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FINANCIAL ANALYSIS OF FOREIGN OPERATIONS:

THE EFFECT OF FOREIGN CURRENCY TRANSLATION

James A. Schweikart

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Financial Analysis of Foreign Operations: The Effect of Foreign Currency Translation

Project Proposal for Summer Grant

by

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Table of Contents

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by

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Project Description

Financial statement analysis of multinational corporations (MNCs) is becoming increasingly complex, due to the further globalization of MNCs and the development of a world economy. MNCs are expanding their markets overseas to become globally competitive. No longer is the international dimension of their businesses only a mere portion of their total activity.

The economic organization of Western Europe and the creation of a new market in Eastern Europe are two forces augmenting the world economy. Coupled with existing competition from the Far East, U.S. MNCs are entering world markets at an accelerated pace. This is both an opportunity and a necessity for U.S. MNCs.

This increased multinational activity raises issues about the reliability of information describing performance of foreign operations, as this segment of information represents a significant portion of total firm activity. Does the foreign information in its current translated form distort company performance (Bodenberg, 1981), or is it reliable? Should it be translated in the first place? What is the impact from foreign information, if any, on financial statement analysis?

These questions are not new. They are simply becoming more important issues. Hawkins (1965) questioned the ability to use

U.S. information to control foreign operations. Mauriel (1969) and Robbins and Stobaugh (1973) specifically identified problems using standardized reports to control foreign operations. Empirical work testing usage of information to evaluate foreign operations began with Morsicato and Radebaugh (1979) and Abdallah (1982). The former found different preferences for information at home office for performance evaluation when the information was translated versus untranslated.

Purpose of This Study

The goals of this study are to (1) determine the difference in financial evaluation of foreign operations between untranslated and translated information, (2) determine the level of usage of untranslated and translated financial information when both are available, and (3) ascertain the level of preference of financial information in its current translated form for evaluation. Performance evaluation is that of the foreign entity. The current translated form is information presented in accordance with Statement of Financial Accounting Standards No. 52 "Foreign Currency Translation," SFAS 52, (1981). The financial information will be balance sheets, income statement, cash flow, and related ratios, along with exchange rate changes.

Those in position to evaluate performance are U.S. MNC home office management, U.S. equity investors (brokerage houses which take positions on companies), and U.S. lenders (primarily banks and insurance companies). They will constitute the sample.

Since measurement of absolute preference and absolute usage of

information is difficult (Gorden, 1977), relative measures will be used. Comparisons will be made for preference of and usage of untranslated versus translated financial information for performance evaluation.

An expanded methodology is presented later.

The Essentials of Foreign Currency Translation (SFAS 52)

SFAS 52 identifies two methods of translating the financial statements of foreign operations. These are the temporal method and the current rate method. The methods are not alternatives, and the Statement explains the circumstances when the two methods are to be used.

Under the temporal method, assets are translated at the current exchange rate at balance sheet date if they are monetary items, otherwise, they are translated at the historic exchange rate at the time of their acquisition. Liabilities, since they are monetary items, are also translated at the exchange rate at balance sheet date. Stockholder equity is brought forward at the historic rate at the date of purchase of the company or issue of the stock plus or minus any changes in equity since that time. T h e s e changes include dividends and earnings. Dividends are translated at the exchange rate and the time of the dividends, and earnings are related to historical cost assets. Expenses, such as depreciation, are translated at the exchange rate of the asset being removed from the balance sheet. Current and evenly incurred revenues and expenses for the year are translated at the average rate for the year. Any amount needed to balance assets and

equities is the translation exchange rate gain or loss and is included in income.

The temporal method attempts to retain the historical cost aspect of foreign statements by translating the activities of the year as if they took place in the currency of the reporting parent. Accordingly, the method is used when the foreign entity is closely tied to the domestic reporting parent. The functional currency of the entity is said to be the currency of the parent, evidenced by a great deal of profit repatriation or the foreign entity conducting much of it business in the currency of the reporting parent (usually the U.S. dollar).

Finally, the temporal method is used, regardless of the functional currency, if the three year inflation rate is greater than 100% in the foreign country concerned. This is because the inflation is usually accompanied by a dramatic depreciation of the foreign currency. Should the otherwise appropriate current rate method be used, asset shrinkage would be unwieldy.

Under the current rate method, all assets and liabilities are translated at the current exchange rate at balance sheet date. The stockholder equity accounts are brought forward at the previous historical balances plus or minus changes such as dividends and earnings. Dividends are translated at the rate in effect at the time of the dividend, and revenues and expenses are translated at the average rate for the year. Any amount needed to balance assets and equities is the cumulative translation adjustment and is part of stockholder equity and _not_ part of income.

In the year of adoption of the current rate method, the financial statements are first translated using the temporal method, recognizing a gain or loss, and then further translated using the current rate method. The difference in the two translations provides the opening balance of the cumulative translation adjustment.

The current rate method is used when the foreign entity is autonomous from the reporting parent. This is evidenced by the foreign entity conducting its business mostly in the foreign currency. Additionally, there is reinvestment of profits in the foreign country and limited repatriation of profits to the domestic parent. Hence, the functional currency is said to be the foreign currency. Under these circumstances, the likelihood of the parent company realizing gains and losses from translation is much less than that of a closely tied branch, and, accordingly, no gain or loss is recognized in the income statement from exchange rate movements.

Illustration of the Problem

The following illustration was created from part of a case developed by Choi (1987). The amounts assigned to certain accounts have been altered for demonstrative purposes as have some of the assumptions. The illustration begins with a **foreign** operation (Exhibit I) with comparative balance sheets and income statement using U.S. Generally Accepted Accounting Principles but in the **foreign** currency.

Exhibit I
Foreign Operation
Comparative Balance Sheets and Income Statement

000's omitted

Balance Sheets		December 31	
		1989	1990
Assets			
Cash		P 20,000	P 22,000
Accounts Receivable		34,000	90,000
Inventory		40,000	30,000
Property, Plant & Equipment		100,000	100,000
Accumulated Depreciation		(20,000)	(30,000)
Total Assets		P 174,000	P 212,000
Liabilities & Equity			
Accounts Payable		P 30,000	P 50,000
Long Term Debt		44,000	52,000
Common Stock		60,000	60,000
Retained Earnings		40,000	50,000
Total Liabilities & Equity		P 174,000	P 212,000

Income Statement for year ending December 31, 1990

Sales			P 230,000
Cost of Sales:			
Beginning Inventory		P 40,000	
Purchases		100,000	
Available for Sale		140,000	
Ending Inventory		30,000	110,000
Gross Margin			P 120,000
Expenses:			
Depreciation		P 10,000	
Other		94,000	
Taxes		6,000	110,000
Net Income			P 10,000
Retained Earnings 12/31/89			40,000
Retained Earnings 12/31/90			P 50,000

The above comparative balance sheets and income statement allow the cash flow statement to be prepared, using the indirect method for simplicity (Exhibit Ia).

Exhibit Ia
Foreign Operation
Cash Flow Statement

Cash Provided from Operations
    Net Income   P 10,000
    Add Depreciation   10,000
                                     20,000
    Increase in Accounts Receivable   (56,000)
    Decrease in Inventory   10,000
    Increase in Accounts Payable   20,000
                               P (6,000)
Cash from Financing: Issue of Long Term Debt   8,000
    Increase in Cash   P   2,000

The above foreign affiliate must be translated into U.S. dollars before consolidation or before segment reporting under Statement of Financial Accounting Standards No. 14, "Financial Reporting for Segments of a Business enterprise," SFAS 14, (1976). As mentioned, there are two techniques for translation under SFAS 52, the temporal method and the current rate method. Some assumptions must be made, however, before translation can be illustrated.

Assumptions

1. The foreign operation was acquired in 1985 when the exchange rate was P1 = $.20.

2. Inventory is kept under FIFO, and existing inventories at year end were acquired in the last quarter of each year.

3. Purchases, sales and expenses were made evenly during the year.

4. Property, Plant & Equipment were acquired in 1987 when the exchange rate was P1 = $.40. Straight line depreciation was used.

5. Other relevant exchange rates against the U.S. dollar are:

    December 31, 1989   P1 = $.020
    December 31, 1990   P1 = $.006
    Average for 1990   P1 = $.014
    Fourth Quarter Average, 1989   P1 = $.240

Fourth Quarter Average, 1990   P1 = $.010

The example shows a rapidly depreciating foreign currency. This is deliberate to demonstrate the effects of currency movements on financial statements. Though the currency has lost most of its value during 1990, the three year inflation rate may be below 100%. Therefore, both the current rate and temporal methods can be available under SFAS 52.

The financial statements in Exhibit I are presented in Exhibit II after translation using the **temporal** method.

Exhibit II
Foreign Operation: Translated-Temporal Method
Comparative Balance Sheets and Income Statement

000's omitted

Balance Sheets		December 31	
		1989	1990
Assets			
Cash		$ 400	$ 132
Accounts Receivable		680	540
Inventory		960	720
Property, Plant & Equipment		4,000	4,000
Accumulated Depreciation		(800)	(1,200)
Total Assets		$ 5,240	$ 4,192
Liabilities & Equity			
Accounts Payable		$ 600	$ 300
Long Term Debt		880	312
Common Stock		1,200	1,200
Retained Earnings		2,560	2,380
Total Liabilities & Equity		$ 5,240	$ 4,192

Income Statement for year ending December 31, 1990		
Sales		$ 3,220
Cost of Sales:		
Beginning Inventory	$ 960	
Purchases	1,400	
Available for Sale	2,360	
Ending Inventory	720	1,640
Gross Margin		$ 1,580
Expenses:		
Depreciation	$ 400	
Other	1,316	
Taxes	84	1,800
Operating Income (Loss)		$ (220)
Translation **Gain**		40

```
Net Income  (Loss)                                          $ ( 180)

Retained Earnings 12/31/89                                     2,560
Retained Earnings 12/31/90                                  $ 2,380
```

The translation gain in the income statement can be calculated as follows:

```
Net Monetary Liabilities 12/31/89  P 20,000 @ .020 $ (400)
Increase in Net Monetary Assets
     During 1990                    P 30,000 @ .014     420
Expected Net Monetary Assets 12/31/90              $    20
Translated Net Monetary Assets
     12/31/90                       P 10,000 @ .006     60
Translation Gain                                   $    40
```

The gain is due to being in a net monetary liability position for most of the year with a depreciating foreign currency.

The above comparative balance sheets and income statement allow the cash flow statement to be prepared, using the indirect method for simplicity (Exhibit IIa).

<div align="center">

Exhibit IIa
Foreign Operation: Translated-Temporal Method
Cash Flow Statement

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```
Cash Provided from Operations
     Net Income  (Loss)                            $ ( 180)
     Deduct Translation Gain                         (  40)
     Add Depreciation                                  400
                                                        180
     Increase in Accounts Receivable                ( 784)
     Decrease in Inventory                             240
     Increase in Accounts Payable                      280
                                                   $ (  84)
Cash from Financing:  Issue of Long Term Debt         112
     Increase in Cash Before Translation          $    28
Translation Adjustment to Cash                      ( 296)
     Decrease in Cash                             $ ( 268)
```

SFAS 52 does not provide guidance in preparing the cash flow statement.   Guidance is provided, however, in <u>Statement of Financial Accounting Standards No. 95</u> "Statement of Cash Flows," SFAS 95, (1987). The above presentation is consistent with SFAS 95 recommendations and illustrations. The major advantage of this

format is its agreement with the untranslated format, due to exchange rate effects being removed. As an example, both show an increase in accounts payable as a source of cash. Thus, both show an increase in cash without regard to translation.

Unfortunately, the above format does not allow easy reconciliation with the changes in the translated balance sheet amounts. Furthermore, the translation adjustment to cash is not the entire translation adjustment change on the balance sheet. Nevertheless, the above format meets minimum reporting requirements under SFAS 95.

A complete reconciliation of the cash flow statement using the translated comparative balance sheet and income statement amounts with the above format is given in Appendix I. In that illustration, the exchange rate effects on the changes in asset and liability accounts affected are shown.

The same foreign operation (Exhibit I) can be translated using the **current rate** method as shown in Exhibit III. Note that the beginning translated balance of retained earnings is the same as that of the temporal method. This is required for the year of transition under SFAS 52 and done here to provide a starting point for the opening balance in the cumulative translation adjustment account.

Exhibit III
Foreign Operation: Translated-Current Rate Method
Comparative Balance sheets and Income Statement

000's omitted

Balance Sheets	December 31	
	1989	1990
Assets		
Cash	$ 400	$ 132
Accounts Receivable	680	540
Inventory	800	180
Property, Plant & Equipment	2,000	600
Accumulated Depreciation	(400)	(180)
Total Assets	$ 3,480	$ 1,272
Liabilities & Equity		
Accounts Payable	$ 600	$ 300
Long Term Debt	880	312
Common Stock	1,200	1,200
Cumulative Translation Adjustment	(1,760)	(3,240)
Retained Earnings	2,560	2,700
Total Liabilities & Equity	$ 3,480	$ 1,272

Income Statement for year ending December 31, 1990		
Sales		$ 3,220
Cost of Sales:		
Beginning Inventory	$ 800	
Purchases	1,400	
Available for Sale	2,200	
Less Translation Adjustment	480	
Ending Inventory	180	1,540
Gross Margin		$ 1,680
Expenses:		
Depreciation	$ 140	
Other	1,316	
Taxes	84	1,540
Net Income		$ 140
Retained Earnings 12/31/89		2,560
Retained Earnings 12/31/90		$ 2,700

The above comparative balance sheets and income statement
allow the cash flow statement to be prepared, using the indirect
method for simplicity (Exhibit IIIa).

Exhibit IIIa
Foreign Operation: Translated-Current Rate Method
Cash Flow Statement

Cash Provided from Operations		
Net Income	$	140
Add Depreciation		140
		280
Increase in Accounts Receivable		(784)
Decrease in Inventory		140
Increase in Accounts Payable		280
	$ (	84)
Cash from Financing: Issue of Long Term Debt		112
Increase in Cash Before Translation	$	28
Translation Adjustment to Cash		(296)
Decrease in Cash	$ (	268)

The cumulative translation adjustment can be proven as

follows:

Net Assets 12/31/89	P 100,000 @ .020	$ 2,000
Increase in Net Assets		
for the Year	P 10,000 @ .014	140
Expected Net Assets 12/31/90		$ 2,140
Translated Net Assets 12/31/90	P 110,000 @ .006	660
Translation Adjustment for 1990		$ (1,480)
Cumulative Translation Adjustment 12/31/89		(1,760)
Cumulative Translation Adjustment 12/31/90		$ (3,240)

Discussion

A cursory look at the three representations of the same
financial events shows that there are many differences. A positive
cash flow in foreign currency became a negative cash flow in
translated dollars, and a positive income in foreign currency
became an income under current rate translation but a loss when
translated using the temporal method. A summary of some of the key
comparisons is presented in Exhibit IV.

Exhibit IV
Foreign Operation Comparative
Financial Analysis for 1990
(all balance sheet ratios are for 1990)

	Untranslated	Current Rate	Temporal
Income	P 10,000	$ 140	$ (180)
Income/Sales	.044	.044	(.056)
Return on Investment	.100	.070	(.048)
Working Capital	P 92,000	$ 552	$ 1,092
Current Ratio	2.840	2.840	4.640
Quick Ratio	2.240	2.240	2.240
Debt/Equity	1.020	.927	.171
Total Assets	P 224,000	$ 1,272	$ 4,192
Cash from Operations	P (6,000)	$ (84)	$ (84)
Cash from Financing	P 8,000	$ 112	$ 112
Change in Cash	P 2,000	$ (268)	$ (268)

The temporal method shows a loss, because the depreciating currency loss is charged to income and because depreciation expense and cost of sales are translated at higher historical exchange rates than the average rate for the year. Return on Investment (net assets) is lower for the current rate from that of the untranslated, due to the income being translated at a rate lower than the December 31, 1989 rate.

Translated working capitals and current ratios differ, due to the exchange rates applied by the two methods to inventories. This also causes total assets to differ and further affects equity in the debt/equity ratio. Finally, a positive untranslated cash flow turns into a negative cash flow when translated under either method, due to the depreciating exchange rate.

The above example was deliberately contrived to illustrate potential differences once translation takes place under either method. By no means can one reasonably expect that all these differences are likely to occur. Yet, some are likely to happen (Brancovic and Madura, 1990). Furthermore, a completely different set of results will occur if the foreign currency appreciated, if

the foreign entity reports a loss, reports a negative cash flow, or if the foreign entity consists of relatively more or less monetary items (Selling and Sorter, 1983). The possibilities for differences in reported results, therefore, are enormous.

Problem Statement

The preceding example illustrates that translation from the foreign currency into U.S. dollars **may invite** different perceptions about the performance of the foreign operation. At this point, no inference is made as to which assessment of performance may be more correct. That issue has been challenged elsewhere (Beaver and Wolfson, 1984). The problem under study is to ascertain the level, if any, of difference in perception about the performance of the foreign operation among the three possibilities presented. Further, the level of usage of translated information versus untranslated information, when both are available, needs to be determined to understand the magnitude of the above difference. Finally, the preference for translated information needs to be measured to support improvement of translated financial information.

Theoretical Justification for the Problem

The problem of determining any difference in perception about a company's performance and explaining that difference is one of understanding the impact of information on the cognitive decision process of information users. This area of accounting research has received considerable attention in the 1970's and 1980's.

Earlier work, using Brunswik's lens model, theorized that available information cues are analyzed and a decision results. Later refinements, using attention and memory theories from

cognitive psychology, posited that all cues were not attended to, but rather a selection was made from the available cues (Birnberg and Shields, 1984). In addition, the role of memory has been emphasized in the decision process, as has the development of decision heuristics (Shanteau, 1989).

The accounting literature is replete with examples of this type of cognitive research which falls under the general framework of human information processing. While different cognitive models appear, they all tend to borrow from cognitive psychology the following format:

```
Information          Perception          Memory        Decision Algorithm
   Cue      ------->     and      ----->Short/Long----->   or Heuristic
                      Attention             Term
                                                                |
                                                                v
                                                     Decision Outcome
```
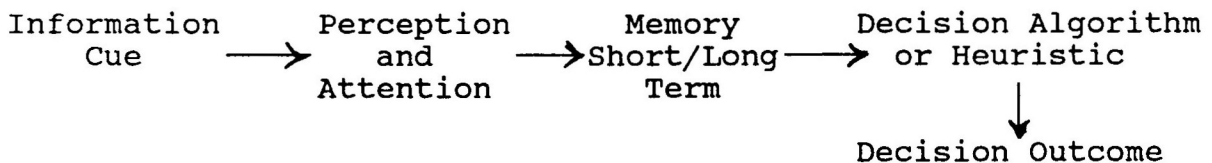
For a discussion of the theories of cognitive psychology affecting each segment of the above process, see Anderson, 1980.

Untranslated and translated information are the available cues in the current study. Given that the two can produce different appearing results, the perception of each may be different. This would present itself in the decision on financial performance. If, however, when both types of information are available, the decision maker does not attend to untranslated information, then the difference in perception becomes unimportant as untranslated information is never considered significant. If both cues are attended to, as expected at least to a degree, then the difference in perception of untranslated and translated information becomes critical to the decision.

Hypotheses

H1: There is no significant difference in financial evaluation of a foreign operation when financial information is untranslated and when financial information is translated using the temporal method.

H2: There is no significant difference in financial evaluation of a foreign operation when financial information is untranslated or when financial information is translated using the current rate method.

Definition:

Financial Information: Comparative balance sheets, related income statement, related cash flow statement, critical financial ratios, and exchange rate movement information. The critical ratios consist of:

1. Income/Sales
2. Return on Investment
3. Working Capital
4. Current Ratio
5. Quick Ratio
6. Debt/Equity

The exchange rate movement information consists of the exchange rate of the foreign currency against the U.S. dollar at the beginning and end of the year. The above financial information consists of all of the information of Exhibit IV and expands thereon.

Definition:

Financial Evaluation: Assessment of **operating performance** and **financial strength** of the firm

H3: Translated financial information is used for financial evaluation more than untranslated financial information.

H4: Performance evaluators prefer translated financial information over untranslated financial information for financial evaluation.

Methodology

To test Hypothesis 1, foreign operations, in a variety of financial scenarios, must be evaluated on their performance with untranslated financial information and translated financial information using the temporal method for each scenario. Three groups will evaluate performance as follows:

1. Untranslated Information Only Presented

2. Translated Information Only Presented

3. Both Untranslated and Translated Information Presented

The evaluators will be financial analysts from both corporate positions and research positions (with brokerage houses). For each scenario, they will rate on a Likert scale:

a. Financial strength of the firm (dependent variable)

b. Operating performance for the year (dependent variable)

Hypothesis 2 will be tested using the same procedure, except that the translated financial information will be done through the current rate method. For both hypotheses, statistical tests will be conducted between and among the three groups.

Hypothesis 3 will be tested by examining statistically the evaluations of the three groups in both of the preceding tests. The group with both untranslated and translated information will be compared with the other two groups to determine the impact of translation on financial evaluation.

Each participant will also be asked a series of Likert scaled items to determine preference of translated information over untranslated information, Hypothesis 4.

Each group (six), three for testing Hypothesis 1 and three for testing Hypothesis 2, should consist of thirty individuals for a total sample of 180.

Development of the Financial Scenarios

The goal is to develop sufficient enough financial scenarios to elicit a wide array of evaluations on operating performance and financial strength. A number of factors can be expected to generate information to accomplish this, but only a few can be used so that the evaluators will not be exhausted or lose interest in the project. For this reason, four factors (independent variables)

are chosen to provide a variety of financial results. These factors should provide points on a continuum of possible financial outcomes but, by no means, represent all possibilities. Still, enough points will be generated for statistical comparison.

The factors or independent variables chosen are, amount of income, amount of cash flow, relative liquid assets to total assets of the firm, and exchange rate movement in the country of the foreign enterprise. For each of these variables, there are two extreme outcomes of importance. Income can be positive or negative (loss), cash flow can be positive or negative, liquid assets can be the majority or minority of assets, and the foreign currency of the local country can be appreciating or depreciating against the U.S. dollar. By holding three variables constant and manipulating the other, 2^4 or 16 financial outcomes are created, as shown in Exhibit V.

Exhibit V
Financial Scenarios

Scenario	Income	Cash Flow	Liquid Assets/ Total Assets	Exchange Rate Movement
1	+	+	>50%	Depreciating
2	+	+	<50%	Appreciating
3	+	−	>50%	Appreciating
4	−	+	>50%	Appreciating
5	+	+	<50%	Depreciating
6	+	−	>50%	Depreciating
7	+	−	<50%	Appreciating
8	−	+	<50%	Appreciating
9	−	−	>50%	Appreciating
10	−	+	>50%	Depreciating
11	−	−	<50%	Appreciating
12	−	−	>50%	Depreciating
13	−	+	<50%	Depreciating
14	+	−	<50%	Depreciating
15	−	−	<50%	Depreciating
16	+	+	>50%	Appreciating

Each scenario will be in the foreign currency, i.e. before

translation. Translation will then be made using both the temporal method and current rate method. Thus, each participant in the study will be required to make evaluations of operating performance and financial strength for sixteen scenarios. Some of the participants will have sixteen untranslated scenarios, some will have sixteen translated scenarios, and some will have sixteen scenarios both untranslated and translated.

The scenario in the illustration has a positive income, positive cash flow, less than 50% of total assets are liquid, and the foreign currency is depreciating. This is an example of scenario five in Exhibit V. The other scenarios can be built from the illustration either manually or through a Lotus program. A Lotus program will be developed to assure accuracy of results and to allow later additional scenarios to be created with relative ease.

Assumptions in Building the Financial Scenarios

When a scenario reports a positive income, the income will be used to increase quick assets. Purchase of property, plant and equipment are considered part of a separate decision process. Inventory will not be increased, as firms, in general, try to minimize inventory on hand.

If a positive cash flow is also included in the scenario, no other accounts need adjustment. If, however, a positive income is accompanied by a negative cash flow, property, plant and equipment will be increased, and long term debt decreased in proportion to their beginning balances.

If a scenario reports a loss, downward adjustment to quick assets will be made. Accordingly, if the scenario also reports a

negative cash flow, no other accounts need adjustment. If, however, there is a loss and a positive cash flow, property, plant and equipment will be reduced, and long term debt increased in proportion to their beginning balances.

If a firm is highly liquid, monetary assets will be 60% of total assets at the beginning of the year. If the firm is not as liquid, monetary assets will only be 40% of total assets. All firms will be in a net liquid asset position.

A depreciating exchange rate trend will be created similar to that in the illustration. To create appreciation in foreign exchange, the same trend will be in reverse order. Eight scenarios will be created with income, cash flow, and financial structure. By adding the currency movement to each scenario, sixteen complete scenarios are generated.

Statistical Analysis

Analysis of variance will be used to test for significant differences in means in evaluation of operating performance and financial strength for the three groups: untranslated information only, both untranslated and translated information, and translated information only. The ANOVAs will be run for both cases of income, cash flow, financial structure and exchange rate movement (the sixteen scenarios and appropriate combinations). This procedure will be followed using temporal and current rate translations (H1 and H2).

Duncan Range tests will be used to test for clustering of the three groups (H3). All individuals will be group scored on a Likert scale assessing preference of translated information over untranslated information. The two constructs in the same series of

items will be t tested for significant difference.

Expected Results

There is a high expectation, due to the effects demonstrated in the illustration, that each scenario will be evaluated differently after translation. There is also some expectation that the impact of income, cash flow, structure of the firm, and exchange rate movement may be different and may offer some explanation for differences in the evaluations. There may be a different impact from the two translation methods which may augment the assessment of appropriateness of the two methods. There is also expectation of higher usage of and preference for translated information, as that information will appear to be more familiar to financial evaluators (Hosseini and Rezaee, 1990).

Purpose of the Grant

The grant will accomplish the following:

1. Development of the financial scenarios

2. Creation and testing of the Lotus program

3. Creation and testing of the test instrument

If possible, continued support will be requested later for data gathering and analysis.

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Appendix I

Cash Flow Statement
with Exchange Rate Effect

I. The following shows the calculation of the exchange rate gain,
by balance sheet account, in the illustration (Temporal Method):

	1 Translated Balances @.020 12/31/89	2* Translated Changes @.014	1+2=3 Expected Balance 12/31/90	4 Translated Balances @.006 12/31/90	3-4 Gain (Loss)
Cash	$ 400	$ 28	$ 428	$ 132	$(296)
Rec.	680	784	1,464	540	(924)
A.Pay.	(600)	(280)	(880)	(300)	580
L.T.D.	(880)	(112)	(992)	(312)	680
Net	$(400)	$ 420	$ 20	$ 60	$ 40

*The translated changes are the differences between the 12/31/89
and 12/31/90 amounts in the foreign currency multiplied by the
average rate for the year. For example,

```
Cash    12/31/89    P 20,000
        12/31/90    P 22,000
        Increase    P  2,000    @ .014 = $28
```

II. Understanding the exchange gain or loss on each balance sheet
account allows preparation of a cash flow statement without the
exchange rate gain or loss removed and with the exchange rate
effect removed (SFAS 95 treatment per the illustration) with
reconciliation.

Foreign Operation
Translated: Temporal Method
Cash Flow Statement

	I Exchange Rate Effect Unremoved	II Exchange Rate Effect		III FAS 95 ER Removed (illustration)
Income	$ (180)	-		$ (180)
Add Depreciation	400	-		400
Ded Translation Gain	(40)	-		(40)
	$ 180			$ 180
Receivables (dec)	140	$(924)	(inc)	784
Inventory (dec)	240	-	(dec)	240
Acc. Payable (dec)	(300)	580	(inc)	280
From Operations	$ 260	$(344)		$ (84)
Long Term Debt (dec)	(568)	680	(inc)	112
	$ (308)	$ 336		$ 28
Translation Gain	40	(40)		-
Cash Change	$ (268)	$(296)		$ 28
				(296)
				$ (268)

Column I is prepared using the translated balance sheets and income
statements of Exhibit II. By removing the exchange gain/loss
calculated above (column II), balance sheet account changes are
those resulting from the expected 12/31/90 balances. Accordingly,
a reconciliation to the reported cash change is made at the bottom
of column III. Column III is the FAS 95 treatment in the
illustration.

Note how decreases in receivables become increases, and how
decreases in accounts payable and long term debt become increases
and their corresponding effects on cash flow.

III. The following shows the calculation of the cumulative
translation adjustment, by balance sheet account, in the
illustration (Current Rate Method):

	1 Translated Balances @.020 12/31/89	2* Translated Changes @.014	1+2=3 Expected Balance 12/31/90	4 Translated Balances @.006 12/31/90	3-4 CTA Change
Cash	$ 400	$ 28	$ 428	$ 132	$ (296)
Rec.	680	784	1,464	540	(924)
Inv.	800	(140)	660	180	(480)
FA,net	1,600	(140)	1,460	420	(1,040)
A.Pay.	(600)	(280)	(880)	(300)	580
L.T.D.	(880)	(112)	(992)	(312)	680
Net	$ 2,000	$ 140	$ 2,140	$ 660	$(1,480)

*The translated changes, as before, are the differences between the
12/31/89 and 12/31/90 amounts in the foreign currency multiplied by

the average rate for the year. See I. above for an example.

IV.   Understanding the change in the cumulative translation
adjustment on each balance sheet account allows preparation of a
cash flow statement without the exchange rate effect removed and
with the exchange rate effect removed (SFAS 95 treatment per the
illustration) with reconciliation.

<div align="center">

Foreign Operation
Translated: Current Rate Method
Cash Flow Statement

</div>

	I Exchange Rate Effect Unremoved	II Exchange Rate Effect		III FAS 95 ER Removed (illustration)
Income	$ (180)	–		$ (180)
Add Depreciation	400	–		400
	$ 280			$ 280
Receivables (dec)	140	$(924)	(inc)	784
Inventory (dec)	620	(480)	(dec)	140
Acc. Payable (dec)	(300)	580	(inc)	280
From Operations	$ 740	$(824)		$ (84)
Fixed Assets (dec)	1,040	(1,040)		–
Long Term Debt (dec)	(568)	680	(inc)	112
	$ 1,212	(1,184)		$ 28
Cumul. Trans. Adj.	(1,480)	1,480		–
Cash Change	$ (268)	$(296)		$ 28
				(296)
				$ (268)

Column I, as before, is prepared using the translated balance
sheets and income statements of Exhibit III.   By removing the
exchange rate effect calculated above (column II), balance sheet
account changes are those resulting from the expected 12/31/90
balances.   Accordingly, a reconciliation to the reported cash
change is made at the bottom of column III.   Column III is the FAS
95 treatment in the illustration.

Appendix II

Basic Financial Scenarios
Without Exchange Rate Movement

The following basic financial scenarios are created from Exhibit V without reference to exchange rate movements. The eight scenarios become sixteen when appreciating and depreciating foreign exchange rates are applied.

1. Income +, Cash Flow +, Liquidity > 50% Total Assets

000's omitted

Balance Sheets		December 31		
		1990		1991
Assets				
Cash		F 45,000	F	60,000
Accounts Receivable		45,000		60,000
Inventory		10,000		10,000
Property, Plant & Equipment		70,000		70,000
Accumulated Depreciation		(20,000)		(30,000)
Total Assets		F 150,000		F 170,000
Liabilities & Equity				
Accounts Payable		F 50,000	F	50,000
Long Term Debt		20,000		20,000
Common Stock		30,000		30,000
Retained Earnings		50,000		70,000
Total Liabilities & Equity		F 150,000		F 170,000

Income Statement for year ending December 31, 1991

Sales				F 200,000
Cost of Sales:				
Beginning Inventory		F 10,000		
Purchases		140,000		
Available for Sale		150,000		
Ending Inventory		10,000		140,000
Gross Margin				F 60,000
Expenses:				
Depreciation		F 10,000		
Other		30,000		40,000
Net Income				F 20,000
Retained Earnings 12/31/90				50,000
Retained Earnings 12/31/91				F 70,000

Cash Flow Statement

Cash Provided from Operations				
Net Income				F 20,000
Add Depreciation				10,000
				30,000
Increase in Accounts Receivable				(15,000)
Increase in Cash				F 15,000

2. Income +, Cash Flow -, Liquidity > 50% Total Assets

<div align="center">000's omitted</div>

Balance Sheets		December 31		
		1990		1991
Assets				
Cash	F	45,000	F	30,000
Accounts Receivable		45,000		60,000
Inventory		10,000		10,000
Property, Plant & Equipment		70,000		90,000
Accumulated Depreciation		(20,000)		(30,000)
Total Assets	F	150,000	F	160,000
Liabilities & Equity				
Accounts Payable	F	50,000	F	50,000
Long Term Debt		20,000		10,000
Common Stock		30,000		30,000
Retained Earnings		50,000		70,000
Total Liabilities & Equity	F	150,000	F	160,000

Income Statement for year ending December 31, 1991

Sales			F	200,000
Cost of Sales:				
Beginning Inventory	F	10,000		
Purchases		140,000		
Available for Sale		150,000		
Ending Inventory		10,000		140,000
Gross Margin			F	60,000
Expenses:				
Depreciation	F	10,000		
Other		30,000		40,000
Net Income			F	20,000
Retained Earnings 12/31/90				50,000
Retained Earnings 12/31/91			F	70,000

Cash Flow Statement

Cash Provided from Operations		
Net Income	F	20,000
Add Depreciation		10,000
		30,000
Increase in Receivables		(15,000)
	F	15,000
Investing: Purchase of Property		(20,000)
Financing: Payment on Long Term Debt		(10,000)
Decrease in Cash	F	(15,000)

3.   Income -, Cash Flow +, Liquidity > 50% Total Assets

000's omitted

Balance Sheets		December 31		
		1990		1991
Assets				
Cash		F 45,000	F	70,000
Accounts Receivable		45,000		40,000
Inventory		10,000		10,000
Property, Plant & Equipment		70,000		50,000
Accumulated Depreciation		(20,000)		(30,000)
Total Assets		F 150,000	F	140,000
Liabilities & Equity				
Accounts Payable		F 50,000	F	50,000
Long Term Debt		20,000		30,000
Common Stock		30,000		30,000
Retained Earnings		50,000		30,000
Total Liabilities & Equity		F 150,000	F	140,000

Income Statement for year ending December 31, 1991

Sales			F 200,000
Cost of Sales:			
Beginning Inventory	F	10,000	
Purchases		140,000	
Available for Sale		150,000	
Ending Inventory		10,000	140,000
Gross Margin			F 60,000
Expenses:			
Depreciation	F	10,000	
Other		70,000	80,000
Net Loss			F (20,000)
Retained Earnings 12/31/90			50,000
Retained Earnings 12/31/91			F 30,000

Cash Flow Statement

Cash Provided from Operations		
Net Loss		F (20,000)
Add Depreciation		10,000
		(10,000)
Decrease in Receivables		5,000
		F (5,000)
Investing: Sale of Property		20,000
Financing: Issue of Long Term Debt		10,000
Increase in Cash		F 25,000

4.   Income -, Cash Flow -, Liquidity > 50% Total Assets

000's omitted

Balance Sheets		December 31	
		1990	1991
Assets			
Cash	F	45,000	F 40,000
Accounts Receivable		45,000	40,000
Inventory		10,000	10,000
Property, Plant & Equipment		70,000	70,000
Accumulated Depreciation		(20,000)	(30,000)
Total Assets		F 150,000	F 130,000
Liabilities & Equity			
Accounts Payable	F	50,000	F 50,000
Long Term Debt		20,000	20,000
Common Stock		30,000	30,000
Retained Earnings		50,000	30,000
Total Liabilities & Equity		F 150,000	F 130,000

Income Statement for year ending December 31, 1991

Sales			F 200,000
Cost of Sales:			
Beginning Inventory	F	10,000	
Purchases		140,000	
Available for Sale		150,000	
Ending Inventory		10,000	140,000
Gross Margin			F 60,000
Expenses:			
Depreciation	F	10,000	
Other		70,000	80,000
Net Loss			F (20,000)
Retained Earnings 12/31/90			50,000
Retained Earnings 12/31/91			F 30,000

Cash Flow Statement

Cash Provided from Operations		
Net Loss		F (20,000)
Add Depreciation		10,000
		(10,000)
Decrease in Receivables		5,000
Decrease in Cash		F (5,000)

5. Income +, Cash Flow +, Liquidity < 50% Total Assets

000's omitted

Balance Sheets		December 31		
		1990		1991
Assets				
Cash	F	30,000	F	45,000
Accounts Receivable		30,000		45,000
Inventory		10,000		10,000
Property, Plant & Equipment		100,000		100,000
Accumulated Depreciation		(20,000)		(30,000)
Total Assets	F	150,000	F	170,000
Liabilities & Equity				
Accounts Payable	F	50,000	F	50,000
Long Term Debt		20,000		20,000
Common Stock		30,000		30,000
Retained Earnings		50,000		70,000
Total Liabilities & Equity	F	150,000	F	170,000

Income Statement for year ending December 31, 1991

Sales			F	200,000
Cost of Sales:				
Beginning Inventory	F	10,000		
Purchases		140,000		
Available for Sale		150,000		
Ending Inventory		10,000		140,000
Gross Margin			F	60,000
Expenses:				
Depreciation	F	10,000		
Other		30,000		40,000
Net Income			F	20,000
Retained Earnings 12/31/90				50,000
Retained Earnings 12/31/91			F	70,000

Cash Flow Statement		
Cash Provided from Operations		
Net Income	F	20,000
Add Depreciation		10,000
		30,000
Increase in Accounts Receivable		(15,000)
Increase in Cash	F	15,000

6. Income +, Cash Flow -, Liquidity < 50% Total Assets

000's omitted

Balance Sheets		December 31	
		1990	1991
Assets			
Cash		F 30,000	F 15,000
Accounts Receivable		30,000	45,000
Inventory		10,000	10,000
Property, Plant & Equipment		100,000	120,000
Accumulated Depreciation		(20,000)	(30,000)
Total Assets		F 150,000	F 160,000
Liabilities & Equity			
Accounts Payable		F 50,000	F 50,000
Long Term Debt		20,000	10,000
Common Stock		30,000	30,000
Retained Earnings		50,000	70,000
Total Liabilities & Equity		F 150,000	F 160,000

Income Statement for year ending December 31, 1991

Sales		F 200,000
Cost of Sales:		
Beginning Inventory	F 10,000	
Purchases	140,000	
Available for Sale	150,000	
Ending Inventory	10,000	140,000
Gross Margin		F 60,000
Expenses:		
Depreciation	F 10,000	
Other	30,000	40,000
Net Income		F 20,000
Retained Earnings 12/31/90		50,000
Retained Earnings 12/31/91		F 70,000

Cash Flow Statement

Cash Provided from Operations		
Net Income		F 20,000
Add Depreciation		10,000
		30,000
Increase in Receivables		(15,000)
		F 15,000
Investing: Purchase of Property		(20,000)
Financing: Payment on Long Term Debt		(10,000)
Decrease in Cash		F (15,000)

7. Income -, Cash Flow +, Liquidity < 50% Total Assets

000's omitted

Balance Sheets		December 31		
		1990		1991
Assets				
Cash		F 30,000	F	55,000
Accounts Receivable		30,000		25,000
Inventory		10,000		10,000
Property, Plant & Equipment		100,000		80,000
Accumulated Depreciation		(20,000)		(30,000)
Total Assets		F 150,000	F	140,000
Liabilities & Equity				
Accounts Payable		F 50,000	F	50,000
Long Term Debt		20,000		30,000
Common Stock		30,000		30,000
Retained Earnings		50,000		30,000
Total Liabilities & Equity		F 150,000	F	140,000

Income Statement for year ending December 31, 1991

Sales			F 200,000
Cost of Sales:			
Beginning Inventory	F	10,000	
Purchases		140,000	
Available for Sale		150,000	
Ending Inventory		10,000	140,000
Gross Margin			F 60,000
Expenses:			
Depreciation	F	10,000	
Other		70,000	80,000
Net Loss			F (20,000)
Retained Earnings 12/31/90			50,000
Retained Earnings 12/31/91			F 30,000

Cash Flow Statement

Cash Provided from Operations		
Net Loss		F (20,000)
Add Depreciation		10,000
		(10,000)
Decrease in Receivables		5,000
		F (5,000)
Investing: Sale of Property		20,000
Financing: Issue of Long Term Debt		10,000
Increase in Cash		F 25,000

8. Income -, Cash Flow -, Liquidity < 50% Total Assets

<div align="center">000's omitted</div>

Balance Sheets		December 31		
		1990		**1991**
Assets				
Cash		F 30,000	F	25,000
Accounts Receivable		30,000		25,000
Inventory		10,000		10,000
Property, Plant & Equipment		100,000		100,000
Accumulated Depreciation		(20,000)		(30,000)
Total Assets		F 150,000	F	130,000
Liabilities & Equity				
Accounts Payable		F 50,000	F	50,000
Long Term Debt		20,000		20,000
Common Stock		30,000		30,000
Retained Earnings		50,000		30,000
Total Liabilities & Equity		F 150,000	F	130,000

Income Statement for year ending December 31, 1991

Sales			F 200,000
Cost of Sales:			
Beginning Inventory	F	10,000	
Purchases		140,000	
Available for Sale		150,000	
Ending Inventory		10,000	140,000
Gross Margin			F 60,000
Expenses:			
Depreciation	F	10,000	
Other		70,000	80,000
Net Loss			F (20,000)
Retained Earnings 12/31/90			50,000
Retained Earnings 12/31/91			F 30,000

Cash Flow Statement

Cash Provided from Operations		
Net Loss		F (20,000)
Add Depreciation		10,000
		(10,000)
Decrease in Receivables		5,000
Decrease in Cash		F (5,000)

Exchange Rate Assumptions

	Appreciating Foreign Currency	Depreciating Foreign Currency
4th Quarter, 1990	1 FC = $.55	1 FC = $.85
December 31, 1990	1 FC = $.60	1 FC = $.80
Average, 1991	1 FC = $.70	1 FC = $.70
4th Quarter, 1991	1 FC = $.75	1 FC = $.65
December 31, 1991	1 FC = $.80	1 FC = $.60

All inventories will be LIFO.
The three year inflation rate will be below 100%. Note that one year depreciation of foreign currency is 25%.