #8 than under other methodologies and to determine whether the differences would be consistent over time.

(ii) For CNM, TRM, CRM, and PPM, deferring translation gains and losses results in lower average variability of earnings. This occurs at the firm level for most firms, but certainly not for all. For twenty-four of the forty-eight sample companies, at least one of the four non-deferral methodologies resulted in higher variability of earnings than the deferral counterpart. Although it is generally true that deferral methodologies result in lower variability of reported earnings than non-deferral methodologies, there are notable exceptions at the firm level, and the effect of deferral/non-deferral on variability of reported earnings is highly firm specific.

If variability of earnings is relevant to policy makers, then the deferral issue is a major one. For example, M3, which is the methodology of SFAS #52 with non-deferral instead of deferral of gains and losses, results in higher average variability of earnings for the sample companies than M2, the methodology of SFAS #8. In fact, if the SFAS #8 methodology required deferral, and the SFAS #52 methodology had required non-deferral, SFAS #8 would have resulted in lower average variability of earnings (M6 vs M3). Although these differences are not observed for all companies, as described above, they suggest that managers who expressed concern about SFAS #8 because they preferred lower variability of reported earnings were perhaps focused on the non-deferral issue rather than the question of which exchange rate should be used to translate various accounts.

While deferral is a major policy issue, it is not the only major issue. The current study suggests that deferral may be a means of variability reduction, but this descriptive study cannot meaningfully address the issue of what variation is noise and what has economic information content.

(iii) M8 (PPM/DEF) results in the lowest average variability of earnings, and the next lowest average variability results from the use of M4 (PPM/NDF). This is not true for all companies, although most of the forty-eight companies shown on Table III had the lowest variability under M8. Among the four non-deferral methodologies, M4 (PPM/NDF) resulted in the lowest variability for thirty-four of the sample firms. Managers may see high variability of reported earnings as undesirable because they may perceive it to indicate higher risk, to result in lower market prices, and to result in lower management compensation. Some managers may therefore prefer M4 or M8 due to lower variability without reference to any other factor.

(iv) The four non-deferral methodologies, as a group, do appear to converge toward the earnings numbers generated by M4 (PPM/NDF), and the four deferral methodologies, as a group, appear to converge toward M8 (PPM/DEF). This convergence is the result of the use of PPM numbers instead of exchange rates. Exchange rates are

more variable than price parity numbers and, in the long term at least, appear to be driven substantially by relative price levels (the price parity theory). The short-term differences between the reported earnings obtained from exchange rate methods and price parity methods are caused by short-term variations in the exchange rate itself, variations which result from factors which are quite possibly of no analytical significance to individual firms which are going concerns. PPM methodologies therefore appear to eliminate much of the variability that is a substantial element of the time series of reported earnings resulting from the use of exchange rate methodologies.

## **VII. Suggestion For Future Research**

Empirical studies, other than the present study, that describe what happens when different translation methodologies are used, are rare. Considerable more descriptive research is needed, but the next major step is the testing of various translation methodologies against normative criteria. Accounting information must be useful in decision-making, yet virtually nothing is known concerning which translation methodology is best for any decision-making criterion. If the normative criterion is variability of earnings, the results of this study indicate that the best translation methodology is one based on price parity numbers instead of exchange rates. The criticisms of SFAS #8 indicate that this criterion is a major concern for many managers. However, it is not known whether the greater variability of earnings observed with exchange rate methodologies contain more information than price parity methodologies, or just noise. Future research may attempt to associate differences in variability with other measures of economic variability, to address the issue of what variation is noise and what has economic information content.

Ironically, the accounting profession has never clarified exactly what it wishes to achieve by translating foreign accounts and consolidating them with parent company numbers. Substantial arguments exist for not translating foreign accounts at all (see Holt, 2004). It is suggested that when various translation methodologies are tested against decision-making criteria, both the price parity approach and the no translation option be included in the testing.

**Table 2**  
**Firm-Level Earnings Effects and**  
**Coefficients of Variation (CV)**  
**(Millions of Pounds)**

COMPANY 15

	1993	'94	'95	'96	'97	'98	'99	'00	'01	2002	CV
M1	-35	23	42	103	136	107	103	11	218	-74	1.367
M2	77	105	70	58	66	212	80	22	24	127	.706
M3	27	39	130	23	-9	-111	340	155	166	208	1.329
M4	77	108	55	71	33	112	143	78	86	174	.445
M5	56	69	97	38	31	63	224	105	108	160	.625
M6	67	84	74	47	48	128	164	71	73	133	.444
M7	45	66	84	40	17	39	203	92	104	141	.678
M8	81	122	71	92	51	105	147	85	106	133	.296

COMPANY 33

	1993	'94	'95	'96	'97	'98	'99	'00	'01	2002	CV
M1	10	5	24	21	19	52	91	51	80	62	.724
M2	9	30	18	14	26	143	68	64	24	65	.883
M3	7	2	29	21	19	46	102	54	84	70	.778
M4	25	30	19	46	24	55	48	48	61	38	.364
M5	12	9	21	23	19	67	85	48	65	61	.666
M6	10	25	17	14	26	144	74	67	26	66	.888
M7	11	9	20	24	18	53	76	44	65	55	.642
M8	25	32	19	48	23	61	50	52	58	40	.373

COMPANY 47

	1993	'94	'95	'96	'97	'98	'99	'00	'01	2002	CV
M1	86	44	69	65	86	102	162	125	106	57	.389
M2	70	102	83	95	100	21	20	23	-80	351	1.412
M3	163	12	25	18	44	245	273	218	312	-207	1.450
M4	61	80	85	92	138	125	153	94	51	59	.370
M5	108	65	61	62	63	149	189	172	191	103	.469
M6	112	82	61	56	57	140	171	174	152	213	.463
M7	100	55	55	63	69	143	169	118	126	26	.496
M8	92	97	84	115	151	164	174	119	74	144	.289

**Table 3**  
**Coefficients of Variation**

	M1	M2	M3	M4	M5	M6	M7	M8
1	1.423	2.099	1.165	0.594	1.099	0.491	1.136	0.406
2	1.096	0.866	1.467	0.764	0.616	0.358	0.655	0.201
3.	1.476	3.283	1.393	1.859	0.881	1.181	1.359	1.358
4.	0.805	0.889	1.138	0.646	0.667	0.674	0.622	0.480
5.	0.521	0.639	0.766	0.314	0.618	0.603	0.540	0.300
6.	0.448	0.712	0.786	0.356	0.493	0.492	0.480	0.334
7.	0.873	1.499	1.328	0.549	0.658	0.733	0.602	0.497
8.	0.564	0.351	1.140	0.514	0.724	0.502	0.749	0.505
9.	1.659	3.154	1.998	1.842	2.623	2.969	2.450	1.929
10.	0.824	0.899	1.532	0.897	0.427	0.361	0.466	0.497
11.	1.696	0.520	3.115	1.119	2.034	1.428	2.730	1.265
12.	1.829	2.772	0.630	0.366	0.336	0.273	0.348	0.289
13.	1.724	0.818	2.652	1.253	1.863	1.424	2.061	1.285
14.	0.951	1.527	0.948	0.584	0.822	0.523	0.809	0.350
15.	1.367	0.706	1.329	0.445	0.625	0.444	0.678	0.296
16.	0.929	1.510	1.052	0.841	0.555	0.569	0.525	0.343
17.	1.271	1.655	1.606	1.084	1.357	1.240	1.482	1.006
18.	3.750	2.901	3.687	3.192	3.094	2.816	3.407	3.524
19.	0.668	0.905	1.001	0.343	0.532	0.532	0.481	0.372
20.	0.425	1.210	1.005	0.293	0.461	0.485	0.394	0.295
21.	0.586	0.730	0.979	0.420	0.685	0.571	0.695	0.335
22.	0.772	0.594	1.022	0.528	0.885	0.800	0.860	0.382
23.	0.372	1.627	0.938	0.511	0.283	0.247	0.293	0.309
24.	0.770	0.752	1.354	0.869	0.765	0.570	0.768	0.282
25.	0.562	0.675	0.977	0.406	0.550	0.502	0.537	0.330
26.	1.396	1.056	2.375	0.426	1.221	1.099	1.577	0.406
27.	0.903	0.511	1.315	0.435	0.738	0.475	0.801	0.340
28.	1.561	1.744	1.565	1.480	1.362	1.505	1.411	1.153
29.	0.494	1.125	1.271	0.362	0.532	0.539	0.510	0.354
30.	1.658	2.456	1.951	2.419	1.962	1.619	2.078	2.562
31.	2.029	1.433	2.951	2.226	3.331	3.201	4.608	2.555
32.	3.002	2.581	2.308	1.846	1.256	0.880	1.667	0.965
33.	0.724	0.883	0.778	0.364	0.666	0.888	0.642	0.373
34.	1.014	0.981	1.533	0.421	0.829	0.298	0.909	0.391
35.	0.899	1.896	1.297	0.568	1.102	0.788	1.108	0.600
36.	0.659	1.710	1.327	0.664	0.792	0.768	0.805	0.681
37.	0.581	0.500	0.909	0.336	0.551	0.522	0.531	0.369
38.	1.304	1.796	1.152	1.270	1.054	1.023	1.108	0.757
39.	1.483	1.887	1.853	1.471	1.433	1.400	1.894	1.540
40.	3.129	5.959	4.149	3.723	3.561	3.150	4.551	2.501
41.	1.430	2.098	1.622	1.403	1.279	1.303	1.345	1.277
42.	0.929	0.827	1.197	0.437	0.847	0.551	0.932	0.372
43.	0.941	0.784	1.165	0.729	0.890	0.761	0.916	0.660
44	0.725	0.452	1.053	0.303	0.611	0.528	0.573	0.338

45.	0.726	0.661	0.964	0.468	0.627	0.652	0.608	0.457
46.	1.084	1.133	1.382	0.808	0.974	0.620	1.107	0.766
47.	0.389	1.412	1.450	0.370	0.469	0.463	0.496	0.289
48.	1.129	1.927	1.637	0.905	0.863	0.575	0.689	0.799
AVG	1.157	1.440	1.504	0.917	1.054	0.925	1.167	0.785

**Table 4**  
**Translation Methodology Rank Orderings**  
**By Earnings Variability**

Company 15

Rank	1993-1997	1998-2002	1993-2002
1	M3	M3	M3
2	M1	M2	M1
3	M4	M1	M5
4	M5	M5	M2
5	M8	M7	M7
6	M7	M6	M4
7	M2	M4	M6
8	M6	M8	M8

Company 33

Rank	1993-1997	1998-2002	1993-2002
1	M8	M2	M6
2	M3	M6	M2
3	M4	M3	M3
4	M2	M1	M1
5	M1	M5	M5
6	M6	M7	M7
7	M7	M8	M8
8	M5	M4	M4

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Rank	1993-1997	1998-2002	1993-2002
1	M3	M3	M3
2	M4	M2	M2
3	M8	M7	M6
4	M6	M4	M5
5	M5	M8	M7
6	M7	M1	M1
7	M1	M5	M8
8	M2	M6	M4

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