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degree of

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IN BUSINESS ADMINISTRATION

BY

PONTUS HENRIK TROBERG

Norman, Oklahoma

1982

ACCOUNTING RESOURCE (CURRENCY) TRANSLATION:

A COMPARATIVE ANALYSIS OF APPROACHES

APPROVED BY:

Margaret Stott

Raymond Daly

Homer A Brown

J. P. Herrick

Stanley B. Eliason

DISSERTATION COMMITTEE

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ACCOUNTING RESOURCE (CURRENCY) TRANSLATION: A COMPARATIVE ANALYSIS OF APPROACHES

CHAPTER I

INTRODUCTION AND BACKGROUND OF TRANSLATION

Summary of the Problem Area and the Research Project

Several attempts have been made by authoritative bodies, both in the United States and abroad, to resolve the problems of accounting resource translation. However, there appears to be no general agreement that either present or currently proposed translation rules constitute a significant improvement in either theory or practice over preceding rules.

This dissertation addresses the problem of accounting resource translation by analyzing the Financial Accounting Standards Board Statement No. 8 (hereinafter termed FAS 8) translation approach and Statement No. 52 (hereinafter termed FAS 52) translation approach. Both translation methods are analyzed using first currency exchange rates, and then substituting purchasing power parities for exchange rates.

The methodology of the dissertation is that of translating financial statements of actual companies for every quarter of a six-year period, and analyzing the differences in the after-translation values resulting from each translation approach. The research focuses on:

1. Evaluating the extent to which each translation approach preserves the reported net income information embodied in the foreign financial statements of foreign entities in each of various sets of inflationary and contextual circumstances.

2. Evaluating the extent to which each translation approach preserves the financial results and relationships embodied in the foreign financial statements of foreign entities.

The sets of circumstances include foreign environments with different inflationary conditions and different structural characteristics of the foreign entities. Exchange rates utilized are actual exchange rates for a six-year period. Purchasing power parity indices utilized are indices based on the relationship between actual price level indices for the same period as the exchange rates.

The accounting standards examined are U. S. standards. In this respect the context is that of the U. S., but the results of this study are expected to be almost equally relevant to all industrialized countries because similar translation approaches are used worldwide.

This research approach provides insights into translation methods and problems, and the actual effects of various translation approaches on translated data of real companies are clarified. The research results will hopefully provide indications about what should be the preferred accounting translation standards in certain types of circumstances, and are expected to stimulate a series of follow-on studies by this and other researchers into what translation approaches should be used in other circumstances.

Definitions and Concepts

This section and many of the subsequent sections present certain views of other authors about translation and translation related issues. The conclusions reached by those authors do not necessarily represent the opinions of the researcher.

Several definitions of translation have been presented throughout the years. Webster's Collegiate Dictionary defines "translate" as "to change from one form to another; to transfer from one set of symbols into another."[1] "Translation" and "conversion" are frequently used synonymously by accountants and businessmen when referring to foreign affiliate accounts. A clear distinction exists, and Webster's Collegiate Dictionary defines "convert" as "to alter the physical nature of; to exchange for an equivalent."[2] Thus, conversion implies an exchange of objects -- money for goods, yen for dollars, and so on. To translate, and translation, on the other hand, imply the restatement of an abstract idea -- the name of an object translated from one language to another or the reported peso assets of a Mexican subsidiary stated in U. S. dollars for a consolidated report, as examples -- by a different media.[3]

Harris defines accounting translation more as a process of restatement than as a process of measurement conversion.[4] The translation

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[1]Webster's Collegiate Dictionary, (1977), p. 1241.

[2]Ibid, p. 249.

[3]Anderson, A., Carlisle, S., Jones, J. A. and Kessler, L. T., Currency Translation (1974), p. 1.

[4]Harris, T. S., Translating the Accounts of Foreign Subsidiaries by 'The Closing Rate Method' has some Conceptual Validity but is Invalid in Relation to the Theoretical Base of Current Accounting Practice (A thesis presented to the University of Cape Town, February, 1980), p. 31.

definition presented by Patz is the following: "Translation in general terms is a mathematical process of transforming measurements taken in terms of one scale of measurement into a second scale of measurement."[5] Moriscato defines translation in a similar way, i.e., as a measurement conversion process.[6] The translation procedure is viewed also by Aggarwal more as a measurement conversion process than as a restatement process; Aggarwal states that the translation procedure should change only the unit of measurement and not the value of what is being measured.[7]

The use of the title "Foreign Currency Translation" for FAS 52, and before that, "Accounting for the Translation of Foreign Currency Translations and Foreign Currency Financial Statements," as the title of FAS 8 has received criticism. According to Scott, the use of the concept demonstrates how erroneous perceptions may encourage improper translation methods. The phrase "foreign currency" is said by its critics to be appropriate for translation of currency items but misleading for foreign-held non-currency resources in the nature of bricks and mortar. The phrase implies that foreign physical resources should be translated as if they were currency, which seems to suggest that the resources are about to be returned to the U. S. as currency and should be valued on a conversion or liquidation basis. Scott suggests that the preferred terminology

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[5]Patz, D. H., "A Price Parity Theory of Translation" (Accounting and Business Research, Winter, 1977), p. 15.

[6]Moriscato, H. G., Currency Translation and Performance Evaluation in Multinationals (Ann Arbor, Michigan, UMI Research Press 1980,

[7]Aggarwal, R., "The Translation Problem in International Accounting: Insight for Financial Management" (Management International Review, Vol. XIV, 2-3/1975), p. 74.

to describe the translation process for resources that will remain abroad indefinitely is "foreign resource translation."[8]

Translation Objectives

Before presenting various views on the objective of translation and various translation theories, the need for translation of foreign financial statements is reviewed. The need for translation can be divided into:

1. External financial reporting requirements based on generally accepted accounting principles. Financial statements in U. S. dollars of a company's subsidiary are required for preparation of combined or consolidated financial statements, for computing the parent company's equity in net assets and earnings of foreign subsidiaries accounted for by the equity method, and for providing supplemental information about investments in foreign subsidiaries accounted for at cost.[9&10] This requirement is intended to provide information to "outsiders," mainly shareholders and creditors. The preparation of consolidated financial statements is mandatory in most industrialized countries.

2. Management needs. A multinational enterprise must translate foreign subsidiaries' financial data to satisfy its own internal needs. Translation is needed, a) to enable the management of a multinational enterprise to effectively coordinate, integrate and manage global operations,[11] and b) to enable

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[8]Scott, G. M., "Foreign Financial Statement Translation: A Review and Ambitious Proposal" (Collected Papers of the American Accounting Association Annual Meetings, 1981), p. 12.

[9]AICPA, APB Opinion No. 18, The Equity Method of Accounting for Investments in Common Stock (March 1971), para. 14.

[10]AICPA, ARB No. 51, Consolidated Financial Statements (1959), para. 21.

[11]Anderson, et. al., Currency Translation (1974), p. 7.

financial performance evaluations of the foreign subsidiaries and their management.[12]

It can be seen that translation is a necessity. The place to begin the discussion of how to translate is with the objectives of translation.

There exists a variety of views on the objectives of translation. One view is that the objectives of translation should follow from the objectives of financial reporting, because translation is intended to facilitate financial report representation. The basic objectives of financial reporting as stated by the Financial Accounting Standards Board include those of providing information:[13]

> "that is useful to present and potential investors and creditors and other users in making rational investment, credit and similar decisions, and in assessing the amounts, timing and uncertainty of prospective cash receipts from dividends or interest and the proceeds from the sale, redemption or maturity of securities and loans."
>
> "about economic resources of an enterprise, the claims to those resources, and the effects of transactions and events, and circumstances that change resources and claims to those resources."
>
> "about an enterprise's financial performance during a period."

The basic objective stated by the Trueblood Committee (October 1973) is nearly the same, but is stated more broadly as the need to provide information useful for predicting, comparing and evaluating enterprise earning power. This concept is explained in the following way.

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[12]Because cultural, lingual, political, industrial and economic conditions are not directly comparable among countries other evaluation methods should also be used.

[13]Financial Accounting Standards Board. Statement of Financial Accounting Concepts No. 1: Objectives of Financial Reporting by Business Enterprises, (November, 1978), para. 34, 37, 40, 42.

> "The measurement made by accounting should relate to the enterprise's goal of providing the most cash for its owners. Given appropriate financial information, the decision-maker can evaluate the enterprise's ability to be better off, to generate more cash, and to have earnings convertible into cash at some future date. This ability is the enterprise's earning power. Cash generating ability and earnings are closely related and the longer the period, the closer the relationship."[14]

The Committee on International Accounting of the American Accounting Association stated the objective of translation as to represent to decision-makers -- investors and managers -- the foreign investment operations in a familiar currency framework, and where relevant, to facilitate comparison with domestic and other foreign investments and operations.[15] Seidler's view on the objective of translation is that it seems more in accordance with the contemporary emphasis on future earnings as a basis for investment evaluation to translate foreign accounts under a method which attempts to measure the effects of exchange rate changes on the dollar value of the future earnings streams from the foreign subsidiary.[16] An objective with many supporters is that accounting translation should report foreign-held resource values in the context of the economy in which these resources will be employed to generate a stream of future

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[14]Report of the Study Group on the Objectives of Financial Statements (Trueblood Committee), Objectives of Financial Statements (AICPA, October 1973), pp. 13, 23.

[15]Report of the Committee on International Accounting, American Accounting Association, "Objectives of Translation" (The Accounting Review, Supplement 1975), p. 91.

[16]Seidler, L. J., "An Income Approach to the Translation of Foreign Currency Financial Statements" (CPA Journal 42, January 1972), pp. 31-32.

earnings since it is this earning stream which is to be predicted.[17] "In other words, if a group of an entity's resources is to be used abroad as inputs to a productive process, then the earnings stream of those resources should be measured in terms of the foreign economy."[18] American companies conducting international operations today tend to possess a multinational outlook, and therefore the relevant economy for most foreign-held resources will be the local economy, not the U. S. economy.[19]

The objective of translation as stated in FAS 8 is "to measure and express in dollars, and in conformity with U. S. generally accepted accounting principles, the assets, liabilities, revenues or expenses that are measured or denominated in foreign currency."[20] The purpose of this FAS 8 objective appears to be to measure the accounts of the foreign entity in dollars as though the entity operates in the U. S. economic environment.[21] FAS 8 has been criticized for causing fluctuations in reported income, for companies having to report accounting exchange gains and losses where the reverse is believed to have occurred from an economic standpoint, and for altering the after-translation financial statement relationships from

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[17]Scott, G. M. "Currency Exchange Rates and Accounting Translation: A Mis-Marriage?" (ABACUS, June 1975), p. 59.

[18]Anderson, et. al., Currency Translation (1974), p. 7.

[19]Scott, G. M. "Currency Exchange Rates and Accounting Translation: A Mis-Marriage?" (ABACUS, June 1975), p. 59.

[20]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 8: Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements, (1975), para. 6.

[21]Arthur Young and Company, "Accounting Translation of Foreign Currency Transactions and Foreign Currency Financial Statements" (Client Memorandum, September 22, 1980), p. 3.

those reflected in the foreign currency denominated financial statements.[22&23] If the volatility is artificial, that is, if a translation loss/gain is reported where the reverse has occurred from an economic standpoint, and if financial statement relationships are altered, the objectives of FAS 8 and/or the consequences of applying FAS 8 are at variance with the Financial Accounting Standards Board's (FASB) objectives as stated in the Statement of Financial Accounting Concepts No. 1 as well as with the Trueblood Committee's objectives. The critics of FAS 8 assert that translation under FAS 8 rules results in information that diverges from economic reality, which brings into doubt the utility of FAS 8.

According to FAS 52, translation should accomplish the following objectives:[24]

a) Provide information that is generally compatible with the expected economic effects of a rate change on an enterprise's cash flows and equity.

b) Reflect in consolidated statements the financial results and relationships of the individual consolidated entities as measured in their functional currencies in conformity with U. S. generally accepted accounting principles.

FAS 52 objectives appear to be more compatible than those of FAS 8 with the objectives of financial reporting stated in Statement of Financial

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[22]Deloitte, Haskins, and Sells, "Foreign Currency Translation, Proposed FASB Statement" (August 23, 1980), p. 3.

[23]Peat, Marwick, Mitchell and Company, "Foreign Currency Translation -- An Overview of the FASB's Revised Exposure Draft," (New York, July 1981), p. 3.

[24]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (December 1981), para. 4.

Accounting Concepts No. 1, as well as with the Trueblood Committee's objectives. In the FAS 52 objectives it is clearly stated that information provided should be in accordance with expected economic effects of rate changes, and that financial relationships should not be significantly altered in the translation process. In this respect, the FAS 52 objectives seem better able to preserve the economic reality of the foreign subsidiaries. Consequently, if the rules of FAS 52 are consistent with the objectives of FAS 52 the application of FAS 52 can be expected to provide information that is more useful for economic decision-making than that provided by FAS 8. One of the major objectives of this study is to compare FAS 52 and FAS 8 and their effects on translated data, including, among other things, their effects on financial relationships.

Translation Theories

Patz stated that to develop a proper translation approach, the following fundamental questions need an answer.

a) What is the nature of the phenomenon being accounted for, i.e., the nature of foreign operations?[25]

b) What objective of the firm should be considered preeminent?[26]

c) What information is to be afforded preeminence in any information conflict situation?[27]

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[25]Patz, D. H. "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), pp. 314-315.

[26]Ibid, pp. 314-315.

[27]Ibid, pp. 314-315.

In addressing these questions, Mueller adds two more questions to be answered.

> d) Can a single translation method serve all translation purposes?[28]
>
> e) Can there be a point of noncompatibility between two or more currencies to the extent that translation of amounts from one currency into another makes no sense?[29]

Patz presents two currency translation theories which he labels, "the measurement theory approach" and "the pure restatement theory approach," in his effort to deal with and answer the first three questions. Patz description of the two theories will not be outlined in its full extent because of its complexity and length. Furthermore, Patz does not directly relate the theories to currently known translation approaches.

According to Patz, an equally descriptive term of the measurement theory approach would be "proprietary theory." According to this theory, the preeminent goal of the firm is maximization of remittable domestic currency values. The measurement theory approach involves adopting a strong parent perspective. The subsidiary is viewed as an extension of the parent company's operations.

Timely adjustment to new information implies that the measures which are taken will be complete, and periodic measurement will not be frustrated by time lags in the adjustment process. Therefore, Patz states that reasonable exchange rate market efficiency would seem to be a necessary condition for application of the measurement theory of translation. Patz concluded that the proprietary

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[28]Mueller, G. G., "Are Traditional Foreign Exchange Translation Methods Obsolete?" (California Management Review, Summer 1965), pp. 45-46.

[29]Ibid, pp. 45-46.

theory can, unfortunately, only tell us what property to measure and why we should measure it. It cannot tell us how to measure the property, nor does it assure that reasonably accurate information measurement is feasible.[30]

Under the pure restatement approach, also called the "entity theory" by Patz, it is assumed that the utility of foreign held resources of interest to users of translated accounting data is their foreign utility, that is, the command over goods and services they bestow upon the multinational entity in the foreign environment. It is assumed that their previously unmeasured and perhaps unmeasurable utility in the country of the parent is of secondary interest. The underlying reasoning of the entity theory is that the pre-translation measurements were taken with respect to and embody important information and relationships with regard to a foreign environment that is markedly different from the domestic environment and that the overwhelming majority of the foreign bundle of assets can be expected to continue to be used in that foreign environment. Thus, their utility is uniquely and meaningfully expressed in terms of the local economy where they presently reside.[31] Patz' arguments in this respect are similar to Scott's and Anderson, et. al's.[32&33] Consequently,

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[30] Patz, D. H., "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), pp. 315-319.

[31] Ibid, pp. 319-322.

[32] Scott, G. M., "Currency Exchange Rates and Accounting Translation: A Mis-Marriage?" (ABACUS, June 1975), p. 59.

[33] Anderson, et. al., Currency Translation (1974), p. 7.

restating existing local information intact, local command over goods and services, rather than attempting to measure domestic utility is indicated as the proper direction for translation. The need to preserve the existing pre-translation place significance of the foreign accounting measures, the local perspective, is seen as an overriding consideration."[34] Under the entity approach, then, the preeminent goal of the multinational firm and its managers is the more general concept of maximization of command over goods and services rather than the more specific command over domestic currency or command over domestic goods and services. Ability to act in local-country input and output markets rather than the ability to act in the foreign exchange market is considered to be the primary interest of the multinational firm.[35] Scott thinks that, for resources held abroad that are not directly involved with the foreign exchange markets, the exchange risk present in the exchange markets is in most cases largely irrelevant to the earnings and cash flows derived from resources held in foreign environments.[36]

"What information is to be afforded preeminence in any information conflict situation" was the third fundamental question raised by Patz. According to Patz, information regarding local levels of

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[34]Patz, D. H., "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), p. 319.

[35]Ibid, p. 319.

[36]Scott, G. M., "Foreign Financial Statement Translation: A Review and Ambitious Proposal" (Collected Papers of the American Accounting Association Annual Meetings, 1981), p. 10.

command over goods and services and changes in these levels, occasioned by operations, must consequently be granted paramount importance.[37]

Under the restatement approach the accountant's interest is to restate the foreign measures denominated in an unfamiliar currency unit of measure in a manner that preserves the "place significance" of those measures. "Place significance" refers to preserving the context of the local market in which the transactions that are stated in the foreign measures have taken place. According to Patz, the restatement approach indicates that a solution to the translation problem lies in relating the two units of measure in terms of the relationship that exists at any time between the respective standards of measurement. Once related in these terms, measures in one unit can be converted to measures in the other unit, while local magnitude of general purchasing power expressed by the measures is simultaneously preserved. What is required is a time series of ratios of the general purchasing power of the two currencies involved in any instance of translation, temporal expressions of relative purchasing power or price parity.[38]

Because the perspective under the restatement approach is a local perspective and exchange rates do not sufficiently incorporate the change in purchasing power of the foreign currency, the approach to use when considering the restate-translate versus translate-restate

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[37] Patz, D. H., "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), p. 320.

[38] Ibid, p. 320.

issue is to first restate, then translate.[39] The practical problem with the restatement theory is that a necessary condition for application of this theory is the availability of reasonably accurate measures of price parity. The problem is truly difficult since it involves trade-offs in terms of new costs, objectivity, expected extent of measurement error and the question of practical feasibility. According to Patz, exchange rates may well constitute reasonable surrogate measures of price parity, but this is a fairly unexplored empirical question with regard to the present floating rate system.[40]

Of the five fundamental questions presented, the last two, posed by Mueller, are "can a single translation method serve all translation purposes?," and, "is there a point of noncompatibility between two or more currencies beyond which translation of amounts from one currency into another makes no sense?" The answers to the last two questions vary and are often incomplete. Lorensen deals with the aspect of rate changes, and he states that a translation principle should be suitable for all kinds of rate changes and that what he calls the "temporal principle" fulfills this requirement.[41] In saying that an accounting principle must be established to deal with currency depreciation and appreciation as

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[39]Zenoff, D. and Zwick, J., International Financial Management (New Jersey: 1969), pp. 749-759.

[40]Patz, D. H., "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), pp. 319-322.

[41]Lorensen, L., Reporting Foreign Operations of U. S. Companies in U. S. Dollars (New York: AICPA, Accounting Research Study, No. 12, 1972), p. xi.

well as fixed and floating exchange rates Hayes is presenting a viewpoint fairly close to Lorensen's.[42] Deupree, on the other hand, in reviewing financial statements readers' aspects, says that the translated financial statements are prepared differently if they are intended for the investor (investor's cost method) than if they are intended for creditors and other "outsiders" (general purpose method).[43]

Another controversial issue in translation of foreign financial statements has been the reporting of "translation adjustments" (translation gains and losses). Patz describes translation adjustments as follows: The measurement approach involves measurement of an attribute (remittable domestic currency value) not measured pre-translation, and such adjustments arising from translation must, by definition, be measures of gain or loss of that attribute occasioned by changes in the exchange rate.[44]

Copeland and Ingram present two views on the reporting of "unrealized" exchange gains and losses which correspond to the Financial Accounting Standards Board's conceptual framework for financial accounting and reporting. The term "exchange" used by Copeland and Ingram is synonymous to the term "translation" as used in this dissertation. According to Copeland and Ingram, the

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[42]Hayes, D. J., "Translating Foreign Currencies" (Harvard Business Review, January - February 1972), p. 16.

[43]Deupree, M. M., "Translation for Currency Financial Statements to U. S. Dollars " (Financial Executive, October 1972), p. 48.

[44]Patz, D. H., "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), p. 317.

"asset/liability" view requires that differences between current and book balances of accounts requiring end-of-period translation from foreign currencies into dollars must be reflected in current period income statements.[45] Advocates of this view maintain that each asset in a statement of financial position should be a financial representation of an economic resource of the enterprise and each liability should be a financial representation of an obligation of the enterprise to transfer resources to another entity.[46] From this it follows that unrealized gains and losses must be recognized to preserve the integrity of the balance sheet.[47] That is, unrealized gains and losses represent changes in resources or obligations of the firm at the balance sheet date.

Copeland and Ingram are of the opinion that, in contrast to the asset/liability view, the "revenue/expense" view does not require recognition of unrealized gains or losses or, at most defers these if they are recognized at all. The major concern is for achieving proper matching of costs with revenues. Differences in the two views are concisely stated in the following: "In the asset and liability view,

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[45]Copeland, R. M. and Ingram, R. W., "An Evaluation of Accounting Alternatives for Foreign Currency Transactions" (The International Journal of Accounting Education and Research, Spring 1978), pp. 15-26.

[46]Financial Accounting Standards Board, FASB Discussion Memorandum, Conceptual Framework for Financial Accounting and Reporting (Stamford, Connecticut, 1976), para. 54.

[47]Copeland, R. M. and Ingram, R. W., "An Evaluation of Accounting Alternatives for Foreign Currency Transactions" (The International Journal of Accounting Education and Research, Spring 1978), p. 16.

earnings are changes in net assets.... In the revenue and expense view, earnings are the difference between revenues and expenses..."[48] Copeland and Ingram state that in each of these cases, the primary concern is the end-of-period valuation of assets and liabilities. Clear adherence to the revenue/expense view is exemplified in APB 1 (depreciation guidelines), APB 4 (investment credit), APB 11 (income taxes), APB 17 (intangibles), APB 28 (interim financial statements), and FAS 9 (income taxes in the oil and gas industry). Clear adherence to the asset/liability view is reflected in APB 5(leases), APB 7 (leases), APB 16 (business combinations), and FAS 2 (research and development).[49]

According to Copeland and Ingram, the optimal accounting method will best approximate the eventual liquidation values of foreign currency balances and the changes in resources resulting from transactions. Three values (derived from three accounting alternatives) can be used to approximate liquidation values. (1) The initial transaction value that reflects nonrecognition of unrealized interim gains/losses, (2) the initial transaction value adjusted for unrealized gains/losses by means of a contra account (deferral of unrealized interim gains/losses), and (3) the initial transaction

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[48] Financial Accounting Standards Board, FASB Discussion Memorandum, Conceptual Framework for Financial Accounting and Reporting (Stamford, Connecticut, 1976), para. 56.

[49] Copeland, R. M., and Ingram, R. W., "An Evaluation of Accounting Alternatives for Foreign Currency Transactions" (The International Journal of Accounting Education and Research, Spring 1978), pp. 16-17.

value adjusted for interim values (immediate recognition of unrealized interim gains/losses). The first alternative represents the revenue/expense view, and the third alternative represents the asset/liability view (adopted in FAS 8). The second alternative represents a compromise of the first and third alternatives and is similar to the approach adopted in FAS 52 (Foreign Currency Translation).

Copeland and Ingram tested the three alternatives empirically to provide insight into the translation effects of the patterns occurring in foreign currency rates since the effective date of FAS 8. They concluded that, if the currencies and periods examined in their study were representative of general exchange rate behavior, deferral of interim foreign exchange gains and losses appears to be the most satisfactory accounting alternative. The deferral method was the only proposed alternative which was capable of producing both the best approximation of the liquidation values of exchange transactions and the least distortion in a firm's earnings performance. As such, it is also the only method which meets the primary objectives of both the asset/liability view and the revenue/expense view of conceptual theory.[50] Neither of these views has gained a consensus in the professional community, and, therefore there seems to be little reason to emphasize one view to the exclusion of the other in current accounting standards. Copeland and Ingram concluded that the position of the Financial Accounting Standards Board in FAS 8 is arbitrary and inconsistent with both conceptual issues and economic reality.[51]

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[50] Ibid, pp. 20-26.

[51] Ibid, p. 26.

Translation Methods

The current-noncurrent method is a translation method that was adopted by the American Institute of Certified Public Accountants (AICPA) in the 1930's. This method makes a distinction between long term and short term accounts. The logic of this distinction is that short term accounts were considered to be more vulnerable to exchange rate risks than long term accounts. It was believed that as a consequence the short term accounts should be translated at the current rate at the balance sheet date and the long term accounts at the historical (transaction date) rate. This method was included in ARB No. 43 issued by the AICPA in 1953.

For the first half of the 1970's both the current-noncurrent method and the monetary-nonmonetary method were widely used in practice. Additionally, companies were allowed to defer exchange gains and losses, which helped to smooth reported income.

According to Anderson et. al., the current-noncurrent method ran into problems because of its reliance on exchange rates, and because exceptions were allowed in the treatment of inventory, noncurrent debt, common stock and fixed assets. The exceptions to the general rule were so great that the entire concept had to be seriously questioned.[52] In 1975, a new translation recommendation came into effect, and the current-noncurrent method was discarded.

Hepworth (1956) and the National Association of Accountants (1960) were the originators of the so-called monetary-nonmonetary

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[52]Anderson, et. al., Currency Translation (1974), pp. 52-56.

method. This method makes a distinction between monetary and nonmonetary items. The monetary items are translated at the closing rate and the nonmonetary items at the historical rate. A modified monetary-nonmonetary method is the method recommended in FASB Statement No. 8 in 1975.

Critics of the monetary-nonmonetary method are of the opinion that this method does not fairly represent the position of the foreign subsidiary.[53&54] This method and its shortcomings will be discussed in greater detail in connection with the presentation of FAS 8.

The current-rate-only (closing rate) method has been recommended by, among others, the Institute of Chartered Accountants in England and Wales (1968) and by the Research and Publication Committee of the Institute of Chartered Accountants in Scotland (1970).[55&56] The International Accounting Standards Committee (1978) has also been in favor of this method.[57] In applying this method, all assets and

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[53] Ibid, p. 62.

[54] Scott, G. M., "FASB 8, The Foreign Currency Translation Index, and Bounded Horizons" (Collected Papers of the Northeast Regional Meetings of the American Accounting Association, April 1979), p. 6.

[55] The Institute of Chartered Accountants in England and Wales, "Accounting for Devaluation" (Institute Recommendation on Accounting Treatment of Major Changes in the Sterling Parity of Overseas Currencies, The Accountant, February 17, 1968), pp. 206-209.

[56] The Research and Publication Committee of the Institute of Chartered Accountants of Scotland, "The Treatment in Company Accounts of Changes in the Exchange Rates of International Currencies" (The Accountant's Magazine, September 1970), p. 420.

[57] International Accounting Standards Committee, "Accounting for Foreign Transactions and Translations of Foreign Financial Statements: IED 11," (Accountancy, January 1978), pp. 46-49.

liabilities should be translated according to the current rate, because the total net assets are regarded as being vulnerable to exchange rate risks.[58, 59 & 60] Under the closing rate method, the foreign subsidiary is viewed as a separate entity, and the local perspective is preserved.[61&62] This corresponds to the entity or pure restatement theory view. Moriscato recommends the closing rate method for performance evaluation in multinationals because transactions actually occurred in local currency.[63]

One criticism of the closing rate method is that the use of current rates to translate past measures is technically wrong -- they cut across the canons of arithmetical calculations in general and of monetary calculations in particular.[64] Because translation gains and

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[58] Dorring, H., Gertzel, C. and Malmros, P., "Omrakningsmetoder for Koncernbokslut (Translation Methods for Consolidated Statements)." (Foretagsekonomi No. 10/1976), p. 8.

[59] Eriksson, L., "Valutakursforandringar i Koncernbokslut (Currency Exchange Rate Changes in Consolidated Statements)," (Balans, 2-1976), p. 10.

[60] Accounting Standards Committee, "Foreign Currency Transactions" (Proposed Statement of Standard Accounting Practice - ED 21, The Accountant, 6th October, 1977), p. 419 (para. 9).

[61] International Accounting Standards Committee, "Accounting for Foreign Transactions and Translations of Foreign Financial Statements" (Exposure Draft 11, Accountancy, January 1978), p. 48.

[62] Moriscato, H. G., Currency Translation and Performance Evaluation in Multinationals (Ann Arbor, Michigan, UMI Research Press 1980, Research for Business Decisions, No. 20), p. 40.

[63] Ibid, p. 150.

[64] Clarke, F. L., "Patz on Parities, Exchange Rates, and Translation" (Accounting and Business Research, No. 33, Winter 1978), p. 76.

losses are a consequence of the application of a different translation exchange rate at the end than at the beginning of the period or at the transaction date, a translation gain or loss will arise on almost every balance sheet item. To a certain degree the losses and gains on different balance sheet items will offset each other but a final translation adjustment will exist and need to be accounted for. The way FAS 52 accounts for translation adjustments and other issues relating to the closing rate method will be described and discussed in more detail in connection with the presentation of FAS 52.

In an AICPA study, published in 1972, a new translation method was presented.[65] This method coincides with the monetary-nonmonetary method under certain conditions, and therefore it may be viewed as a variation of the monetary-nonmonetary method. Lorensen called this method "The Temporal Principle of Translation." According to this principle, the nature of translation as a measurement conversion process requires that assets and liabilities of foreign subsidiaries be translated in a manner that retains the accounting principles used to measure them in the foreign money financial statements, that is, that the attributes of the assets and liabilities measured be the same after translation as before. This objective is accomplished for assets and liabilities measured at foreign money prices by applying the fair value principle.[66] This means that a U. S.

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[65] Lorensen, L., Reporting Foreign Operations of U. S. Companies in U. S. Dollars (New York: AICPA, Accounting Research Study, No. 12, 1972).

[66] Ibid, p. 17.

dollar can be approximated for each foreign money price by multiplying the foreign money price by the foreign exchange rate in effect at the date to which the foreign money price pertains. The attributes measured -- for example, historical cost, current replacement price, or current selling price -- are thus retained. "Translating the assets and liabilities at the foreign exchange rate in effect at any other date or by using some other conversion factor results in restating the foreign money prices to U. S. dollar amounts that cannot be described as historical cost or current replacement or selling price, and consequently changes the principles used to measure them in the foreign money financial statements."[67] The temporal method of translation is based on the concept that a foreign operation is an extension of its parent. Under that concept, the objective is to translate elements of a foreign entity's financial statements as though its operations were conducted in the economic environment of its parent.[68, 69, 70, 71]

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[67] Ibid, pp. 17-18.

[68] Accounting Standards Committee, "Foreign Currency Transactions" (Proposed Statement of Standard Accounting Practice - ED 21, The Accountant, 6th October, 1977), p. 419.

[69] International Accounting Standards Committee, "Accounting for Foreign Transactions and Translations of Foreign Financial Statements: IED 11" (Accountancy, January 1978), p. 48.

[70] Moriscato, H. G., Currency Translation and Performance Evaluation in Multinationals (Ann Arbor, Michigan, UMI Research Press 1980, Research for Business Decisions, No. 20), p. 40.

[71] Peat, Marwick, Mitchell and Company, "Foreign Currency Translation - An Overview of the FASB's Revised Exposure Draft" (New York, July 1981), p. 6.

The following example will illustrate the application of the temporal principle: Assume a building which was purchased for FC (foreign currency) 100,000 when the exchange rate was FC 5=$1. The building would be translated at this ratio period after period and would be reflected at $20,000 (disregarding depreciation) in the consolidated accounts. However, if it was revalued to FC 150,000 when the exchange rate was FC 6=$1, then the building would be translated at the six to one ratio until a further revaluation took place. This means that the building would now be reflected at $25,000 in the consolidated statements.

According to the rules in FAS 8, the temporal principle is to be applied to all assets and liabilities except cash, amounts receivable and amounts payable. In paragraph twelve of FAS 8 it is specifically stated that for assets and liabilities, except for those mentioned, the particular measurement basis used shall determine the translation rate. Accounts carried at prices in past exchange (past prices) shall be translated at historical rates, and accounts carried at prices in current purchase or sale exchanges (current prices) or future exchanges (future prices) shall be translated at the current rate.

As mentioned, generally, the translation results under the monetary-nonmonetary method will coincide with the translation results under the temporal method, because most assets or liabilities classified as nonmonetary would be translated at similar rates under the temporal method. This is a consequence of the fact that under generally accepted accounting principles monetary assets and liabilities

are usually measured at amounts that pertain to the balance sheet date and nonmonetary assets and liabilities are usually measured at prices in effect when the assets or liabilities were acquired or incurred. Two examples of when a difference would occur are:[72]

1. a listed investment (marketable security) shown at cost would be translated at the historic rate under the temporal method and at the closing rate under the monetary-nonmonetary method, and

2. stock valued at net realizable value would be translated at the current rate under the temporal method and at the historic rate under the monetary-nonmonetary method.

Naturally, like all other translation methods, the temporal method has received criticism. One deficiency can be illustrated by a modification of the previously presented numerical example, i.e., where a building cost FC 100,000 when the exchange rate was FC 5=$1. Assume that the building is revalued to FC 150,000 when the exchange rate is FC 10=$1. The building will now be shown at 15,000 U. S. dollars (instead of $20,000 as before revaluation) in the consolidated accounts. The question must now be raised whether in fact the parent company has incurred a loss ($5,000) or not. If the building is sold and the proceeds are remitted it will be of lower value to the holding company (parent). However, the asset (building) itself has a higher value in the foreign economy in which it is located.[73] Thus its value has improved when compared to the value represented by the

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[72] Aggarwal, R., "The Translation Problem in International Accounting: Insight for Financial Management" (Management International Review, 2-3/1975), p. 73.

[73] Assuming the inflationary value increase is less than the revaluation amount.

historical cost, and, in fact, its real value can only be measured by its relationship to the other assets and liabilities in the subsidiary.

By applying the temporal method the other assets and liabilities which were previously translated at historical rates would still be translated at those rates, and this is where "real value" distortion becomes apparent.[74] In an Exposure Draft of the Australian Accounting Research Foundation an "amendment" to the temporal method was suggested. The Foundation advocates the use of the temporal method, with the modification that where fixed assets are revalued only the portion relating to the revaluation, that is, the increment, should be translated at the closing rate. The previous cost or value should continue to be translated at the relevant historic rates.[75] Going back to the previously presented numerical example, FC 50,000 of the FC 150,000 would be translated at the FC 10=$1 rate, while the remaining FC 100,000 would be translated at the FC 5=$1 rate, giving the building a total translated value of $25,000.

Many authors are of the opinion that the translation procedure is a technical question such that any deficiency in the information value of the translated statements is due to the valuation basis used, not the translation method. Arthur Anderson and Company is

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[74]Harris, T. S., Translating the Accounts of Foreign Subsidiaries by 'The Closing Rate Method' has some Conceptual Validity but is Invalid in Relation to the Theoretical Base of Current Accounting Practice (A Thesis presented to the University of Cape Town, February 1980), p. 47.

[75]Australian Accounting Research Foundation, "Translation of Foreign Currency Financial Statements in the Context of Historical Cost Accounting" (Exposure Draft: Proposed Statement on Accounting Standards, insert to Australian Accountant, No. 5, June 1979).

of the opinion that a permanent solution of the issues involved in translation cannot be achieved until agreement is reached that the overall purpose of financial statements requires that economic resources be reported at their current values.[76]

Clarke, on the other hand, rejects current value accounting, because current values do not represent amounts of actual money or money equivalents. According to Clarke, prices paid in the past to acquire physical assets were actual money amounts then, but have long gone, and, adjusting the amounts contained in conventional historical cost statements in the manner prescribed under current purchasing power accounting cannot change any of that. Neither official exchange rates nor parity type rates can be used with propriety to adjust indexed historical cost, for in no way can such practice produce a number representative of an identifiable quantity of actual dated money of any particular kind. Neither does replacement cost indicate existing amounts of money available. Clarke concludes that no protracted discussion whether to use official exchange rates or parity rates, or how or when to use them is much to the point unless the data to be translated are dated money amounts or their equivalent.[77]

Haase intertwined the valuation phase with the translation phase, and stated that the translation is not just a technical question but a material problem with a direct effect on the information

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[76]Arthur Anderson and Company, "Response to the Discussion Memorandum on Accounting for Foreign Currency Translation" (May 1974), p. 9.

[77]Clarke, F. L., "A Note on Exchange Rates, Purchasing Power Parities and Translation Procedures" (ABACUS, June 1977), pp. 65-66.

value of the consolidated financial statements.[78] Some attempts have been made to develop translation methods which would specifically incorporate inflation effects. The so-called translate-restate method was developed by the AICPA.[79] According to this method, the financial statements of the subsidiary are first translated into the parent company's (reporting) currency in accordance with presently accepted methods, and then adjusted for the price level change in the country of the parent company.[80] For a business entity with shareholders located mainly in the parent company's home country it may be regarded as justified to place the adjustment emphasis on the inflationary conditions in the parent's country, according to Schwayder.[81]

Zenoff and Zwick believe that the translate-restate method does not adequately take into consideration the change in the purchasing power of the currency of the foreign subsidiary, because the exchange rates (translation rates) do not always (or very seldom) sufficiently incorporate this change. Therefore, they prefer the opposite approach, the restate-translate method. First, the financial statements of the subsidiary are restated to reflect the price level changes in the subsidiary's home country and then translated into the parent company's currency.[82] A

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[78]Haase, K., "Wechselkursanderungen im Multinationalen Konzernabschluss (Currency Exchange Rates Changes in Consolidated Statements of Multinationals)" (Der Betrieb, 40/1976), p. 1881.

[79]AICPA, APB Statement No. 3 (1969).

[80]Rosenfield, P., "General Price-Level Accounting and Foreign Operations" (Journal of Accountancy, February 1971), pp. 58-65.

[81]Schwayder, K., "Accounting for Exchange Rate Fluctuations" (The Accounting Review, October 1972), p. 748.

[82]Zenoff, D. and Zwick, J., International Financial Management (New Jersey, 1969), pp. 749-759.

third method incorporating inflation effects is the restate-translate-restate approach. This method is a combination of the two previous ones, and its name tells the reader the logical sequence of the whole translation process.

In 1975, a method called the earning power principle was introduced.[83&84] According to this principle, changes in translated amounts must correspond to changes in the earning power of the foreign subsidiary's assets and liabilities in terms of the parent company currency. This means that a multinational company must be able to incorporate some measure of the change in value of the foreign assets and liabilities because of the change in the associated cash flow. Aggarwal and Baker point out that the present translation methods give different and sometimes conflicting results because they do not take into account the effects of differential rates of inflation and changes of exchange rates, the latter being influenced by political and/or economic considerations in the short run. The application of the earning power principle would mean that the translation rate used should be based on an estimate of how the cash flows associated with an (balance sheet) item change because of exchange rate-related economic changes, including price level changes. In this way the translated foreign subsidiary financial statements would reflect

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[83] Aggarwal, R., "The Translation Problem in International Accounting: Insight for Financial Management" (Management International Review, 2-3/1975), pp. 67-79.

[84] Aggarwal, R. and Baker, J. C., "Using Foreign Subsidiary Accounting Data, a Dilemma for the Multinational Corporation" (Columbia Journal of World Business, Fall 1975), pp. 88-89.

more accurately the economic value of balance sheet items after the exchange rate change than by applying currently recommended procedures. These estimates of changes in cash flows associated with each asset or liability can, according to Aggarwal and Baker, be based on appropriate economic forecasts, projected changes in exchange rates, and the rates of inflation in the planning horizon.[85]

Parker's suggestion for dealing with translation and inflation is to use current replacement cost valuation with closing exchange rates. Parker thinks this is a more universally valid approach than the historic rate methods (Parker's classification), based on either a monetary-nonmonetary or a current-noncurrent classification of assets and liabilities, and the closing rate method.[86]

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[85] Ibid, pp. 88-89.

[86] Parker, R. H.,"Principles and Practice in Translating Foreign Currencies: An Essay in Comparative Accounting" (ABACUS, December 1970), p. 153.

CHAPTER II

PROBLEM AREA

Problem in Focus

A recent research study, which established the relative importance of eighty-eight international accounting problems, indicated that knowledgeable respondents believe that the most important of nine problem categories is that of exchange rate and translation accounting.[1] A relevant section of this lengthy study is included here as Appendix 1. Even more striking, of the top ten individual problems of the eighty-eight evaluated by the international accounting experts involved in the study, five are related to currency translation. Furthermore, of these eighty-eight problems, the following problem was tied for first place in importance.

> In a world of shifting exchange rates, it is difficult to measure the economic effect of exchange rate changes on a particular company having dealings with foreign affiliates or other foreign operations or the net effect of these rate changes on a system of interrelated companies in different countries; in some circumstances the swings in the parities of currencies are largely unrelated to the operations of affiliated companies in that country.

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[1] Scott, G. M. with Troberg, P., Eighty-Eight International Accounting Problems in Rank Order of Importance -- A Delphi Evaluation (Sarasota, Florida: American Accounting Association, 1980), p. 18.

The results of this study indicate that additional research in the translation area is urgently needed. As the review of the translation methods and their history shows, the opinions about a proper translation approach are very heterogeneous and, many times, conflicting. "The fact is that literature on translation has become so randomly voluminous, the isolated and debated issues so numerous and diffuse, the lack of articulated basic assumptions and concepts underlying conflicting opinions so widespread, that the body of knowledge on translation in its present form almost defies comparative evaluation and reconciliation."[2] In general, what has accumulated from fifty years of costly inquisitive effort is a massive body of opinions, methods, issues, fragmented bits of theorising and unintegrated solutions to specific pragmatic problems, most of which were generated on an ad hoc basis. The translation experience contains a worthwhile lesson for academic and professional accountants alike, because it aptly demonstrates the real cost of failing to heed the arguments for broad normative accounting theory construction in terms of specific and precisely defined and/or testable hypotheses and the significance of the cry for an increased role for empirical research in accounting.[3]

The economic climate of businesses conducting foreign operations has changed over the years. Until the beginning of the 1960's

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[2]Patz, D. H., "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), pp. 311-312.

[3]Ibid, p. 312.

the foreign operations were smaller in scale, often in the form of branch operations, and in that respect more of an extension of the parent company's operations. After the beginning of the 1960's the foreign operations have taken more and more a multinational (international) outlook.[4] The emphasis has been switching from the parent company to the multinational entity as a whole, whereby the individual parts (entities) are treated more or less the same with no special emphasis on the part that is the parent company.

Focusing on the current U. S. conditions and translation standard, it can be noted that since FASB Statement No. 8 (Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Statements) came into effect on January 1, 1976, it has been the object of widespread and heated objections. The Financial Accounting Standards Board has been reconsidering FAS 8 since January, 1979. As a result, FASB issued an initial Exposure Draft on foreign currency translation in August, 1980 that was intended to replace FAS 8. The initial Exposure Draft proved to be as controversial as Statement No. 8. At the Board's public hearing in December, 1980, 47 organizations and individuals presented testimony. Additionally, more than 360 comment letters were received.[5] The views presented were varying and conflicting. FASB's chairman, Donald J. Kirk, called the translation topic ".... the most complex and most controversial one that the Board has faced." The four day hearing

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[4]Scott, G. M., "Currency Exchange Rates and Accounting Translation: A Mis-Marriage?" (ABACUS, June 1975), p. 59.

[5]Financial Accounting Standards Board, Foreign Currency Translation (Revised Exposure Draft, June 30, 1981), para. 175.

bore out his conclusion; opinions were almost equally split between favoring the approach of the present standard and favoring the approach of the Exposure Draft, but virtually no one favored either method without substantial modification, and there was little agreement with respect to the modifications required.[6] In 1981 the FASB issued a revised Exposure Draft entitled "Foreign Currency Translation." The revised Exposure Draft of June 30, 1981 modified certain of the provisions contained in the Board's earlier Exposure Draft. In December of 1981 FASB adopted a new translation standard, FAS 52, entitled "Foreign Currency Translation." This standard is similar to the revised Exposure Draft although the inflation adjustment conventions have been changed from the revised Exposure Draft. The new standard will be effective for fiscal years beginning on or after December 15, 1982.

FASB Statement No. 8

In FAS 8 the objective of translation is stated as being "to measure and express in dollars, and in conformity with U. S. generally accepted accounting principles, the assets, liabilities, revenues or expenses that are measured or denominated in foreign currency."[7] The FAS 8 objective appears to attempt to measure the accounts of the foreign entity in dollars as though it operates in the U. S. economic environment.[8]

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[6]Ibid, para. 176.

[7]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 8: Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements, 1975, para. 6.

[8]Arthur Young and Company, "Accounting for Translation of Foreign Currency Transactions and Foreign Currency Financial Statements" (Client Memorandum, September 22, 1980), p. 3.

In preparing the consolidated statements, cash and amounts receivable or payable that are denominated in the local currency shall be translated into dollars at the current rate. For assets and liabilities other than those mentioned above, the particular measurement basis used shall determine the translation rate, i.e., the temporal principle is to be applied. In most cases we do not have any revaluation of inventory and fixed assets, because most countries use historical cost accounting, and, consequently, the translation results under the FAS 8 rules will coincide with the translation results under the (pure) monetary-nonmonetary method.

The income statement items are translated at the (weighted) average rate for the accounting period in question, except that revenues and expenses (cost of goods sold and depreciation) that relate to assets and liabilities translated at historical rates shall be translated at the historical rates used to translate the related assets (inventory, fixed assets) or liabilities. Exchange gains and losses are included in determining net income for the period in which the rate changes. Exchange gains and losses are a consequence of translation, that is, of remeasuring in dollars, and of conversion of foreign currency or the settlement of a receivable or payable denominated in foreign currency at a rate different from that at which the item is recorded.[9] There is no amortization of unrealized exchange gains and losses. In Canada, similar rules to

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[9]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 8: Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements, (1975), para. 16-17.

those of FAS 8 were intended to be adopted, mainly because of the influence of FAS 8. However, the Canadian Exposure Draft on foreign currency translation (which was intended to come into effect as a standard on December 1, 1978, but was suspended at the beginning of 1979) stated that unrealized exchange gains and losses should be amortized over the remaining life of the related items.[10]

The perspective contained in FAS 8 could be said to represent the parent company's perspective.[11] The temporal principal is considered, as mentioned earlier, to be based on the concept that a foreign entity is an extension of its parent.[12, 13, 14, 15] Moriscato is of the opinion that, in terms of the objectives stated in FAS 8, translation has been defined as a measurement conversion process, which is based on the underlying concept of financial accounting as a measurement process with

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[10]Canadian Institute of Chartered Accountants, "Foreign Currency Translation" (CICA Handbook, September 1978), Section 1650.

[11]Ernst and Whinney, "Foreign Currency Translation - FASB Revised Exposure Draft" (Financial Reporting Development, July 1981), p. 1.

[12]Accounting Standards Committee, "Foreign Currency Transactions," (Proposed Statement of Standard Accounting Practice - ED 21, The Accountant, 6th October, 1977), p. 419.

[13]International Accounting Standards Committee, "Accounting for Foreign Transactions and Translations of Foreign Financial Statements: IED 11," (Accountancy, January 1978), p. 48.

[14]Moriscato, H. G., Currency Translation and Performance Evaluation in Multinationals (Ann Arbor, Michigan, UMI Research Press, Research for Business Decisions No. 20), p. 40.

[15]Peat, Marwick, Mitchell and Company, "Foreign Currency Translation - An Overview of the FASB's Revised Exposure Draft," (New York, July 1981), p. 6.

the monetary unit as the basic unit of measure.[16]

FAS 8 has been heavily criticized. The major criticisms of Statement No. 8 are that:[17&18]

> it causes fluctuations (volatility of) in income reported, because all exchange gains and losses are to be reflected in reported income.
>
> accounting exchange gains and losses can be reported where the reverse has occurred from an economic standpoint, and
>
> financial statement relationships are restated from those reflected in the foreign currency denominated financial statements.

FAS 8 requires that differences between current and book balances of accounts requiring end-of-period translation from foreign currencies into dollars must be reflected in current period income statements. If exchange rates are volatile, reported earnings, which are to be reported on a quarterly basis, are also likely to be volatile. Prior to FAS 8, many companies deferred unrealized gains and losses in their effort to smooth the impact of volatile exchange rates on interim earnings because companies prefer to report a stable earnings pattern. Under FAS 8 unrealized exchange-related events must affect reported earnings. According to Copeland and Ingram, this exposes the business community to an accounting risk in addition to an economic risk. The accounting risk

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[16]Moriscato, H. G., Currency Translation and Performance Evaluation in Multinationals (Ann Arbor, Michigan, UMI Research Press, Research for Business Decisions No. 20), p. 31.

[17]Deloitte, Haskins and Sells, "Foreign Currency Translation, Proposed FASB Statement" (August 28, 1980), p. 3.

[18]Peat, Marwick, Mitchell and Company, "Foreign Currency Translation - An Overview of the FASB's Revised Exposure Draft" (New York, July 1981), p. 3.

arises when unrealized gains and losses are not indicative of eventual realized gains and losses, that is, when accounting reports do not reflect economic reality. Copeland and Ingram are of the opinion that the position taken in FAS 8 is defensible if the reported earnings volatility is real, but indefensible if the volatility is artificial.[19]

Under Statement No. 8 a strengthening foreign currency often produces a translation loss because significant nonmonetary assets, such as property, plant, and equipment, are translated at historical rates.[20] This kind of situation will occur when the foreign subsidiary's monetary liabilities exceed the monetary assets. In this situation, if the nonmonetary assets have risen in real value to the same or greater extent than the monetary liabilities, the justification for reporting a translation loss is most questionable and most doubtful from an economic reality standpoint.

When different translation rates are used for different accounts, the financial statement relationships after translation will differ from the corresponding relationships before translation. In this situation the question arises as to whether or not it is meaningful to calculate ratios and other financial relationships from translated data. The results of these calculations do not accurately describe the financial situation of the

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[19]Copeland, R. M. and Ingram, R. W. "An Evaluation of Accounting Alternatives for Foreign Currency Transactions" (The International Journal of Accounting Education and Research, Spring 1978), pp. 15-16.

[20]Ernst and Whinney, "Foreign Currency Translation - FASB Revised Exposure Draft" (Financial Reporting Development, July 1981), p. 7.

foreign subsidiary in its economic environment, and they often give a misleading picture of the subsidiary. If it is considered that calculation of translated ratios and relationships is needed, then the translation approach in question (FAS 8) must be questioned.

Objections also have been expressed about FAS 8 because of the effects it has had on management actions. To avoid the possible consequences of having to report foreign currency adjustment in income, management has often taken economic actions relative to foreign currency position which result in unfavorable economic consequences. That is, management, in its quest to show "favorable" accounting results, has made economic decisions which are, in essence, dysfunctional to the financial position of the firm.[21] In an effort to reduce the multinational businesses' exposure to the FAS 8 translation adjustments the multinational enterprises have:[22]

- increased hedging of foreign currency positions
- changed the mix between local currency debt and U. S. debt
- refinanced debt, including changing the currencies in which the debt is denominated, at higher cash borrowing cost

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[21]Mensah, Y. M. and Biagioni, L. F., "The Predictive Ability of Financial Ratios Using Alternative Translation Methods for Foreign Currency Financial Statements: A Simulation Study," (The International Journal of Accounting Education and Research, Fall 1980), p. 222.

[22]Arthur Young and Company, "Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements" (Client Memorandum, September 22, 1980), p. 2.

- devoted substantial amounts of management and staff time in foreign exchange risk management (with all the attendant extra recordkeeping, monitoring of currency positions, and preparation and analysis of various reports which that entails)

- made more use of outside foreign currency consultants

- found that their foreign exchange risk management strategies have begun to impinge more seriously on decisions in other corporate activities, especially finance and marketing.

Another criticism of FAS 8 and translation theory in general is that neither encompasses a clear concept of economic reality, nor do they (or FASB) provide a definition of exchange risk.[23]

FASB Statement No. 52

According to FAS 52, financial statements are intended to present, in financial terms, the performance, financial position and cash flows of an enterprise. To make this possible, the financial statements of separate entities within an enterprise that operate in different economic and currency environments are consolidated and presented as though they were the financial statements of a single enterprise. Because it is not possible to combine, add or subtract measurements expressed in different currencies, a translation must be made. It is necessary to translate into a reporting currency those assets, liabilities, revenues, expenses, gains and losses that

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[23]Scott, G. M., "Foreign Financial Statement Translation: A Review and Ambitious Proposal" (Collected Papers of the American Accounting Association Annual Meetings, 1981), pp. 4, 6.

are measured or denominated in currencies of other countries. However, the unity presented by such translation does not alter the underlying significance of the results and relationships of the constituent parts of the enterprise.[24] That is, one of the major objectives of translation is to carry into the consolidated financial statements the financial results and relationships as measured in the primary currency in which the foreign entity conducts its business.[25] Only through the effective commercial and financial operation of its constituent parts is the enterprise as a whole able to achieve its purpose. Accordingly, FAS 52 states that the translation of the financial statements of each component entity of an enterprise should accomplish the following objectives.[26]

a) Provide information that is generally compatible with the expected economic effects of a rate change on an enterprise's cash flows and equity.

b) Reflect in consolidated statements the financial results and relationships of the individual consolidated entities as measured in their functional currencies in conformity with U. S. generally accepted accounting principles.

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[24]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (December 1981), para. 4.

[25]Arthur Young and Company, "Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements," (Client Memorandum, September 22, 1980), p. 4.

[26]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (December 1981), para. 4.

An entity's functional currency is the currency of the primary economic environment in which the entity operates. Normally, that is the currency of the environment in which an entity primarily generates and expends cash. For an entity with operations that are relatively self-contained and integrated within a particular country, the functional currency generally would be the currency of that country. However, an entity's functional currency might not be the currency of the country in which the entity is located. For instance, the functional currency for foreign operations that are a direct and integral component or extension of a parent company's operations might be the currency of the parent's country. Fundamental to the functional currency approach to translation is the view that, generally, a U. S. enterprise is exposed to exchange risk to the extent of its net investment in a foreign operation.[27] Functional currency assets and liabilities hedge one another, and only the net assets are exposed to exchange risk.[28]

The translation approach of FAS 52 is the closing rate method, which is based on the concept that a reporting company has a net investment in a foreign operation and that what is at risk from currency fluctuations is the net investment.[29] Therefore, all the assets and liabilities are translated at the same rate, i.e., the closing rate

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[27]This is a contrast to FAS 8's emphasis on elements of a foreign entity's financial statement -- not on net investment.

[28]Ibid, para. 5-6, 94.

[29]Accounting Standards Committee, "Foreign Currency Transactions," (Proposed Statement of Standard Accounting Practice - ED 21, The Accountant, 6th October, 1977), p. 419.

which means the rate on the balance sheet date. Capital accounts, such as common stock and paid-in capital, would as a practical matter be translated at historical rates.[30] For revenues, expenses, gains and losses the rates on the dates on which these elements are recognized during the period should be used, which can reasonably be approximated by using an appropriately weighted average exchange rate for the period.

A translation adjustment (gain or loss) shall not be included in determining net income but shall be reported separately and accumulated in a separate component of equity until sale or until substantially complete liquidation of the net investment in the entity has taken place. The translation adjustment is solely a result of the translation process and has no direct effect on reporting currency cash flows. According to one view of assenting FASB members, the translation adjustment reflects an economic effect of exchange rate-changes, but that exchange rate-change in the U. S. dollar equivalent of the net investment is an unrealized enhancement or reduction, having no effect on the functional currency net cash flows generated by the foreign entity. Another view of assenting FASB members is that the translation adjustment is merely a mechanical by-product of the translation process.[31] In both cases the translation adjustment is regarded as

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[30]Financial Accounting Standards Board, Letter of February 2, 1982.

[31]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (December 1981), para. 111, 113-114.

having no direct effect on the functional currency cash flows of either the foreign operation or the consolidated group, and, therefore, it is reported in a separate component of equity and not included in the determination of net income.[32]

This way of reporting differs significantly from FAS 8's reporting rules, because under FAS 8 conversion gains and losses as well as translation gains and losses are reflected in net income. According to Tuckerman, it is advisable to show gain or loss on translation separately from gain or loss on exchange (conversion), because of the diverse nature of the two accounts, and because there is no single place in the operating statement where both could appropriately be placed.[33]

One of the more debated issues in developing the new translation standard had been the translation of operations in highly inflationary economies. FASB defines a highly inflationary economy as one that has a cumulative inflation of approximately 100 percent or more over a three-year period.[34] The initial Exposure Draft (August 1980) did not contain any inflation adjustment provisions, and virtually every respondent to the 1980 Exposure Draft who addressed this problem pointed out that, unless special provisions

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[32]Peat, Marwick, Mitchell and Company, "Foreign Currency Translation - An Overview of the FASB's Revised Exposure Draft," (New York, July 1981), p. 6.

[33]Tuckerman, B., "Reporting the Results of Foreign Currency Fluctuation," (Management Accounting, April 1968), p. 27.

[34]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (December 1981), para. 109.

are made, the proposed translation method could report misleading results. Specifically, applying the closing rate method under highly inflationary circumstances without any kind of inflation adjustment generally results in a substantial downward revaluation of balance sheet amounts of long-lived assets, notably property and equipment.[35] In the revised Exposure Draft (June 1981), the FASB proposed that the financial statements of a foreign entity with a highly inflationary functional currency should be restated to reflect changes in the general price level in the functional currency country prior to translation. The revised Exposure Draft represented, in this respect, a restate-translate translation approach. If this proposal had been accepted, restatements would have been permitted with lower levels of inflation provided the cumulative, three-year inflation rate was higher than that of the country of the reporting currency (the U. S.). The United Kingdom is an example of a country that belonged to the "optional restatement" category (as of 1980).[36]

The inflation adjustments suggested in the revised Exposure Draft were:[37]

a) Restatement of non-monetary assets and liabilities.

b) Restatement to reflect in net income the effects of general price-level changes on revenues and expenses attributable to non-monetary items such as cost of

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[35]Ernst and Whinney, "Foreign Currency Translation - FASB Revised Exposure Draft," (Financial Reporting Development, July 1981), p. 16.

[36]Ibid, p. 16.

[37]Financial Accounting Standards Board, Foreign Currency Translation (Revised Exposure Draft, June 30, 1981), para. 13.

sales, depreciation, amortization and gain or loss on disposition on nonmonetary assets.

c) Restatement to reflect in net income the effects of general price-level changes attributable to monetary assets and liabilities.

The amounts necessary to restate a foreign entity's equity balances for the effects of general price-level changes would have been included with translation adjustments in the separate component of equity. More simply stated, equity would have been adjusted or "plugged" to balance the price-level restated balance sheet.[38]

Many respondents to the revised Exposure Draft objected to the proposed restatement provisions, generally on one or more of the following grounds:[39]

a) Information to reflect changes in the general price level should not be required in the primary financial statements until and unless the usefulness of that information has been adequately demonstrated in the Statement 33 experiment.

b) The primary financial statements should not mix information presented in constant measuring units that reflect changes in the general price level with information presented in nominal monetary units.

c) The lack of timely and reliable price-level indexes in more highly inflationary economies constitutes a significant obstacle to practical application of the proposal.

In view of the difficulties with the proposal, the FASB decided that a preferable alternative, recommended by many respondents, is to require that

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[38]Deloitte, Haskins and Sells, "Foreign Currency Translation Update," (The Week in Review - 81-45, November 6, 1981), p. 6.

[39]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (December 1981), para. 106.

the financial statements of foreign entities in those economies that meet the definition of highly inflationary economies be remeasured as if the functional currency was the reporting currency. If the reporting currency is more stable it can, according to FASB, be used as the functional currency without introducing a form of inflation accounting. The remeasurement into the reporting currency that now will serve as the functional currency is intended to produce the same result as if the entity's books of record had been maintained in the functional currency. To accomplish that result, the FASB thinks that it is necessary to use historical exchange rates between the functional currency and another currency in the remeasurement of certain accounts, among others, inventories carried at cost, property, plant and equipment, intangible assets, common stock, cost of goods sold and depreciation. The current rate will be used for most other accounts.[40] This way of translating appears likely to produce results similar to FAS 8, although the FASB contends that this remeasurement approach obviates translation.

Foreign currency transactions are transactions denominated in a currency different from the entity's functional currency. Foreign currency transactions often produce receivables or payables, and a change in the exchange rate between the functional currency and the currency in which a transaction is denominated increases or decreases the expected amount of functional currency cash flows upon settlement of the transaction. With FAS 52 that increase or decrease in expected

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[40]Ibid, para. 10-11, 47-48, 107.

functional currency cash flows is a foreign currency transaction gain or loss that generally should be included in determining net income for the period.[41]

FAS 52 has also been criticized, even by some of the members of the FASB. Three members (including the chairman) of the seven member Board opposed FAS 52. The dissenters criticized FAS 52, among other things for, (a) adopting objectives that are at variance with the single entity and single unit of measure concepts that they believe underlie consolidated statements, and (b) making what they believe to be an unwarranted reporting distinction between exchange gains and losses and translation adjustments. The dissenters recommend that the basic underlying principles of FAS 8 be retained, but that "locally sourced" inventories be translated at the current rather than the historical rate.[42] Arthur Andersen and Company is much of the same opinion, i.e., they support the temporal method as applied in FAS 8 and think that inventories that are stated at FIFO or average cost and that turn over at least once a year should be translated at the current exchange rate.[43]

Other critics of the functional currency approach assert that it is not consistent with consolidation theory and that it violates the single entity and single unit of measure concepts that they believe underlie consolidated financial statements. The Board,

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[41]Ibid, para. 15.

[42]Ibid, pp. 15-16.

[43]Arthur Andersen and Company, Accounting News Brief, No. 8, October-November 1980, p. 1.

or at least the majority of the Board, responded to this criticism by arguing that they believe that for an enterprise operating in multiple currency environments, a true "single unit of measure" does not, as a factual matter, exist.[44]

The reporting of translation adjustments as a separate component of stockholders equity rather than including these adjustments in net income is viewed by some as a violation of the "clean surplus" concept. Under this concept, all changes in equity, other than capital investments or distributions, are reported in income.[45] It has also been suggested that the use of current rates to translate past measures is technically wrong. They cut across the canons of arithmetical calculations in general and of monetary calculations in particular.[46]

A Comparison

A comparison of the principal features of FAS 8 and FAS 52 can be seen on Table 1.

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[44]Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (December 1981), para. 85.

[45]Peat, Marwick, Mitchell and Company, "Foreign Currency Translation - An Overview of the New FASB Exposure Draft" (September 1980), p. 11.

[46]Clarke, F. L., "Patz on Parities, Exchange Rates and Translation" (Accounting and Business Research, No. 33, Winter 1978), p. 76.

TABLE 1

COMPARISON OF THE PRINCIPAL FEATURES

OF FAS 8 AND FAS 52

Feature	FAS 8	FAS 52
Translation Approach	Temporal Method	Current Rate Method
Functional currency	Concept not applicable	The currency of the primary economic environment in which an entity operates, generates and expends cash
Adjustments resulting from the translation of foreign currency statements	Reported currently in income	Accumulated as a separate component of equity
Translation in highly inflationary economies	A possible local revaluation of resources has a major impact on the translated results and values	Remeasurement into reporting currency that becomes the functional currency
Gains and losses from foreign currency transactions	Reported currently in income	Reported currently in income

The major differences between FAS 52 and FAS 8 are as follows:

1. a) All assets and liabilities in the balance sheet are translated at the closing rate (balance sheet date rate) under FAS 52. FAS 8 states that the temporal principle be applied to assets and liabilities other than cash, receivables and payables. In practice this means, in most cases, that the historical rates are used for nonmonetary items and the current rate for monetary items.

   b) For all income statement items the current weighted average rate for the period is to be used under FAS 52. FAS 8 differs in the respect that for depreciation and other expenses related to nonmonetary assets and liabilities, such as cost of sales, historical rates are to be used.

2. In highly inflationary economies the reporting currency becomes the functional currency when FAS 52 is applied. Under FAS 8 the temporal principle is applied which may give similar results to FAS 52 under some conditions but different results under others.

3. The major reporting difference is that, under FAS 52, translation gains and losses are to be reported separately and accumulated in a separate component of equity, that is, they will not be reflected in net income as under FAS 8.

Arthur Young and Company is of the opinion that the results of translating foreign currency financial statements under the FAS 52 rules appear to be more in accord with the economic substance of the effects of changes in foreign exchange rates than the results of applying FAS 8's translation rules. For example, under FAS 8 a foreign manufacturing subsidiary with a positive stockholders' equity and an excess of current liabilities and long term debt over cash and receivables has reported exchange losses (a decrease in equity) as

the foreign currency in its country of operations has strengthened in relation to the U. S. dollar. Under FAS 52 this would not happen.[47]

Compared to the FAS 8 the FAS 52 is not considered (by many) to cause unnecessary fluctuations in reported income, and financial relationships are not restated, for the most part.[48]

Alternatives

Exchange rates do not necessarily reflect an equilibrium based on any underlying economic phenomena within a particular country. The use of exchange rates for translation purposes has been criticized because the exchange rates may not reflect the purchasing power relationships and changes in these relationships between countries. For example, there have been many circumstances documented where, in the short, intermediate and (less often) long term there have been significant divergences of exchange rate changes from changes of each of the major price indices of one country relative to the same indices of another country.[49]

There have been efforts made to explain the relationship between exchange rates and purchasing power parities (PPP) by the

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[47]Arthur Young and Company, "Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements" (Client Memorandum, September 22, 1980), p. 4.

[48]Peat, Marwick, Mitchell and Company, "Foreign Currency Translation - An Overview of the New FASB Exposure Draft" (September 1980), p. 2.

[49]Scott, G. M., "Currency Exchange Rates and Accounting Translation: A Mis-Marriage?" (ABACUS, June 1975), pp. 64-65, 68.

application of a so-called purchasing power parity theory. The PPP doctrine, however, means different things to different people.[50] "The proposition that relative goods prices are not affected by exchange rates -- or equivalently, that exchange rates changes will be proportional to relative inflation -- is generally referred to as the doctrine of purchasing power parity,"[51] according to Krugman. Chacholiades, in turn, states that the purchasing power theory is an attempt to explain, and perhaps more importantly, measure statistically the equilibrium rate of exchange and its variations by means of the price-levels and their variations in different countries. The basis for this idea is that a certain amount of money should purchase the same representative bundle of commodities in different countries.[52] Balassa expresses a view similar to Chacholiades in saying that in recent years (1960's) a proposal has been forward to use the purchasing power doctrine as a guide in establishing equilibrium exchange rates.[53]

Rodriquez and Carter define PPP-theory as the model that links exchange rates or trade performance to the changes in relative

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[50]Balassa, B. "The Purchasing Power Parity Doctrine: A Reappraisal" (Journal of Political Economy, December 1964), p. 584.

[51]Krugman, P. R. "Purchasing Power Parity and Exchange Rates: Another Look at the Evidence" (Journal of International Economics, No. 3, August 1978), p. 397.

[52]Chacholiades, M. International Monetary Theory and Policy (New York: McGraw-Hill Book Company, 1978), pp. 183-184.

[53]Balassa, B. "The Purchasing Power Parity Doctrine: A Reappraisal" (Journal of Political Economy, December 1964), p. 584.

prices. More specifically, they state that this theory proposes that after a base period of relative equilibrium in two exchange markets and their domestic economies is established, the exchange rate in any given period should reflect the changes in relative prices since the base period.[54] The dictionary of Modern Economics defines purchasing power parity as "a theory of international exchange rates which states that the demand for the currency of one country for the currency of another, when neither is on the gold standard, is essentially an offer to change units of purchasing power of one country for those of the other." To summarize, the PPP theory focuses on the relationships between exchange rates and price-levels (inflation).

Heckscher and Yeager subscribe to the idea that there are in fact, a great number of individual purchasing power parities, one for each commodity and service traded between countries.[55&56] "The purchasing power parity may then be conceived of as some sort of 'central tendency' amongst the individual parities."[57]

The notion of purchasing power parities derives from the exchange theories of the Spanish economists of the Salmanca school in the sixteenth

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[54]Rodriquez, R. M. and Carter, E. E., International Financial Management (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1976), p. 38.

[55]Heckscher, E. G. Price Levels and Rates of Exchange: The Theory in E. F. Heckscher et al., Norway, Denmark, Iceland and the World War, (Yale University Press, 1930).

[56]Yeager, L. B. "Exchange Rates and Price Levels" in International Monetary Relations, Theory, History and Policy (New York: Harper and Row, 1966), p. 176.

[57]Wheatley, J. "Remark on Currency and Commerce" cited in Einzig, P., The History of Foreign Exchange (London: MacMillan, 1962), p. 509.

century.[58] Rediscovery of the parity theory in the twentieth century is generally credited to Cassel, who, in 1916, published the article "The Present Situation of Foreign Exchange." Cassel explained that "when two currencies have undergone inflation, the normal rate of exchange will be equal to the old rate multiplied by the quotient of the degree of inflation in the one country and in the other."[59]

Two versions of the PPP theory are usually distinguished, namely (a) the absolute version and (b) the relative (comparative) version. According to the absolute version, at every moment the rate of exchange between the two countries will be determined by the quotient between the general levels of prices in the two countries. Balassa states this differently, namely that PPP calculated as a ratio of consumer goods prices for any pair of countries would tend to approximate the equilibrium rates of exchange.[60]

The relative version is concerned with the effects of inflation on an initial equilibrium rate of exchange. It asserts that, in comparison to a period when equilibrium rates prevailed, changes in relative prices would indicate the necessary adjustments in exchange rates.[61] Keynes was more a supporter of the relative version. It is clear that the current level of support for the parity theory runs in favor of its

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[58]Clarke, F. L. "A Note on Exchange Rates, Purchasing Power Parities and Translation Procedures" (ABACUS, June 1977), p. 60.

[59]Cassel, G. Money and Foreign Exchanges After 1914 (London: Constable and Company, 1922), p. 140.

[60]Balassa, B. "The Purchasing Power Parity Doctrine: A Reappraisal" (Journal of Political Economy, December 1965), p. 584.

[61]Ibid, p. 584.

relative version.[62] This appears to be the result of empirical testing that has brought about a fairly strong consensus that PPP is mainly a long run phenomenon in the sense that it should be expected to agree with data on price-levels and exchange rates only as an average over several quarters, perhaps even years.[63-65] Officer says that if PPP determines the exchange rate, there is no necessity for the relationship to be simultaneous. He believes that "allowances for lagged influence not only is consistent with the theory but also may improve its explanatory power, especially if the lag is distributed through time."[66] Also, Clarke thinks that variations between exchange rates and calculated parities and between movements in them are expected and are reconcilable.[67] The most recent evidence known to the author involving research of the degree of relationship between price-levels and exchange rates indicates that the casual

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[62]Clarke, F. L. "A Note on Exchange Rates, Purchasing Power Parities and Translation Procedures," (ABACUS, June 1977), pp. 61-62.

[63]Genberg, H. "PPP Under Fixed and Flexible Exchange Rates," (Journal of International Economics, No. 2, May 1978), p. 272.

[64]Aliber, R. Z. and Stickney, C. P. "Accounting Measure of Foreign Exchange Exposure: The Long and Short of it" in Notable Contributions to the Periodical International Accounting Literature - 1975-1978, (Sarasota, Florida: American Accounting Association, 1979), pp. 7-10. (Also in Accounting Review, January 1975, pp. 44-57.)

[65]Ernst and Whinney, "Foreign Currency Translation - FASB Revised Exposure Draft" (Financial Reporting Development, July 1981), p. 26.

[66]Officer, L. H. "The Purchasing Power Parity Theory of Exchange Rates: A Review Article" (International Monetary Fund Staff Papers, No. 1, March 1976), p. 46.

[67]Clarke, F. L. "A Note on Exchange Rates, Purchasing Power Parities and Translation Procedures" (ABACUS), June 1977), p. 62.

relations run in both directions and tend to be self-reinforcing.[68]

The following factors affect long run exchange rate behavior:[69]

1. Relative money growth -- the country with greater monetary growth will experience exchange depreciation, all other things being equal.

2. Real output growth -- the country with greater real output growth, and thus greater absorption of money supply into transaction balances rather than price increases, will experience exchange appreciation, all other things being equal.

3. Growth in productive efficiency -- the country with greater relative growth of productive efficiency in the tradeables sector will experience exchange appreciation, all other things being equal.

The purchasing power parities are brought about by a process of commodity arbitrage -- buyers choose goods from the cheapest source. However, this commodity arbitrage process operates only with significant delays, which explains why the purchasing power parity principle gives the long run trend of exchange rates but cannot explain day-to-day or even quarter-to-quarter movement.[70&71] In the current floating rates situation the main sources of delays are two:[72]

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[68]Bank of International Settlements, 46th Annual Report 1.4.76 to 31.3.77 (Basle: BIS, 13 June, 1977), p. 31.

[69]Feiger, G. and Jacquillat, B. International Finance - Text and Cases (Boston: Allyn and Bacon, Inc., 1982), p. 151

[70]Ibid, p. 151.

[71]Kravis, I. and Lipsey, R. "Price Behavior in the Light of Balance of Payments Theories," (Journal of International Economics, No. 2, May 1978), p. 231.

[72]Feiger, G. and Jacquillat, B. International Finance - Text and Cases (Boston: Allyn and Bacon, Inc., 1982), p. 151.

1. There are substantial ordering, shipping, delivery and payment lags in the world trade. Even if buyers respond immediately to the opportunities offered by exchange rate changes, it will take quite a while for these demand changes to be reflected in payment flows. It is payment flows that affect the spot market.

2. In the attempt to maintain market share, companies will alter selling prices to prevent full impact of exchange rate changes being felt by customers. Companies are unwilling to operate with a loss or a low margin forever, but they may for some time.

Feiger and Jacquillat add still another factor with delaying impact, namely government intervention in the exchange market. Government management of exchange rates, not only in the form of exchange market intervention, but also in the form of trade restrictions, tariffs, currency exchange restrictions, and domestic economic policies (including fiscal and monetary policies), is considered by many to be one of the strongest factors to cause disequilibrium of exchange rates.[73-75] Sometimes these government actions may have a quite prolonged delaying impact on the commodity arbitrage process. Cassel gives much the same reasons for why a floating exchange rate may diverge from the purchasing power parity, including government intervention and especially that trade restrictions may be more severe in one direction (country) than the other. Cassel also notes that anticipation of greater inflation in a country than abroad,

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[73]Klein, R. B. "Inter-Country Purchasing Power Index Numbers" (Management Accounting, August 1972), pp. 28-32.

[74]Anderson et. al., Currency Translation (1974), p. 29.

[75]Scott, G. M. "Currency Exchange Rates and Accounting Translation: A Mis-Marriage?" (ABACUS, June 1975), pp. 64-65.

and, long term capital movements are factors influencing the equilibrium.[76]

Because of the time-lag between changes in domestic price levels and changes in exchange rates between countries, it is an open question as to whether exchange rates are suitable for translation purposes, especially since companies have to generate reports frequently, that is, at least quarterly.[77]

Klein contends that it is even rare that the exchange rate will reflect purchasing power parity.[78] Furthermore, as some people see it, the use of exchange rates suggests that a foreign subsidiary is of importance primarily as a source of remittable funds from the foreign country to the domestic country of the holding company, i.e., the exchange rate is a remittance-oriented (conversion oriented) ratio.[79] "Since the majority of a firm's assets representing capital and retained earnings are reinvested (not remitted) in the country where the firm is located, the translated statements must reflect an equal amount of purchasing power."[80]

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[76]Cassel, G. in "The Purchasing Power Parity Theory of Exchange Rate: A Review Article" by Officer, L. H. (International Monetary Fund Staff Papers, No. 1, March 1976), p. 9.

[77]Scott, G. M. "Currency Exchange Rates and Accounting Translation: A Mis-Marriage?" (ABACUS, June 1975), p. 67.

[78]Klein, R. B. "Inter-Country Purchasing Power Index Numbers" (Management Accounting, August 1972), pp. 28-32.

[79]Harris, T. S. Translating the Accounts of Foreign Subsidiaries by 'The Closing Rate Method' Has Some Conceptual Validity but is Invalid in Relation to the Theoretical Base of Current Accounting Practice (A thesis presented to the University of Cape Town, February 1980), p. 25.

[80]Anderson, et. al., Currency Translation (1974), p. 2.

The possible use of alternatives to exchange rates for some aspects of translation has received almost no attention among academics and practitioners, and FASB has seemingly paid no serious attention to alternatives.

An alternative to the exclusive use of exchange rates for translation purposes would be the use of purchasing power parity ratios. They reflect the purchasing power and changes in purchasing power between countries. PPP indices could be used as historical or current indices in the same manner in which historical and current exchange rates currently are used. Besides possibly reflecting the "economic reality" of the subsidiary better, it seems probable that an advantage of using PPP indices would be a more stable equilibrating mechanism than when using exchange rates because PPP-indices do not fluctuate to the same extent as exchange rates. This stability should mean that translation gains and losses due to volatility of the equilibrating mechanism would be less frequent and of smaller magnitude for PPP than for exchange rates. If this were so, hedging to avoid translation losses due to volatility of the equilibrating factor would also be eliminated or reduced, which in turn would enhance the stability of the exchange rate markets and world monetary system and promote international trade.[81]

The foreign currency translation index (FCTI) approach is another alternative to the use of exchange rates for translation. The FCTI is a variant of the PPP index method and utilizes an index especially developed to suit the needs of accounting translation purposes. The

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[81]Daley, L. and Scott, G. M., "Measuring the Economic Effect of Exchange Rate Changes on American Companies" (Collected Papers of the American Accounting Association Annual Meetings, 1979), p. 10.

advantage of the FCTI is that it can be constructed to equilibrate either general or specific price changes between economies, depending on what is desired.[82]

Klein suggests yet another alternative, that is, that a combination of purchasing power indexes and exchange rates be used to establish translation rates. With this scheme, the purchasing power index would be used as a basis for adjusting the exchange rate of certain net assets to obtain the translation rate.[83&84]

There are several problems to encounter in applying PPP indices for translation purposes. According to Rodriquez and Carter, for the PPP theory to work properly all goods should be internationally traded, be without transport costs, and behave according to the law of one price.[85] These requirements are naturally not fulfilled in the current state of world affairs. On the other hand, it is questionable whether these requirements need to be fulfilled or to what degree they need to be fulfilled.

A base period is required for calculating relative PPP. Further, if price-levels are to be compared, a choice among three measures -- GDP implicit deflators, wholesale prices and consumer prices -- must be made.

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[82]Scott, G. M. "FASB 8, the Foreign Currency Translation Index, and Bounded Horizons" (Collected Papers of the Northeast Regional Meetings of the American Accounting Association, April 1979), pp. 12-13.

[83]Not applicable to income statement accounts.

[84]Klein, R. B. "Inter-Country Purchasing Power Index Numbers" (Management Accounting, August 1972), pp. 28-32.

[85]Rodriquez, R. M. and Carter, E. E. International Financial Management (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1976), p. 38.

For purposes of international comparisons of price movements, each of these suffers from the fact that the methods used in their preparation, and sometimes the constituent elements as well differ from one country to another.[86] Samuelson believes that of these three measures the GDP deflator has the strongest claim to represent a general measure of a country's price index.[87] The GDP deflator is based on a conceptual framework that assigns an appropriate weight to each good, whatever the classification chosen -- as for example between tradeables and nontradeables.[88]

Another problem in the calculation of PPP ratios is the weighing of the countries' consumption patterns. If differences in tastes do not counterbalance differences in productive endowments, there will be a tendency in each country to consume commodities with lower relative prices in larger quantities. The purchasing power of the second country's currency (assuming two countries) will then be underestimated, if the first country's consumption pattern is used as weights, and overestimated if the weights are the final bill of goods consumed in the second country. It is customary to use a geometric average of the two values in empirical work, although this average lacks specific economic meaning.[89]

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[86]Kravis, I. B. and Lipsey, R. D. "Price Behavior in the Light of Balance of Payments Theories" (Journal of International Economics, No. 2, May 1978), pp. 199-200.

[87]Samuelson, P. A. "Analytic Notes on International Real-Income Measures," (Economic Journal, September 1974), p. 602.

[88]Kravis, I. B. and Lipsey, R. D. "Price Behavior in the Light of Balance of Payments Theories" (Journal of International Economics, No. 2, May 1978), p. 200.

[89]Balassa, B. "The Purchasing Power Parity Doctrine: A Reappraisal," (Journal of Political Economy, December 1964), p. 587.

As yet virtually no one appears to have attempted to construct and apply time series of price parity indices in translation, let alone determined the comparative effects of such translation or the properties of the output of such translation.[90] This author is aware of only a few researchers, namely Mensah and Biagioni, and Wyman.

Other alternatives to exchange rates, besides the PPP ratios, may prove to be suitable for translation purposes. One such alternative is cost, and hence application of cost ratios. Arguments in favor of cost over price parity theories are the following:[91]

1. Cost of production are less subject to adjustment to exchange rate changes than are prices of traded goods.

2. Costs exclude the volatile component of profits and so are more likely than product prices to represent long run prices (for absolute parity) and to reflect permanent rather than temporary changes in prices upon inflation or deflation (for relative parity).

Another possible alternative to the use of exchange rates would be to use interest rates ratios for translation purposes, or to use interest rates to adjust the legal exchange rates to obtain a translation rate. The basis for this suggestion is the so-called Fisher Effect, which is the proposition that anticipated changes in exchange rates are reflected in the relative differential in interest rates in the different countries on financial instruments which have similar risk characteristics. No

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[90]Patz, D. H. "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), p. 322.

[91]Officer, H. "The Purchasing Power Parity Theory of Exchange Rates: A Review Article" (International Monetary Fund Staff Papers, No. 1, March 1976), p. 10.

causation effect is necessarily present, but it is only that equilibrium forces simultaneously impact the spot and forward exchange rates and the interest rates. Tests of the Fisher Effect are more limited than those for PPP theory, because meaningful interest rate data is not available.[92&93] An application of interest rates in any form for translation purposes is nonexistent to this author's knowledge.

Research of the Effects of Translation Methods

Mensah and Biagioni carried out a simulation study to test the business failure predictive ability of financial ratios under different translation methods. The translation approaches tested were the current-noncurrent method, the FAS 8 (temporal version) method, the closing rate method, and a relative purchasing power parity approach. Mensah's and Biagioni's overall conclusion was that the differences between translation methods are insignificant, at least with respect to their business failure predictive ability, although the current-noncurrent method and the FAS 8 method were somewhat less accurate than the others. An interesting finding was that the exclusion of translation gains and losses from the reported income did not significantly impair the predictive ability of the ratios of the alternative translation methods. This finding

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[92]Aliber, R. Z. and Stickney, C. P. "Accounting Measures of Foreign Exchange Exposure: The Long and Short of it," in Notable Contributions to the Periodic International Accounting Literature - 1975-1978). (Sarasota, Florida: American Accounting Association, 1979), pp. 7-10. (Also in Accounting Review, January 1975, pp. 44-57.)

[93]Giddy, I. "An Integrated Theory of Exchange Rate Equilibrium" (Journal of Financial and Quantitative Analysis, December 1976).

is significant in respect to the contrast between FAS 8 and FAS 52 in reporting translation gains and losses.[94, 95, 96]

In the theory section of this dissertation, Copeland's and Ingram's study was described. They tested empirically which of three values best approximates the eventual liquidation values of foreign currency balances and the changes in resources resulting from transactions (their performance criteria). The values tested were, (1) the initial transaction value that reflects nonrecognition of unrealized interim gains/losses, (2) the initial transaction value adjusted for unrealized gains/losses by means of a contra account, i.e., deferral of unrealized interim gains and losses (consistent with the FAS 52 reporting approach), (3) the initial transaction value adjusted for interim value, i.e., immediate recognition of unrealized interim gains and losses (approach adopted in FAS 8). Copeland and Ingram concluded that, if the currencies and periods examined in their study were representative of general exchange rate behavior (after 1975), deferral of interim foreign exchange gains and losses appears to be the most satisfactory accounting alternative. The deferral method was the only proposed alternative which was capable of producing both the best approximation of the liquidation values of exchange transactions and the least distortion in the firm's

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[94]Under FAS 8, translation gains and losses are included in reported income.

[95]Under FAS 52, translation gains and losses are reported in a separate component of equity and not reflected in net income.

[96]Mehsah, Y. M. and Biagioni, L. F. "The Predictive Ability of Financial Ratios Using Alternative Translation Methods for Foreign Currency Financial Statements: A Simulation Study," (The International Journal of Accounting Education and Research, Fall 1980), pp. 221-245.

earnings performance. It is also the only method which meets the primary objectives of both the asset/liability view and the revenue/expense view of conceptual theory.[97]

In several studies, including the Evans, Folks, and Jilling[98] study, the reaction of management to fluctuating exchange rates and FAS 8 has been examined. The conclusion in most studies has been that it appears that the foreign exchange risk management practices have clearly changed since FAS 8.[99] The implication is that the rules of FAS 8 have influenced the hedging activities of management because management seems to fear the possible impact that FAS 8 translated data may have on financial statement readers. Studies of the effects of the adoption and use of FAS 8 on multinational companies stock prices have generally concluded that FAS 8 has had no significant effect.[100&101]

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[97]Copeland, R. M. and Ingram, R. W. "An Evaluation of Accounting Alternatives for Foreign Currency Transactions" (The International Journal of Accounting Education and Research, Spring 1978), pp. 15-26.

[98]Evans, R., Folks, W. and Jilling, J. The Impact of Financial Accounting Standards No. 8 on the Foreign Exchange Risk Management Practices of American Multinationals (Stamford, Connecticut: Financial Accounting Standards Board, November 1978).

[99]Daley, L. and Scott, G. M. "Measuring the Economic Effect of Exchange Rate Changes on American Companies" (Collected Papers of the American Accounting Association Annual Meetings, 1979), p. 14.

[100]Dukes, R. An Empirical Investigation of the Effects of Financial Accounting Standards Board Statement No. 8 on Security Behavior, (Stamford, Connecticut: Financial Accounting Standards Board, November, 1978).

[101]Arthur Young and Company, "Accounting for the Translation of Foreign Currency Transactions and Foreign Currency Financial Statements" (Client Memorandum, September 22, 1980), p. 2.

CHAPTER III

RESEARCH PROJECT

Research Objectives

The objectives of the research study were to examine how well different translation approaches preserve the integrity of net income and certain financial ratios embodied in the foreign financial statements of foreign entities when net income and the financial ratios are represented by their time series patterns. The time series pattern for net income as well as the financial ratios was formed by the observations of net income and each financial ratio, that is, one observation for every quarter of a six-year period. There were two kinds of time series patterns, namely one pattern consisting of the observations of net income/financial ratios before translation and the other pattern consisting of the observations of net income/financial ratios after translation. The degree of closeness of fit between the nontranslated time series pattern and the translated time series pattern was used as the measure of the ability of a translation approach to preserve the before-translation net income and financial ratios.

The following research questions were analyzed:

1. Is there a difference among different translation approaches with respect to preserving the net income information embodied in the foreign financial statements?

2. Is there a difference among different translation approaches with respect to the extent to which they retain the integrity of financial relationships in the functional currency?

The first research question was addressed because FAS 8 has been alleged by its critics to alter and even distort the reported net income figure information embodied in the foreign (local) financial statements. One major reason for this that is suggested by the critics is the artificial volatility that FAS 8 is considered to produce in reported net income. It is asserted by the proponents of FAS 52 that FAS 52 will better preserve the locally reported net income information than does FAS 8, especially since translation adjustments (gains and losses) are excluded from net income. This issue was explored in this research.

Under the closing rate method of FAS 52, the current rate is used for translation of all items except income statement items for which a weighted average exchange rate for the period is used. FAS 52's proponents believe that because of this, under most conditions FAS 52 preserves the financial results and relationships significantly better than the temporal method adopted in FAS 8. Preserving financial results and relationships is a stated objective of FAS 52, and FAS 52's possible superiority relative to FAS 8 in this respect (the second research question) was investigated.

The nature of this research project was investigative. The translation methods explored and contrasted were FAS 8 and FAS 52. FAS 8 and FAS 52 were contrasted not only in their "pure" form, but also with respect to the effects of substituting purchasing power parity ratios for exchange rates but otherwise using the translation rules of FAS 8 respective to FAS 52. The deficiencies and the possible advantages of

PPP indices rather than exchange rates for translation purposes were considered in this study. The possible use of PPP ratios for translation purposes has received almost no attention and is virtually unexplored.

Four major translation alternatives were tested in this research study. These were:

1. FAS 8 with exchange rates
2. FAS 8 with PPP ratios
3. FAS 52 with exchange rates
4. FAS 52 with PPP ratios

The current-noncurrent method and the initial Exposure Draft that was the precursor of FAS 52 were not explored in this study because neither are currently under consideration as a possible standard by the FASB. The current-noncurrent method and the initial Exposure Draft, however, provide avenues of possible future research.

Methodology

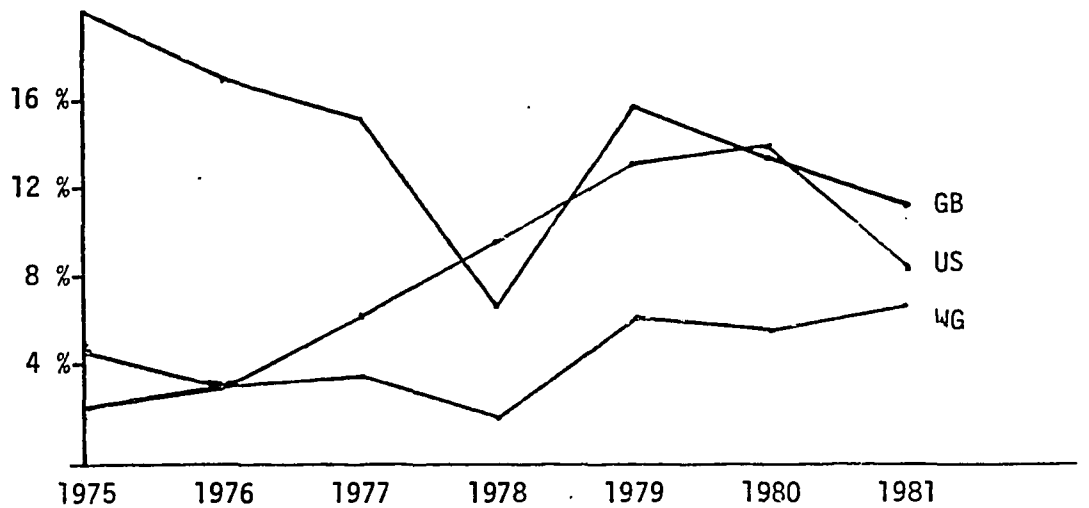
The quarterly financial statements for 1976-1981 of four U. S. companies were utilized. The quarterly financial statements were translated into a reporting currency of a country with a higher inflation rate than the U. S. as well as to a reporting currency of a country with a lower inflation rate than the U. S. The results were expected to give indications about the need for inflation adjustment prior to translation of financial statements of entities in inflationary economies. This problem area has been virtually unexplored by objective research, but has been heavily debated. West Germany and Great Britain seemed to be suitable choices as the countries of the reporting currencies, because West Germany has had a lower inflation rate (4.3%) and Great Britain a higher

inflation rate (13.0%) than the U. S. (8.7%) based on the wholesale price index of finished goods. The inflation development in these three countries for 1976-1981 is displayed in Figure 1. Furthermore, both are major trading partners of the U. S. The U. S. quarterly financial statements (local economy) of the companies selected were translated into the reporting currencies (parent company's currency) of British pounds and German marks. The financial statements translated were the consolidated statements of the companies in question because only consolidated statements were available on a quarterly basis. This meant that the before-translation statements generally contained translation gains and losses from consolidating foreign subsidiaries. This should not have had any effect on the research results because what was of interest was the ability of the different translation approaches to preserve nontranslated resource values and results irrespective of how these values and results had been obtained. In other words, it did not matter if the reported results had been obtained through efficient operations, inefficient operations or by including or excluding foreign subsidiaries because exactly the same resource values and results were translated under each translation approach.

The approach selected in this study, i.e., to consider the U. S. as the local economy and the foreign countries (Great Britain and West Germany) as the domestic (reporting) economy, could be described as a "reverse" approach. The advantage of this approach was that the financial statements to be translated had been prepared in accordance with U. S. generally accepted accounting principles. Consequently, no adjustment of the statements to reflect U. S. generally accepted accounting principles

FIGURE 1

Inflation development in Great Britain, the United States and West Germany for 1976-1981.



GB = Great Britain
US = The United States
WG = West Germany

was needed. This eliminated any confounding effects on the research that such an adjustment could have caused. Another advantage was that because exactly the same statements were translated into two economies affected differently by inflation the effects of differential inflation on the translation results could be determined more precisely. Furthermore, there were problems in obtaining data of U. S. foreign subsidiaries on a quarterly basis. An effort was made to obtain such data, but only a few U. S. parent companies provided any data at all, and this data proved to be insufficient. The rest of the companies contacted either did not respond or responded that in accordance with company policy the information requested is not made available to persons external to the company.

Hence, a "reverse" approach was selected so that the quarterly data needed for this research study could be obtained.

In 1971 the United States suspended the link between the dollar and gold and refused to exchange gold for dollars. Finally, in 1973 the Bretton Woods monetary system, under which the foreign exchange market had worked since 1945, was abandoned. The Bretton Woods system was an adjustable peg system, which provided for exchange rate stability in the short run but it allowed for the possibility of exchange-rate adjustment when a country's balance of payments was in fundamental disequilibrium.[1] Since 1973 the major currencies have been operating under a dirty floating system, which succeeded the Bretton Woods system. Under dirty floating, as opposed to clean floating, there is a central bank intervention in the foreign exchange market to iron out wide fluctuations in exchange rates.[2]

The time period chosen was 1976-1981, that is, six years. This time period was selected so that it approximately includes the years for which the floating rate system has been in effect. The years 1973-1975 were, however, excluded because balance sheets were not accessible on a quarterly basis for these years.

Four types of companies were tested. The criteria regarded as important in selecting companies for this research study determined the

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[1]Balance of payments is usually defined as the systematic record of all economic transactions between the residents/enterprises of the reporting country and the residents/enterprises of the rest of the world over a specified period of time.

[2]Chacholiades, M. International Monetary Theory and Policy (New York: McGraw-Hill Book Company, 1978), pp. 53, 166-168.

types or categories of companies selected. The criteria were asset structure and net income growth. With respect to asset structure, two kinds of companies were selected; one where monetary assets exceeded monetary liabilities and one where monetary liabilities exceeded monetary assets. Asset structure was emphasized in order to contrast the FAS 8 and FAS 52 translation rules in this respect. Under FAS 8, only monetary assets and liabilities are generally translated at a current rate while the FAS 52 translation rules state the use of current rates exclusively. The effects of these rules on financial relationships and net income are heavily debated but empirically unexplored. The initial sample was chosen from Compustat tapes.

With respect to net income growth, two kinds of companies were selected; one with a fairly strong growth and one with a fairly low growth. The ones with strong growth had a growth that, on an average, exceeded the local inflation rate and the ones with a low growth had a growth that, on an average, was below the local inflation rate for 1976-1981.[3] The reason for this choice was that inflation and translation (exchange rates or PPP-ratios) are interrelated, although no one knows the exact relationship; the performance of the different translation approaches under different net income growth and different inflationary conditions is unknown and of great interest, since volatility of reported net income is one issue for which FAS 8 has been heavily criticized.

To summarize, there was one company in each of the four classifications selected as shown in Table 2.

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[3]Because of the reverse approach used in this study, the local inflation rate was actually the U. S. inflation rate.

TABLE 2

SELECTION CRITERIA

Asset Structure:	Net Income Growth: High	Net Income Growth: Low
Monetary Assets > Monetary Liabilities		
Monetary Liabilities > Monetary Assets		

This provided eight base cases, consisting of four companies' statements translated into two reporting currencies each.

The companies were selected from the Primary Industrial file of the Compustat tapes on the basis of the criteria described. The companies on the Compustat tapes were stratified on the basis of asset structure and net income growth rate for 1973-1980, and then the number of companies needed for this research study was selected from suitable strata. The inventory valuation method of the companies selected had to be First-In First-Out, because Last-In First-Out would require specific information of the dates of the acquisition of the goods, some of which have been purchased far back in time. With Last-In First-Out it would have been very unlikely that the various dates required could have been obtained from the financial statement information acquired for this research study, and this information would have been necessary for obtaining the exchange rates or PPP-ratios required under FAS 8 inventory translation rules. Because the

Compustat tapes did not contain balance sheets on a quarterly basis for the time period in question the financial statements of the sample selected were obtained from the Security and Exchange Commission's 10-Q filings.

In total there was a thirty-two factorial design:

FAS 8 a. exchange rates b. PPP-ratios X FAS 52 a. exchange rates b. PPP-ratios

X 2 asset structures X 2 growth rates X 2 reporting currencies = 32.

The limitation imposed by using actual companies was that only a few cases could be explored in order to avoid too much complexity; excessive complexity could have impaired the manageability of the entire project and the interpretability of research results. Because of the small number of companies, the companies were not randomly selected with the result that the findings are not likely to be representative of all companies. This limits the generalizability of the research conclusions.

The major advantage of using actual companies was the reality this brought to the analysis, and it is the actual effects of the FAS 52 and the FAS 8 on companies' translated statements that are of interest. It is believed that the sample will give a good indication of these effects. Furthermore, there is a cry for empirical research in the translation area, and the testing of PPP-ratios for translation purposes on actual enterprises is virtually nonexistent.[4]

Two alternative methodologies were considered: One alternative would be to manually prepare simulated transactions for a few

[4]Patz, D. H. "The State of the Art in Translation Theory" (Journal of Business Finance and Accounting, 4, 3, 1977), pp. 312, 322.

representative cases, and the other is that of computer simulation.

The manual simulation method has three major disadvantages, as follows:

1. Lack of representativeness of the initial financial statements (the starting point). The initially created financial statements are seldom representative for companies in some specific industry. The statements are often prepared with too much emphasis on facilitating later elaborations of the statements. This may obscure the realism of the statements. The financial statements prepared manually will never correspond totally to reality even if utmost care is employed in preparing the initial statements. The degree of reality and the consequent effects on the research results are hard, if not impossible, to determine.

2. Lack of representativeness of the periodic transaction flows. The creation of transactions, that could be regarded as representative for a specific industry is a troublesome task. Again it is a question of degree of representativeness with the consequent effects on the research results. There is a danger of too much standardization of transactions from period to period in an effort to make the whole task more operational and manageable. The forming of a natural and realistic tie between transactions from different periods may also prove to be difficult because of the artificiality of accounting periods. For example, in a real situation an accounts receivable may rise at the end of an accounting period and be collected at the beginning of the following accounting period. In manual preparation, a certain amount of accounts receivables would rise each period and a certain amount would be collected each period, but there would be no individual identification of and connection between an accounts receivable and its collection.

3. Lack of capacity.[5] There is no way to manually prepare enough representative transactions that would correspond to a real situation. The effect of a necessary simplification is hard to determine.

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[5]Scott, G. M. "An Examination of Accounting Currency Translation Theory," (The University of Manchester, Summer 1978).

> There also is not enough capacity to prepare a satisfactory amount of characteristically differently structured companies to enable the drawing of any firm conclusions in regard to the research results.

The major advantage of manual preparation is its deterministic nature. The researcher predetermines the output by the input provided. The effects of different treatments become fairly straightforward to analyze if there are no complex interaction effects, and irrelevant or confounding variables can be reduced or eliminated.

Computer simulation has much the same drawbacks as manual preparation.

1. Lack of representativeness of initial financial statements. One way to overcome this deficiency (also when applying manual preparation) is to use real companies' financial statements as starting point.

2. Lack of representativeness of periodic transaction flows. This deficiency is equally applicable to manual preparation and computer simulation.

The major advantage, especially as compared to manual preparation, is the availability of sufficient processing capability. Computer simulation can systematically assemble a large body of data, such as several sets of transactions and a large number of differently structured companies, and can analyze a large number of cases in a comparative format in order to illustrate the differences in results among different translation methods. Furthermore, simulation can be deterministic in nature.[6] Another advantage of simulation is that variables can be systematically

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[6]Daley, L. and Scott, G. M. "Measuring the Economic Effect of Exchange Rate Changes on American Companies" (Collected Papers of the American Accounting Association Annual Meetings, 1979), p. 11.

varied to study the effects of one changed variable while all the other remain constant (base case approach). To summarize, the most important objection to manual preparation and computer simulation is their lack of realism, and the degree of realism of the results is hard to determine.

As noted, actual exchange rates were used. Purchasing power parity ratios were calculated based on price indexes. There are basically three different indexes to choose from in calculating purchasing power parity ratios. They are the GDP implicit deflator, the wholesale price index and the consumer price index. The GDP implicit deflator, which may have the strongest claim to represent a general measure of a country's price index, was eliminated from this study because it is available only on a yearly basis rather than on a quarterly basis.[7] Of the wholesale price index and consumer price index the wholesale price index was preferred because it better represents the industrial price level development. Industrial companies were tested in this study, not family consumers. There are subgroups of the different indices, and the "finished goods" index of the wholesale price indices was used. This index was available for all the three countries involved from the United Nations' Monthly Bulletin of Statistics. A general wholesale price index was, however, not available for the three countries.

The year 1976 was used as the "base year" and January 1, 1976 constituted the starting date for the PPP-ratios calculations. The exchange rates at that date constituted the initial purchasing power parity ratio; this ratio was indexed up on a quarterly basis by the use of wholesale price

[7]Samuelson, P. A. "Analytic Notes on International Real-Income Measures," (Economic Journal, September 1974), p. 602.

indexes. The purchasing po. r parity rate calculation may be illustrated as follows: On January 1, 1976 the exchange rate between the United States and Great Britain was 0.4942 British pounds = $1. The wholesale price index on March 31, 1976 was 102.7 (beginning of 1976 = 100) for Great Britain and 99.6 for the United States. The purchasing power parity rate may be calculated by determining an adjustment factor to apply to the exchange rate at the beginning of the year.[8] The PPP rate on March 31, 1976 would be: $0.4942 \times \frac{102.7}{99.6} = 0.5096$.

What was measured in this study was how well the time series patterns of net income and financial relations were preserved under the FAS 52 and the FAS 8 translation rules when either exchange rates or PPP-ratios were used as the translation factor. A time series pattern was formed by the twenty-four (twenty-three for three companies) observations of net income and each of the selected financial ratios, that is, one observation for every quarter of the six-year period, 1976-1981. There was one time series pattern before translation consisting of twenty-four (twenty-three) observations of nontranslated net income/financial ratios and there was another time series pattern after translation consisting of twenty-four (twenty-three) observations of translated net income/financial ratios. The closeness of fit between the translated and nontranslated time series patterns was used as the measure of the ability of a translation approach to preserve net income and the financial relationships embodied in the foreign nontranslated financial statements. No kind of absolute measurement

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[8]Wyman, H. E. "Analysis of Gains and Losses from Foreign Monetary Items: An Application of Purchasing Power Parity Concepts." (The Accounting Review, July 1976), p. 546.

of translated net income or translated financial relationships in relation to "economic reality" was attempted, and therefore there was no necessary requirement to establish an equilibrium purchasing power parity ratio as the starting rate. Furthermore, a theoretically generally agreed upon calculation method for calculating equilibrium PPP-ratios probably could not be established.

Performance Evaluation

The different translation approaches were evaluated with respect to the first research question, preservation of locally reported net income information, by establishing the statistical correlation (closeness of fit) between the translated and nontranslated net income time-series patterns. Correlation analysis seeks to determine how well a linear or other equation describes or explains the relationship between variables. The correlation coefficient value can range from minus one to plus one. A correlation coefficient of plus one indicates a perfect direct correlation between two variables, that is, an increase (decrease) in the value of one of the variables will be matched by an exact proportional increase (decrease) in the value of the other variable. A correlation coefficient of minus one indicates a perfect inverse correlation between two variables, that is, an increase (decrease) in the value of one of the variables corresponds to an exactly proportional decrease (increase) in the value of the other variable. A zero correlation indicates no association between two variables, which means that an increase or decrease in the value of one of the variables is not matched by any systematic change in the value of the other variable. The two variable categories in this study were nontranslated data and translated data.

The Pearson Product-Moment formula test was one of the correlation analyses applied in this study. The correlation coefficient (r) is simply obtained by considering the pair of values (translated-nontranslated) corresponding to the various times (every quarter).[9]

The formula to use is:

$$r = -\frac{\Sigma xy}{\sqrt{(\Sigma x^2)(\Sigma y^2)}}$$, where $x=X-\overline{X}$, X = quarterly translated net income

$\overline{X}$ = mean of translated net incomes

$y=Y-\overline{Y}$, Y = quarterly nontranslated net income

$\overline{Y}$ = mean of nontranslated net incomes

A nonparametric correlation test, that is, Spearman's rank correlation (R) test was also performed. When using Spearman's rank correlation, the observations in each set (translated and nontranslated) are first ranked according to their relative magnitudes. After the ranking the following formula is applied:[10] $R = 1 - \frac{6\Sigma Di^2}{n(n^2-1)}$, where ΣDi^2 denotes the sum of the squares of the differences between the ranks of each pair, that is, twenty-four (n) translated and nontranslated pairs.

A correlation coefficient was calculated for each case, as illustrated in Table 3.

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[9]Spiegel, M. R. Schaum's Outline of Theory & Problems of Statistics (New York: McGraw-Hill Book Company, 1961), pp. 241, 246.

[10]Gibbons, J. D. Nonparametric Methods for Quantitative Analysis (New York: Holt, Rinehart & Winston, 1976), pp. 276-277.

TABLE 3

CORRELATION MATRIX

	Companies							
	1 GB	2 GB	3 GB	4 GB	1 WG	2 WG	3 WG	4 WG
FAS 8 Exchange Rates	r or R	r	r	r	r	r	r	r
FAS 8 PPP-Ratios	r	r	r	r	r	r	r	r
FAS 52 Exchange Rates	r	r	r	r	r	r	r	r
FAS 52 PPP-Ratios	r	r	r	r	r	r	r	r

GB = Great Britain
WG = West Germany

The ability of the translation approaches to preserve financial relationships, the second research question, was measured by calculating and comparing, by means of correlation analysis key before-and-after-translation ratios. The ratios tested were return on assets, return on shareholders' equity, gross margin, profit margin, earnings per share, inventory turnover, current ratio and debt to equity ratio. Similar tables to Table 3 were established for each ratio.

After having calculated the correlation coefficients a statistical test of overall difference between the different translation approaches was performed. The Quade test, named after its inventor, Dana Quade, was the test applied. The Quade test is a nonparametric test, which means that it relies on fewer assumptions than a parametric test. The Quade test seeks to determine whether there are differences between different treatments.

In this research study treatments were represented by the four translation approaches. The null hypothesis was that there is no difference in performance between the four translation approaches, that is, the translation approaches perform equally for all companies, of the four selected, irrespective of inflationary conditions (translation into German marks respective to British pounds) and irrespective of financial figure/ratio measured. In this study then there were seventy-two "subjects" (cases) consisting of nine financial measures (net income and eight financial ratios) derived from each of four companies' financial statements which had been translated into two reporting currencies. The values for each "subject" (case) were represented by the correlation coefficients. "Subject" one was the net income figure of the British pounds translated financial statements of the first of the four companies, "subject" two was the net income figure of the British pounds translated financial statements of the second of the four companies, and finally "subject" seventy-two was the debt-to-equity ratio calculated from the German marks translated financial data of the last of the four companies. The subjects or different cases are called blocks in the Quade test, and in total there were seventy-two blocks (b) in this research study. There were four translation approaches called k-variate variables (k=4). The arrangement of the Quade test is illustrated in Figure 3.

In using the Quade-test, a rank = $R(_{ij})$ from 1 to k is assigned to X_{ij} within block (row) i. That is, for block i the variables (correlation coefficients) X_{i1}, X_{i2} . . ., X_{ik} are compared with each other and the rank 1 is assigned to the smallest observed value, the rank 2 to the second smallest, and so on to the rank k, which is assigned to the

FIGURE 2

QUADE TEST

		Treatment = Translation Method			
	Block	FAS 8 Exchange Rates	FAS 8 PPP-Ratios	FAS 52 Exchange Rates	FAS 52 PPP-Ratios
Net Income	Company 1-GB	X_{11}	X_{12}	...	X_{1k}
	Company 2-GB	X_{21}	X_{22}	...	X_{2k}
	Company 3-GB	X_{31}	X_{32}	...	X_{3k}
	Company 4-GB	.	.	.	.
	Company 1-WG	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	Company 4-WG	.	.	.	.
Return on Assets	Company 1-GB	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	Company 4-WG	.	.	.	.
	.	X_{b1}	X_{b2}	...	X_{bk}

largest observation in block i. With respect to this study, first the correlation coefficients for "subject" (block) one were ranked, that is, the correlation coefficients for the net income figure derived from company one's British pounds translated financial statements and then the correlation coefficients for "subject" (block) two and the other seventy "subjects" (blocks) were ranked, that is, ranks were assigned in all of the b blocks. The next step is to assign ranks to the blocks themselves

according to the size of the sample range in each block. The sample range within a block i is the difference between the largest and the smallest observations (correlation coefficients) within a block. The ranks assigned to each block are denoted $Q_1, Q_2, \ldots, Q_b$. Finally the block rank Q_i is multiplied by the difference between the rank within block i, $R(X_{ij})$ and the average rank within blocks, (k+1)/2, to get product S_{ij}.

$$S_{ij} = Q_i \left[R(X_{ij}) - \frac{k+1}{2}\right]$$

S_{ij} is a statistic that represents the relative size of each observation within the block, adjusted to reflect the relative significance of the block in which it appears. The null-hypothesis when using the Quade test is, as mentioned, that there are no differences among the different treatments (translation approaches), that is, each ranking of the variables (translation approaches) within a block is equally likely. The test statistic is:

$$T_1 = \frac{(b-1)B_1}{A_1-B_1}, \text{ where } A_1 = \sum_{i=1}^{b} \sum_{j=1}^{k} S_{ij}^2$$

$$B_1 = \frac{1}{b} \sum_{i=1}^{k} S_j^2$$

S_j denotes the sum for each treatment, that is, $S_j = \sum_{i=1}^{b} S_{ij}$. The test statistic T_1 is compared to the value of the F distribution at the selected α level. If an overall difference is found multiple comparisons are made in order to determine between which individual treatments differences exists. Treatment i and j are considered different if the following inequality is satisfied.[11]

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[11]Conover, W. J. Practical Nonparametric Statistics (New York: John Wiley & Sons, Second Edition, 1980), pp. 295-299.

$$S_i - S_j > t_{1-\alpha/2} \left[\frac{2b(A_1 - B_1)}{(b-1)(k-1)} \right]^{\frac{1}{2}}$$

Computer Programs

The Statistical Analysis System (SAS) computer language was used to perform the translation process under each translation approach and to carry out the correlation analysis. The SAS COMPUTAB (Computing and Tabular reporting) procedure organizes data into tabular form commonly used in business and research. Output data sets are easily displayed as balance sheets, income statements, or other summary reports.[12] This made the COMPUTAB procedure most suitable for this research project in which financial statements needed to be calculated (translated) and displayed on a quarterly basis. By the use of the COMPUTAB procedure the non-translated financial statements were translated (calculated) in accordance with the requirements of each translation approach, and a matrix was formed for each company under each translation approach. The columns of the matrix represent the quarters and the rows of the matrix represent the financial statements accounts.

SAS also provides correlation analysis procedures. The SAS Spearman rank correlation procedure and the SAS Pearson Product-Moment formula procedure were used in this study.

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[12]SAS Institute Inc., SAS/ETS User's Guide (Cary, North Carolina, 1980), p. 20.1.

Assumptions

The following assumptions were made about the companies' book balances at the beginning of 1976 of certain accounts:

1. The amounts of capital stock and paid-in capital at the beginning of 1976 were assumed to have been invested in their entirety ten years earlier.
2. The amount of retained earnings at the beginning of 1976 was assumed to have been earned evenly throughout the preceding ten years.
3. Long-term assets, such as property, plant and equipment, at the beginning of 1976 were assumed to have been acquired in their entirety ten years earlier.

Both FAS 8 and FAS 52 require capital stock and paid-in capital to be translated at historical exchange rates. Because the Security and Exchange Commission's 10-Q filings generally do not contain information about the dates of the initial nor any additional investments, the ten year assumption was made.

Under FAS 52 retained earnings should be translated at historical exchange rates. The dates of these earnings are generally not available in the 10-Q filings. By assuming that the retained earnings were created evenly throughout the preceding ten-year period, the average exchange rate of the ten years prior to 1976 could be, for simplicity reasons, applied to the initial balance of 1976.

Historical rates should be applied to long-term assets according to FAS 8 rules. The 10-Q filings do not contain information about the acquisition dates of these assets, hence the ten year assumption.

Under FAS 8, inventory has to be translated at historical rates. By including only firms that use the First-In First-Out inventory valuation method information about historical purchase dates far back in time

was not needed. This would have been the case if Last-In First-Out would have been the inventory valuation method used. By calculating the inventory turnover ratio, an estimation of the approximate acquisition date could be made, and the historical rate needed under FAS 8 inventory translation rules could be obtained.

Sensitivity analysis with a range of plus/minus five/ten years was employed to explore the possible effects that the assumed initial capital investment, retained earnings and long-term assets dates may have had on the research results.

CHAPTER IV

RESULTS

Companies Selected

A total of four U. S. companies were selected. The companies were code named HIHI, HILO, LOHI and LOLO. These names are abbreviations of the criteria on the basis of which the companies were selected. The abbreviations are explained in Table 4.

TABLE 4

COMPANY ABBREVIATIONS

HIHI = high net income growth - monetary assets exceed monetary liabilities

HILO = high net income growth - monetary liabilities exceed monetary assets

LOHI = low (or negative) net income growth - monetary assets exceed monetary liabilities

LOLO = low (or negative) net income growth - monetary liabilities exceed monetary assets

The HIHI company is engaged, directly and through subsidiaries, in the discovery, development, manufacture, and sale of chemical compounds and substances for use by or on living organisms -- human, plant, and animal. The company manufactures and sells a broad line of human health, agricultural and cosmetic products. Products are manufactured or distributed

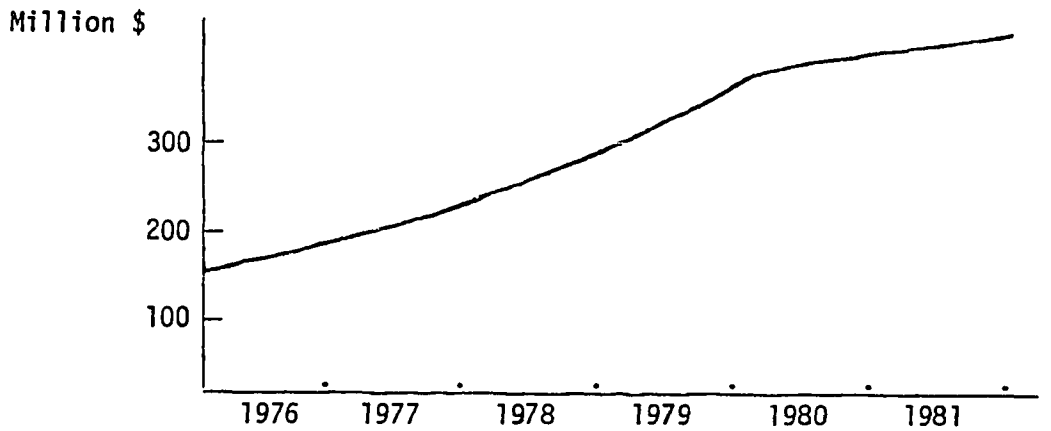
through HIHI's own facilities in the U. S. and thirty-three other countries, in seventeen of which it owns or has an interest in manufacturing facilities. Its products are sold in more than 130 countries. The HIHI company had an annual net income growth of approximately thirteen percent for 1976-1981. The U. S. average annual inflation rate for this period was 8.7 percent based on the wholesale price index of finished goods.

The net income growths of the 900 major industrialized companies on the COMPUSTAT tapes were stratified into intervals of ten percent so that 1.0 meant no growth, 1.1 meant ten percent growth, 1.2 meant twenty percent growth and so on, while 0.9 meant ten percent decline in net income, 0.8 meant twenty percent decline in net income and so on. Of the companies on the COMPUSTAT tapes about eighteen percent had a net income growth between ten and twenty percent and about eight percent between ten and fifteen percent for the time period 1973-1980. The growth interval 10-20 percent had the most observations of intervals of ten percent, and the frequency of observations was declining above and below this interval. HIHI's annual net income growth, which is illustrated in Figure 3, can be said to be representative of a large number of industrialized companies.

The monetary assets to monetary liabilities ratios of the 900 COMPUSTAT companies were stratified into intervals of ten percent. A ratio of 1.0 meant that monetary assets equalled monetary liabilities, a ratio above 1.0 meant that monetary assets exceeded monetary liabilities and a ratio below 1.0 meant that monetary liabilities exceeded monetary assets. The average monetary assets to monetary liabilities ratio of HIHI was 1.12 during 1976-1981. Of the 900 major industrialized companies on the COMPUSTAT tapes 78.9 percent had monetary liabilities exceeding

FIGURE 3

HIHI'S NET INCOME PATTERN



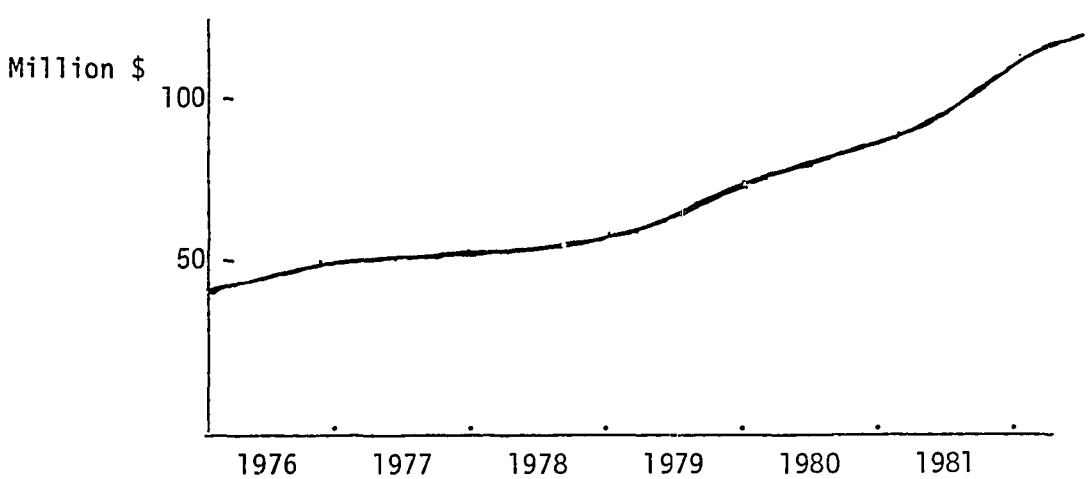
monetary assets during 1973-1980. In the 21.1 percent group where monetary assets exceeded monetary liabilities about sixteen percent fell into the 1.1-1.2 ratio category, which constituted the second most populous category of intervals of 0.1, the interval 1.0-1.1 being the most populous. In this respect HIHI's monetary assets to monetary liabilities ratio can be said to be representative of companies where monetary assets exceed monetary liabilities. HIHI's inventory turnover ratio for 1976-1981 was 1.5. Financial statements data of HIHI was obtained for January 1, 1976 through September 30, 1981, that is, for twenty-three quarters.

The HILO company is a diversified worldwide manufacturer and marketer of consumer products. The company manufactures, markets and distributes, through various retail stores, toiletry and medicinal products, a large number of cosmetic products, specialty foods, permanent press knit and woven apparel for infants, toddlers and young boys and girls, fragrances and fashion items, casual footwear and supplies to hospitals.

The HILO company had an average net income growth of sixteen percent for 1976-1981. Of the 900 major industrialized companies on the COMPUSTAT tapes about eighteen percent had a net income growth between ten and twenty percent and about ten percent between fifteen and twenty percent for 1973-1980, that is, HILO's net income growth, presented in Figure 4, was representative of a large number of industrialized companies. Furthermore, the growth pattern was very stable.

FIGURE 4

HILO'S NET INCOME PATTERN



The monetary assets to monetary liabilities ratio was 0.75 for 1976-1981. About eleven percent of the 900 major industrialized companies on the COMPUSTAT tapes fell into the 0.7-0.8 category, which means that HILO was representative of a large number of industrialized companies. The 0.5-0.6 interval was the most populous of all intervals with fifteen per cent

of the companies represented in this category. HILO's inventory turnover for 1976-1981 was 2.1. Financial statements data of HILO was obtained from the beginning of 1976 through the end of 1981, that is, for twenty-four quarters.

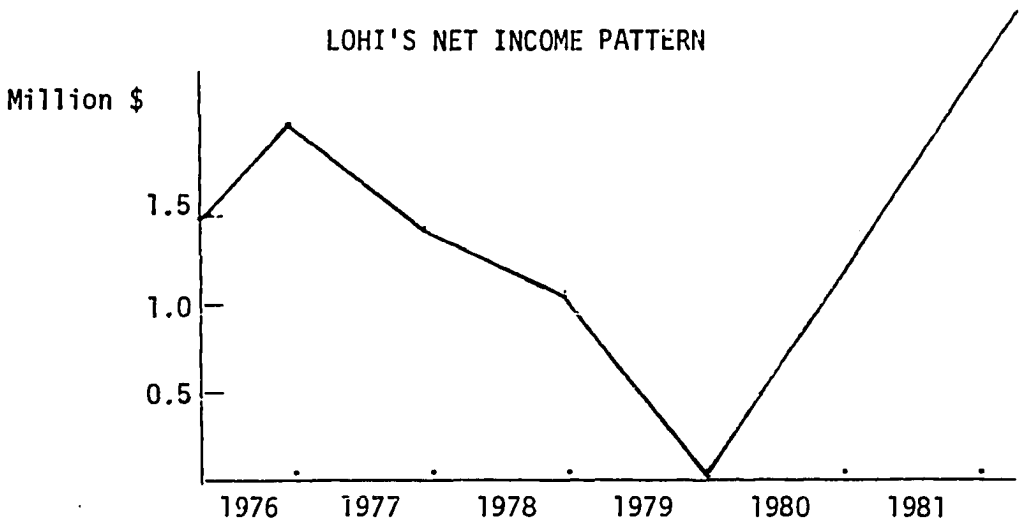
The LOHI company designs, manufactures and sells diversified lines of ready-to-wear ladies' dresses, suits, sportswear and costumes throughout the U. S. The fiscal year of LOHI differs from the fiscal years of the other companies in this study in that it begins on August 1.

LOHI had had a declining net income growth from 1976 to 1980 whereafter the declining trend began to reverse. The net income levels of 1977 through 1980 were all below the 1976 net income level. The net income pattern, illustrated in Figure 5, goes from February, 1976 through October, 1981, that is, twenty-three periods. Companies with an average declining growth trend for 1973-1980 constituted 20.6 percent of the 900 companies on the Primary Industrial COMPUSTAT file. LOHI fell into the 0.9-1.0 growth interval (1.0 = unchanged growth). This interval included about twelve percent of the companies with a declining growth. The number of companies was decreasing the more declining the growth trend was, and therefore LOHI can be considered to be representative of many industrialized companies with a declining growth trend.

The monetary assets to monetary liabilities ratio of LOHI was 3.5, that is, very high, and in this respect LOHI was not a typical industrialized company. LOHI had also a fairly high inventory turnover ratio of 6.1.

FIGURE 5

LOHI'S NET INCOME PATTERN



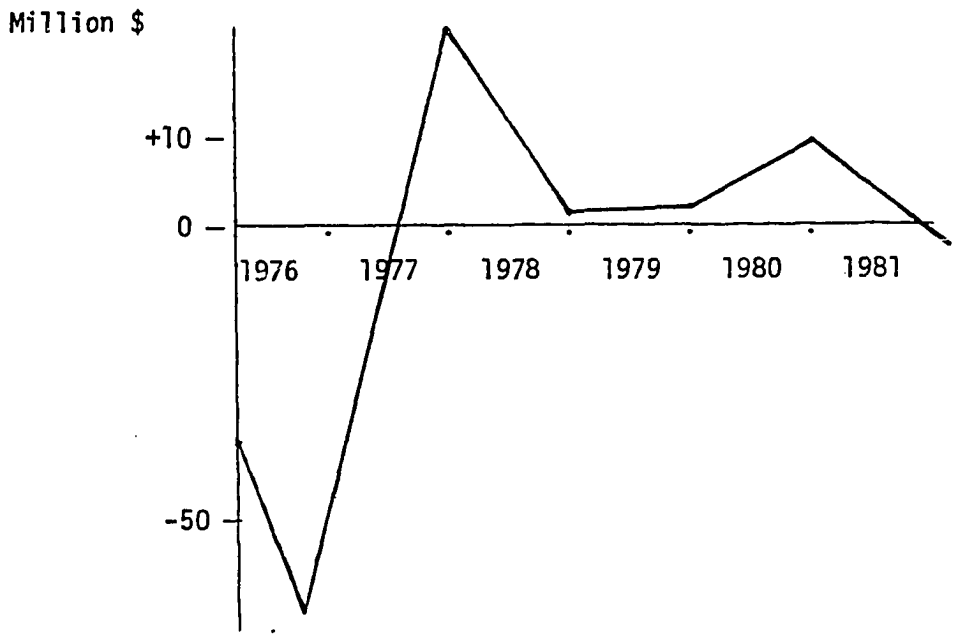
The fourth selected company, LOLO, is a leading international publisher of encyclopedias, reference works, juvenile books, and a wide variety of other educational materials. Business is conducted worldwide in two principal categories, that is, reference book operations and mail order operations.

LOLO has had a debit balance of retained earnings ever since 1975. The results for the years 1973 through 1976 were all negative (losses). The year 1977 constituted a recovery year but the net income growth in the subsequent years has been below the 1977 level although these years have not produced any reported losses. The net income growth pattern of LOLO is illustrated in Figure 6.

The monetary assets to monetary liabilities ratio was 0.69 for 1976-1981. Approximately eleven percent of the 900 companies on the Primary Industrial COMPUSTAT file had a ratio between 0.6-0.7 during 1973-1980. The most populous interval of intervals of 0.1 was the 0.5-0.6

FIGURE 6

LOLO'S NET INCOME PATTERN



interval with fifteen percent of the companies. The inventory turnover ratio for LOLO during the 1976-1981 time period was 1.7. Financial statements data of LOLO was obtained for the period, January 1, 1976 - October 31, 1981, that is, for twenty-three quarters.

Taken as a whole, the selected companies' characteristics were fairly representative of industrialized companies during 1976-1981, except for LOHI's high monetary assets to monetary liabilities ratio. HIHI and HILO were fairly well matched with respect to their net income growth, that is, thirteen and sixteen percent. HILO and LOLO were well matched with respect to their monetary assets to monetary liabilities ratio the ratios being 0.75 respective to 0.69. All the companies except LOHI had an inventory turnover around two and a large international business

sector, which meant that they had characteristics of multinational (international) enterprises.

Analysis of Research Results

Two correlation analyses of the time-series data were applied in this study, namely Spearman's rank correlation test and Pearson's Product-Moment formula test. The correlation coefficients of these two correlation techniques were mostly in agreement, the Pearson test generating generally a little higher coefficients. Interdependence of the observations violates one of the assumptions of the Pearson test, and interdependence of the observations was present in this study in that the observations were serial in nature and each quarter's financial statements are influenced by the preceding quarters. Therefore, more reliance was placed on the Spearman test and the results of the Spearman test are presented first and then the results of the Pearson test are presented and commented on but only with respect to the cases where larger differences in the results between the two correlation tests were found. Being a nonparametric technique Spearman's rank correlation test also is less sensitive than a parametric technique to small sample sizes.

Because the average annual U. S. inflation rate of approximately 8.7 percent was lower than the corresponding British inflation rate of 13.0 percent, for the time period 1976-1981, the U. S. economy was termed noninflationary relative to the British economy when translating from U. S. dollars into British pounds.[1] Similarly, the U. S. economy was termed

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[1]The inflation rate figures are based on the wholesale price index of finished goods.

inflationary relative to the German economy because the German inflation rate of 4.3 percent was lower than the corresponding U. S. inflation rate for the time period in question.

Three kinds of comparisons were made for the net income figure and each of the selected financial ratios. Firstly, the performance of each translation approach, FAS 52 with PPP-ratios, FAS 52 with exchange rates, FAS 8 with PPP-ratios and FAS 8 with exchange rates, in each of the eight cases, that is, HIHI's, HILO's, LOHI's and LOLO's financial statements translated into British pounds respective to German marks, was analyzed separately. Secondly, the exchange rates translation alternative of FAS 52 was compared to the PPP-ratios translation alternative of FAS 52. The same kind of comparison was made for FAS 8. Thirdly, the FAS 8 translation alternatives were compared to the FAS 52 translation alternatives. The results of the sensitivity analyses are presented separately, except for cases that showed high sensitivity to the time assumptions. In these cases the effects of the time assumptions are commented on in connection with the Spearman analysis of the individual financial figure (ratio) in question.

Spearman's Correlation Test

Net Income

The ability of the different translation approaches to reflect in the after-translation values the nontranslated net income figure embodied in the foreign nontranslated financial statements constituted the first research problem of interest. Spearman's rank correlation coefficients for net income are displayed in Table 5.

TABLE 5

SPEARMAN'S CORRELATION

COEFFICIENT FOR NET INCOME

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.148	.488	.788	.587	.625	.615	.599	.337
FAS 8 PPP-Ratios	.524	.603	.919	.952	.383	.674	.819	.944
FAS 52 Exchange Rates	.866	.960	.982	.999	.847	.940	.982	.998
FAS 52 PPP-Ratios	.987	.996	.998	.996	.889	.969	.991	.998

The FAS 52-with-PPP ratios translation alternative performed best of the four translation approaches showing a good performance in all eight cases. There were almost no noticeable differences among the eight cases. The high net income growth cases provided, though, slightly lower correlation coefficients.

The FAS 52-with-exchange rates translation approach provided a high correlation in all eight cases. All the correlation coefficients were close to each other, ranging from .847 to .999. Although there were no substantial differences between the correlation coefficients, some attention may be drawn to the fact that the correlation coefficients of the high net income growth cases were lower than those of the low net income growth cases, both under noninflationary and inflationary conditions. This difference was accentuated when high net income growth was combined with monetary assets exceeding monetary liabilities.

The FAS 8-with-PPP-ratios translation alternative provided medium to high correlation coefficients in the noninflationary as well as inflationary cases except for the inflationary case where high net income growth was combined with monetary assets exceeding monetary liabilities (HIHI). The explanation for the weak performance in this case is not clear-cut but it could be that the FAS 8-with-PPP-ratios approach is not suitable for companies with such an asset structure and such a net income growth. The conclusion is supported by the fact that this translation approach had its worst performance in the HIHI case also when translating from a noninflationary economy.

In translating from a noninflationary economy, the application of the FAS 8-with-exchange rates translation approach to a company with low net income growth and with monetary assets exceeding monetary liabilities (LOHI) seemed to give more accurate results, the correlation coefficient being fairly high (.788), than the application of this translation approach to high growth companies, HIHI and HILO. The correlation coefficient in the noninflationary LOHI case was also higher than the correlation coefficient in the noninflationary LOLO case. The FAS 8-with-exchange rates translation approach performed especially poorly in the noninflationary case where high net income growth was combined with monetary assets exceeding monetary liabilities (HIHI).

In translating from an inflationary economy the FAS 8-with-exchange rates approach performed about equally well in the HIHI, HILO and LOHI cases while this translation approach performed clearly poorer in the LOLO case. In comparing the inflationary cases with the noninflationary cases under the FAS 8-with-exchange rates translation approach it can be

noted that in the high net income growth cases translation from an inflationary economy seemed to provide better results than translation from a noninflationary economy. The results were the reverse for the low net income growth cases. These results give no clear indication whether inflation adjustments of the financial statements prior to translation are needed when translating from an inflationary economy. An inflation adjustment may be recommendable for the low net income growth cases.

The differences between the correlation coefficients of the two FAS 52 translation approaches were very small. The PPP-ratios alternative performed as well or slightly better for seven of the eight cases. The difference between the PPP-ratios alternative and exchange-rates alternative was greater for high net income growth companies than for low net income growth companies.

Focusing on the two FAS 8 translation alternatives, the PPP-ratios alternative provided overall better results than the exchange rates alternative. Only in the inflationary HIHI case the exchange rates approach showed a higher correlation coefficient than the PPP-ratios approach.

The FAS 52 translation approaches clearly out-performed the FAS 8 translation approaches, that is, the after-translation representation of net income corresponded more closely to the before-translation representation of net income when the FAS 52 approaches were used than when the FAS 8 approaches were used. In many cases the difference was substantial. The PPP-ratios alternative of FAS 8 was fairly close to the two FAS 52 alternatives in performance in the translation of financial statements of low growth companies, especially if the monetary liabilities of the

companies exceeded the monetary assets. The correlation coefficients in the LOLO cases were .952 and .944 for the FAS 8-PPP-ratios approach as compared to the range of .996 to .999 for the FAS 52 approaches.

All the conclusions reached and all the recommendations made throughout this research study are subject to constraints with respect to generalizability because of small sample size, limited range of differently structured companies and limited range of environmental conditions present in the study.

Based on the correlation analysis an overall evaluation of how well a specific translation approach preserves the net income information embodied in the foreign nontranslated financial statements permits the following conclusions:

1. The FAS 52 translation approaches are definitely preferable to the FAS 8 translation approaches, especially for high net income growth companies.

2. There is no substantial difference between the PPP-ratios alternative and the exchange rates alternative of FAS 52. Therefore, there is no clear recommendation of one alternative over the other, although the PPP-ratios alternative may be preferable because of its slightly better performance, especially for high net income growth companies.

3. The PPP-ratios alternative of FAS 8 appears to be preferable to the exchange rates alternative of FAS 8 when translating from a noninflationary economy.

4. The PPP-ratios alternative of FAS 8 is preferable to the exchange rates alternative of FAS 8 also for translation of financial statements of low net income growth companies that are located in an inflationary economy.

5. The PPP-ratios alternative of FAS 8 is seemingly not suitable for translation of financial statements of a high net income growth company which

has an asset structure where monetary assets exceed monetary liabilities and which operate in an inflationary economy.

6. The FAS 8-with-PPP-ratios translation approach seems to perform well for low net income growth companies, especially when the company's monetary liabilities exceed the monetary assets.

There are probably two major reasons for the superiority of the FAS 52 approaches over the FAS 8 approaches. One reason would be that translation gains/losses, which are solely the result of translation and consequently do not exist prior to translation, are excluded from net income when applying the FAS 52 translation rules. Consequently, when such unstable factors as translation gains/losses are excluded from translated net income the after-translation net income is likely to be more similar to the before-translation net income than when including such factors. The other reason for FAS 52 superiority over FAS 8 would be that under the FAS 8 translation rules accounting exchange gains and losses can be reported where the reverse has occurred from an economic standpoint. For example, a strengthening functional currency may produce a translation loss for a company with monetary liabilities exceeding monetary assets because significant nonmonetary assets, such as property, plant, and equipment, are translated at historical rates.

The most likely explanation for the PPP-ratios alternatives' overall better performance as compared to their exchange rates counterparts is that PPP-ratios as the equilibrating mechanism are more stable in that they do not fluctuate to the same extent as exchange rates. The instability of exchange rates is often unrelated to the operations and financial conditions of a foreign subsidiary. Consequently, by using exchange rates as

the equilibrating mechanism a "distortion" factor with no or little relation to the operations of the foreign subsidiary is allowed to affect the translated results and relationships. Therefore, the translated results and relationships under an exchange rates approach show less association with the nontranslated results and relationships than when using a more stable equilibrating factor.

The reason for the weak performance of the FAS 8-with-PPP-ratios translation approach in the inflationary HIHI case is unknown. The weak performance can be firm specific, that is, it may be a consequence of the particular characteristics of the HIHI company. To ascertain the reason for this weak performance would require analyses of other similar companies, which is beyond the bounds of this research.

The good performance of the FAS 8-PPP-ratios approach in the low net income growth cases both under inflationary and noninflationary conditions may simply be because the FAS 8-PPP-ratios approach is suited for translation of low growth companies. Further research in which other low net income growth companies are included would be needed before a more firm conclusion can be reached in this respect.

The conclusions from the overall evaluation of the translation approaches with respect to net income are, of course, limited to the specific companies used in the study. The clear difference between the correlation coefficients of the FAS 52 translation approaches and the correlation coefficients of the FAS 8 translation approaches, however, suggests that the FAS 52 translation approaches are superior to the FAS 8 translation approaches irrespective of the characteristics of the companies.

Return on Assets

The performance of the different translation approaches was investigated with respect to eight financial ratios. The correlation coefficients for one, the return-on-assets ratio, are displayed in Table 6.

TABLE 6

SPEARMAN'S CORRELATION COEFFICIENT

FOR RETURN ON ASSETS

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.280	.511	.780	.599	.139	.454	.583	.352
FAS 8 PPP-Ratios	.631	.624	.870	.957	.712	.724	.812	.931
FAS 52 Exchange Rates	.980	.977	.995	1.000	.980	.975	.998	1.000
FAS 52 PPP-Ratios	.995	.996	1.000	1.000	.994	.999	1.000	1.000

The FAS 52-with-PPP-ratios translation approach performed extremely well in all eight cases. The correlation coefficients ranged from .994 to 1.000, and the FAS 52-with-PPP-ratios translation approach performed best of the four translation approaches in six cases and tied for first place in the other two cases. Again the correlation coefficients were slightly higher in all the low net income growth cases.

The FAS 52-with-exchange rates translation approach performed very well in all eight cases the correlation coefficients ranging from .975 to

1.000. Although, there were no substantial differences between the correlation coefficients, it is interesting to note that the performance of this translation approach was slightly better in low net income growth cases when translating from a noninflationary economy as well as from an inflationary economy. This indicates that the FAS 52-with-exchange rates translation approach performs somewhat better under low net income growth conditions.

The FAS 8-with-PPP-ratios translation approach showed a good performance in all eight cases. The correlation coefficients for the return-on-assets ratio were, like for net income, highest in the low net income growth cases, specifically when monetary liabilities exceeded monetary assets. Whether the translation was from an inflationary or noninflationary economy did not make a difference in these cases.

The FAS 8-with-exchange rates translation approach performed very poorly in the cases where high net income growth was combined with an asset structure where monetary assets exceeded monetary liabilities. This was true in the translation from a noninflationary economy as well as from an inflationary economy. The FAS 8-with-exchange rates translation approach performed somewhat better in the noninflationary than in the inflationary context. This may suggest that an inflation adjustment prior to translation could improve the ability of this translation approach to preserve the return-on-assets figure when translating from an inflationary economy. The best performance of the FAS 8-exchange-rates approach was achieved in the noninflationary LOHI case.

The correlation coefficients were very high and close to each other for both the exchange rates and the PPP-ratios alternative of FAS

52. The PPP-ratios alternative performed slightly better in six of the eight cases and evenly in the remaining two cases. The differences between the two FAS 52 approaches were greater for high net income growth companies than for low net income growth companies, and the differences were to the PPP-ratios approach's advantage. The differences between the two FAS 52 approaches may, though, not be considered significant.

A comparison of the two FAS 8 translation approaches shows that the PPP-ratios translation approach out-performed the exchange rates translation approach in all the noninflationary as well as inflationary cases. The differences between the two translation approaches were clearly larger when translating from an inflationary economy than when translating from a noninflationary economy. Exchange rates seemingly do not incorporate sufficiently the effects of high inflation on the operating economy of the foreign subsidiary. Therefore, one possibility warranting investigation is inflation adjustment prior to translation. On the basis of both correlation tests the largest differences between the PPP-ratios and exchange rates FAS 8 translation alternatives occurred in the HIHI cases, both under noninflationary and inflationary conditions.

The FAS 52 translation approaches out-performed the FAS 8 translation approaches. Especially the FAS 8-exchange-rates approach was out-performed by a wide margin. The FAS 8-PPP-ratios translation approach's correlation coefficients were somewhat close to the FAS 52 translation approaches' correlation coefficients in the two cases where low net income growth was combined with monetary liabilities exceeding monetary assets. The correlation coefficients of the FAS 8-PPP-ratios approach were .957 and .931 as compared to 1.000 for the FAS 52 approaches in these cases.

These results were similar to the net income correlation coefficient results in the corresponding net income cases.

An overall evaluation of how well the different translation approaches preserve the return-on-assets relationship embodied in the foreign nontranslated financial statements give the following conclusions:

1. The FAS 52 translation approaches are definitely preferable to the FAS 8 translation approaches.

2. The two FAS 52 translation approaches are so close in their performances, with the PPP-ratios approach having a slight advantage, that one of these approaches cannot be clearly preferred to the other. The difference between the two approaches was somewhat greater for high net income growth companies than for low net income growth companies.

3. Of the FAS 8 translation alternatives the PPP-ratios approach is clearly preferable to the exchange-rates approach, especially when translating financial statements of companies operating in inflationary economies.

4. The FAS 8-PPP-ratios translation approach may be regarded as an acceptable translation approach for low net income growth cases, when monetary liabilities exceed monetary assets, under inflationary as well as noninflationary conditions.

As explained in connection with the overall evaluation of net income the FAS 52 approaches are superior to the FAS 8 approaches probably because in applying the FAS 52 rules translation gains/losses are excluded from reported net income and exchange gains and losses are not reported where the reverse has occurred from an economic standpoint. The better performance of the PPP-ratios approaches as compared to their exchange rates counterparts is most likely, as explained earlier, a consequence of that PPP-ratios are more stable than exchange rates. The good performance of the FAS 8-PPP-ratios approach in the LOLO cases may be a result of either

the qualities of this translation approach or some specific characteristics of the LOLO company. Further research is needed to clarify which is the case.

Return on Equity

The return-on-equity correlation coefficients are presented in Table 7.

TABLE 7

SPEARMAN'S CORRELATION COEFFICIENT

FOR RETURN ON EQUITY

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.334	.517	.810	.419	.131	.421	.598	.329
FAS 8 PPP-Ratios	.628	.610	.886	.078	.774	.711	.815	.933
FAS 52 Exchange Rates	.966	.991	.995	1.000	.985	.995	.999	1.000
FAS 52 PPP-Ratios	.997	.998	1.000	1.000	.997	.999	.999	1.000

The FAS 52-with-PPP-ratios translation approach performed extremely well in all eight cases with the correlation coefficients ranging from .997 to 1.000. The finding that this translation approach performed slightly better in the low net income growth cases than in the high net

income growth cases is similar to the findings of the net income and return-on-assets analyses.

The FAS 52-with-exchange rates translation approach performed very well in all eight cases with the correlation coefficients ranging from .966 to 1.000. The results that the FAS 52-exchange rates approach performed better in the low net income growth cases than in the high net income growth cases, irrespective of inflationary conditions, are consistent with the findings of the net income and return-on-assets analyses. The difference between the performance in the low net income growth cases and the performance in the high net income growth cases was, though, practically nonexistent.

The FAS 8-with-PPP-ratios approach provided a medium high correlation coefficient in seven of the eight cases. In the noninflationary LOLO case the correlation coefficient was only .078, that is, practically no association between the translated and nontranslated return on assets figures. While sensitivity analyses showed that the ten-year time assumption had no major influence on the results of the other cases, the time assumption had a major impact on the FAS 8-with-PPP-ratios translation approach's translation results in the noninflationary LOLO case. The twenty-year assumption provided a correlation coefficient of -.027, that is, close to the ten-year assumption's, but the five-year assumption correlation coefficient was .681. The wide range is not easily explainable.

The LOLO company's negative retained earnings during 1976-1981 may have had some influence on the dispersion of the values of the correlation coefficient in the noninflationary LOLO case. A similar dispersion was, however, not present in the inflationary LOLO case under the FAS

8-with-PPP-ratios translation approach. In the latter case the range of the values of the correlation coefficient was only .026, as based on Spearman's test. These confounding results may be a reflection of the overall complexity of inflation, which may produce confusing results in all but the most straightforward circumstances. In one respect, the five-year assumption that provided the .681 correlation coefficient may be the most realistic for retained earnings because the last three years prior to 1976 provided losses for LOLO giving LOLO a negative retained earnings balance starting at January 1, 1976. Further research seems necessary to clarify the causes of these surprising results.

The FAS 8-PPP-ratios translation approach performed well in the inflationary low net income growth case where monetary liabilities exceeded monetary assets. In this respect the results for the return-on-equity ratio are similar to the results for net income and the return-on-assets ratio. The noninflationary LOLO case provided, however, also high correlation coefficients for the corresponding net income and return-on-assets ratio cases.

The FAS 8-with-exchange rates translation approach had low correlation coefficients in many of the eight cases, but especially in the inflationary HIHI case. The FAS 8-with-exchange rates approach had its highest correlation coefficient in the noninflationary LOHI case. This translation approach had its highest correlation coefficient with respect to net income and return on assets also in the noninflationary LOHI case. This consistency in results is not particularly surprising since net income is the common component of all three of these financial figures.

The high inventory turnover of the LOHI company may be a contributing factor to a higher correlation coefficient in the noninflationary LOHI case, but whether or not that is the case is unknown.

The FAS 8-with-exchange rates translation approach performed better under noninflationary conditions than under inflationary conditions. Although it is not clear, it is possible that inflation adjustment of the financial statements prior to translation might help the FAS 8-exchange rates translation approach to better preserve the nontranslated return-on-equity figure when translating from an inflationary economy.

The correlation coefficients of the two FAS 52 translation approaches were almost the same. The PPP-ratios approach had a slightly higher correlation coefficient in five of the eight cases, specifically in the high net income growth cases, and in three cases the two approaches were even. These findings are similar to the findings of the net income and return-on-assets analyses.

Except for the noninflationary LOLO case the PPP-ratios alternative of FAS 8 performed better than the exchange rates alternative. Under inflationary conditions the PPP-ratios approach of FAS 8 is definitely preferable to the exchange rates approach of FAS 8 because the difference in the translation results of inflationary conditions was substantial, and the difference was to the PPP-ratios approach's advantage. These findings suggest, like the preceding findings of the return-on-assets analysis, that inflation adjustment of the financial statements prior to translation may improve the performance of the FAS 8-exchange-

rates translation approach because the exchange rates seemingly do not sufficiently incorporate the effects of inflation on an economy. PPP-ratios seemingly incorporate these effects better.

The FAS 52 translation approaches out-performed the FAS 8 translation approaches. The FAS 8-exchange rates approach performed clearly worse than the other three approaches. On the basis of the Spearman correlation coefficient, the FAS 8-PPP-ratios approach provided a fairly good performance in some cases, especially in the inflationary low net income growth cases and in the noninflationary low net income growth case where monetary assets exceeded monetary liabilities. The correlation coefficients ranged from .815 to .933 in these three cases as compared to .995 to 1.000 for the FAS 52 approaches.

In evaluating how well the different translation approaches preserve the return-on-equity relationship embodied in the foreign nontranslated financial statements the following conclusions may be drawn:

1. The FAS 52 translation approaches are definitely preferred to the FAS 8 translation approaches.

2. The two FAS 52 translation approaches are so close in their performances that one approach cannot be recommended over the other, although the PPP-ratios alternative performed slightly better, specifically for high net income growth companies.

3. Of the two FAS 8 translation approaches the PPP-ratios approach is recommended over the exchange rates approach, except perhaps for companies with low net income growth and an asset structure where monetary liabilities exceed monetary assets when these companies operated mainly in noninflationary economies. The PPP-ratios approach is definitely recommended for companies located in inflationary economies.

4. The FAS 8-PPP-ratios translation approach may be regarded as an acceptable translation approach to use for translation of low net income growth companies under inflationary conditions.

These conclusions and findings are similar to the conclusions and findings of the net income and return-on-assets analyses.

Gross Margin

The gross margin correlation coefficients are displayed in Table 8.

TABLE 8

SPEARMAN'S CORRELATION COEFFICIENT

FOR GROSS MARGIN

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.024	-.005	1.000[1)]	.419	-.187	.284	1.000[1)]	.557
FAS 8 PPP-Ratios	.719	.429	1.000[1)]	.764	.813	.562	1.000[1)]	.868
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

[1)]The current rate was applied to cost of goods sold because of high inventory turnover.

The FAS 52-exchange-rates approach and the FAS 52-PPP-ratios approach both had a correlation coefficient of 1.000 in all eight cases. A perfect correlation for the gross margin is always the case when a FAS 52 translation approach is applied because according to the FAS 52 translation rules the current weighted average rate for the period in question has to be applied to all income statement items. This means that the same rate was applied to the numerator as well as to the denominator of the gross margin ratio.

The FAS 8-PPP-ratios translation approach had a fairly high correlation coefficient in six cases, namely in both the HIHI, in both the LOHI and in both the LOLO cases, that is, regardless of the inflationary conditions. The correlation coefficients were higher when translating from an inflationary economy. Limited attention should be paid to the correlation coefficients of the LOHI cases of the FAS 8-PPP-ratios translation approach because the numerator and the denominator of the gross margin were both translated at the same rate. The reason for applying the same rate was the high inventory turnover of the LOHI company, that is, 6.09 times per year or more than one and a half times per quarter. Consequently, the current average rate for the quarter in question was for simplicity reasons applied to cost of goods sold, that is, a historical rate was not applied.
The Spearman gross margin correlation coefficients and the Pearson gross margin correlation coefficients were in agreement with each other on all eight cases.

The FAS 8-with-exchange rates translation approach performed poorly in most of the eight cases. The Spearman correlation coefficients and the Pearson correlation coefficients were in agreement for all eight cases.

For the same reason as indicated in the FAS 8-PPP-ratios LOHI cases limited attention should be paid to the correlation coefficients of the LOHI cases of the FAS 8-exchange rates translation approach. The FAS 8-with-exchange-rates approach performed especially poorly in the high net income growth cases under noninflationary as well as inflationary conditions. This translation approach is seemingly less suitable for high net income growth companies, especially if the companies' monetary assets exceed the monetary liabilities. Such a conclusion is supported by the weak performance of this translation approach in the noninflationary HIHI case of net income, in the two HIHI cases of return on assets and in the two HIHI cases of return on equity. With respect to the gross margin the FAS 8-with-exchange-rates translation approach's performance was about the same under noninflationary conditions as under inflationary conditions.

There was no difference between the performances of the two FAS 52 translation approaches because, in accordance with FAS 52 translation rules, the same translation rate was applied to both the numerator and the denominator of the gross margin. Therefore, any judgment whether to use the PPP-ratios FAS 52 approach or the exchange rates FAS 52 approach for translation has to be based on the performances of these translation approaches in other financial areas.

In comparing the two FAS 8 translation approaches it was evident that the PPP-ratios alternative was clearly superior to the exchange rates alternative in preserving the nontranslated gross margin relationship. The difference in performance between the PPP-ratios approach and the exchange rates approach was about the same under inflationary conditions and noninflationary conditions. In most cases, the slower the inventory

turnover the poorer is the performance of the FAS 8 translation approaches because the difference between the translation rate applied to the numerator and the translation rate applied to the denominator of the gross margin usually increases with time.

The FAS 52 translation approaches clearly out-performed the FAS 8 translation approaches in preserving the nontranslated gross margin relationship. Of the four translation approaches investigated the FAS 8 with-exchange-rates approach was the least able to preserve the nontranslated gross margin relationship. The FAS 8-with-PPP-ratios approach did fairly well in the HIHI and LOLO cases under inflationary conditions as well as noninflationary conditions. The correlation coefficients ranged from .719 to .868 in these cases. The gap to the FAS 52 approaches correlation coefficients of 1.000 is, though, evident.

The Spearman correlation coefficients and the Pearson correlation coefficients were in very good agreement on all cases. In evaluating how well the different translation approaches preserve the gross margin relationship embodied in the foreign nontranslated financial statements the following conclusions can be drawn:

1. The FAS 52 translation approaches are clearly better able to preserve the nontranslated gross margin relationship than are the FAS 8 translation approaches.

2. Because the two FAS 52 translation approaches are exactly equal in their performances they are equally acceptable and recommendable.

3. Of the two FAS 8 translation approaches, the PPP-ratios approach is definitely preferrable to the exchange rates approach, regardless of inflationary conditions.

4. The FAS 8-with-PPP-ratios translation approach may be regarded as acceptable to use under inflationary as

well as noninflationary conditions for companies with high net income growth and an asset structure where monetary assets exceed monetary liabilities, and for companies with low net income growth and an asset structure where monetary liabilities exceed monetary assets.

These conclusions are similar to the conclusions of the net income, return-on-assets, and return-on-equity analyses, except that there was absolutely no difference between the two FAS 52 approaches with respect to the gross margin.

Profit Margin

The correlation coefficients for the profit margin in the thirty-two different cases are disclosed in Table 9.

The FAS 52-with-exchange rates translation approach and the FAS 52-with-PPP-ratios translation approach had correlation coefficients of 1.000 in all eight cases. This is a consequence of the FAS 52 translation rules. Net income is determined by other income statement accounts which are all translated at the current weighted average rate for the period. Therefore, both the numerator, net income, and the denominator, net sales, are arrived at by using the same translation rate in the translation process. This gives always a perfect correlation.

The FAS 8-with-PPP-ratios translation approach achieved good results in both the low net income growth cases (LOHI and LOLO) regardless of the inflationary conditions in the country of the foreign subsidiary. The correlation coefficients ranged from .841 to .957 in these cases, being higher for the company having monetary liabilities exceeding monetary assets. The performance in both the HILO cases can be regarded as acceptable, the correlation coefficients being .680 and .727, while the

TABLE 9

SPEARMAN'S CORRELATION COEFFICIENT

FOR PROFIT MARGIN

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.442	.517	.783	.580	-.147	.363	.593	.311
FAS 8 PPP-Ratios	.462	.680	.841	.957	.545	.727	.843	.948
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

performance in both the HIHI cases was unacceptable. Seemingly, the FAS 8-with-PPP-ratios translation approach, like the other translation approaches, does worse in the translation of high net income growth companies' financial statements. Somewhat surprising, perhaps, is the finding that this translation method performed comparably better in the translation from an inflationary economy than in the translation from a noninflationary economy. The findings were the same with respect to gross margin.

The FAS 8-with-exchange rates translation approach performed rather poorly in most of the eight cases. This finding is consistent with the findings of the analyses of the performance of the FAS 8-with-exchange-rates approach with respect to net income and the previously presented financial ratios. The correlation coefficient was especially low in the inflationary HIHI case. The correlation coefficient was -.147. The best result for this translation method was achieved in the noninflationary LOHI case. With

respect to net income, return on assets, return on equity and gross margin, the findings were exactly the same. This may be a firm specific finding, possibly as a consequence of the LOHI company's high inventory turnover. Alternatively the FAS 8-with-exchange-rates translation approach generally performs better for companies with low net income growth and an asset structure where monetary assets exceed monetary liabilities, when these companies operate in a noninflationary economy, than for other cases. Which is the case is not clear.

A comparison of the FAS 8-exchange-rates translation method's performance under noninflationary and inflationary conditions shows that the performance was consistently better in the respective noninflationary cases. Both correlation tests were in agreement in this respect. This indicates that an inflation adjustment of the financial statements prior to translation could improve this translation approach's performance under inflationary conditions.

Both the FAS 52 translation approaches had a perfect correlation, and consequently there was no difference in performance between the two approaches. This was due, as has been explained, to the FAS 52 translation rules.

The FAS 8-PPP-ratios translation approach performed better than the FAS 8-exchange rates approach in all eight cases. The difference was clearly greater in the translation from inflationary economies. The PPP-ratios approach improved its performance under inflationary conditions while the exchange-rates approach deteriorated in performance under these conditions as compared to noninflationary conditions. Both the Spearman and Pearson correlation tests were in agreement on these results.

The two FAS 52 approaches out-performed the two FAS 8 approaches by a wide margin. The FAS 8-with-exchange rates translation approach was least able to preserve the nontranslated profit margin time series pattern. Although the FAS 52 translation approaches as a whole clearly out-performed the FAS 8-PPP-ratios approach, the FAS 8-PPP-ratios approach did well in all the low net income growth cases and was close in its performance to the FAS 52 approaches when low net income growth was combined with monetary liabilities exceeding monetary assets.

In making an overall evaluation of how well the different translation approaches preserve the profit margin relationship embodied in the foreign nontranslated financial statements the following conclusions can be made:

1. The FAS 52 translation approaches are definitely preferred to the FAS 8 translation approaches.

2. The two FAS 52 translation approaches are equally acceptable and recommendable because of perfect equality in performance.

3. Of the two FAS 8 translation approaches the PPP-ratios approach is definitely preferable to the exchange rates approach, regardless of the inflationary conditions of the economy wherein the foreign subsidiary operates. The FAS 8-PPP-ratios approach is particularly recommended when translating from an inflationary economy.

4. The FAS 8-PPP-ratios approach may be regarded as an acceptable translation method to use for translation of low net income growth companies under noninflationary conditions as well as inflationary conditions.

The conclusions of the profit margin analysis are similar to the conclusions of the net income, return on assets, return on equity and gross margin analyses.

Earnings Per Share

The correlation coefficients from the earnings per share correlation test are displayed in Table 10.

TABLE 10

SPEARMAN'S CORRELATION COEFFICIENT

FOR EARNINGS PER SHARE

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.134	.477	.799	.602	.591	.610	.644	.353
FAS 8 PPP-Ratios	.504	.578	.917	.946	.398	.660	.838	.944
FAS 52 Exchange Rates	.853	.957	.980	.998	.800	.928	.979	.998
FAS 52 PPP-Ratios	.988	.996	.998	.998	.837	.970	.992	.999

The results of the earnings per share analysis are not extensively presented or discussed because they are almost exactly the same as the results of the net income analysis. The reason for the similarity between the correlation coefficients of net income and earnings per share naturally is that the earnings per share figure consists of net income divided by the number of outstanding shares, which is the same before translation as after translation. In other words, no new translation dimension is added to the translated net income figure when calculating translated earnings per share.

Inventory Turnover

For all four companies the correlation coefficients for inventory turnover were high both under inflationary and noninflationary conditions regardless of the translation approach applied. The correlation coefficients are displayed in Table 11.

TABLE 11

SPEARMAN'S CORRELATION COEFFICIENT

FOR INVENTORY TURNOVER

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.933	.886	1.000[1)]	.960	.932	.952	1.000[1)]	.975
FAS 8 PPP-Ratios	.987	.992	1.000[1)]	.993	.993	.988	1.000[1)]	.997
FAS 52 Exchange Rates	.949	.958	.982	.983	.958	.940	.979	.987
FAS 52 PPP-Ratios	.994	.993	.999	.995	.998	.990	.997	.998

[1)]The numerator and the denominator were both translated at current rates because of high inventory turnover.

The FAS 52-with-PPP-ratios translation approach performed extremely well in all eight cases. It was better able to preserve the nontranslated inventory turnover ratio than the other three translation approaches. This finding is consistent with the findings of the previously presented net income and financial ratios analyses.

The FAS 8-with-PPP-ratios translation approach performed extremely well in all eight cases. In fact, the FAS 8-with-PPP-ratios approach performed better than the FAS 52-exchange rates approach in all eight cases, although the differences between the performances of these two translation approaches were small. The inventory turnover ratio was, however, the only ratio of the ratios analyzed in this study for which the FAS 8-PPP-ratios approach performed better than the FAS 52 exchange rates approach. The possible reason for the FAS 8-PPP-ratios approach's better performance with respect to the inventory turnover ratio is explained in connection with the comparative analysis of the four translation approaches. The correlation coefficients of the FAS 8-PPP-ratios approach ranged from .987 to .997 when excluding the two LOHI cases, which had perfect correlations. Limited attention should, however, be paid to these perfect correlations because they are a result of the high inventory turnover of the LOHI company which caused the cost of goods sold account and the inventory account to be translated at the same rate. The correlations in the LOLO cases were relatively higher than the correlations in the other cases, but the difference from the other cases was negligible. The results were about the same under inflationary conditions and noninflationary conditions.

The FAS 52-with-exchange rates translation approach did well in all eight cases. This translation approach obtained its highest correlation, like both the FAS 8 translation approaches, in the LOLO cases, but the difference from the other FAS 52-exchange-rates cases was practically nonexistent. Whether the price development conditions were noninflationary or inflationary had no effect on the performance of the FAS 52-exchange rates translation approach.

With respect to the FAS 8-with-exchange-rates translation approach, little attention should be paid to the perfect correlations in the LOHI cases for the reason indicated in the presentation of the FAS 8-PPP-ratios approach. If the LOHI cases are excluded the FAS 8-exchange-rates approach had its best performance in the two cases where low net income growth was combined with monetary liabilities exceeding monetary assets. There were, however, no major differences between the correlation coefficients of these two cases and the correlation coefficients of the other cases. The performance of the FAS 8-with-exchange rates translation approach was approximately the same under inflationary conditions as under noninflationary conditions.

In comparing the different translation approaches with each other it can be noted that the FAS 52-PPP-ratios approach performed best as usually. The difference between the FAS 52-PPP-ratios approach and the FAS 52-exchange-rates approach was greater for high net income growth companies than for low net income growth companies. The FAS 8-with-PPP-ratios approach performed better than the FAS 8-with-exchange rates approach in all cases. The difference in performance between the two FAS 8 approaches was, however, small, except perhaps for the noninflationary HILO case, where the difference of .106 between the correlation coefficients was more noticeable. One of the more interesting findings was, as mentioned, the finding that the FAS 8-with-PPP-ratios translation approach performed better than the FAS 52-with-exchange-rates translation approach in all eight cases. There is no definite explanation known for this but the PPP-ratios approaches provide better results than the exchange rates approaches when the translation rate of the numerator of a

ratio pertains to a date that is close in time to date of the rate applied to the denominator of the ratio. This conclusion is supported by the fact that the FAS 52-PPP-ratios approach usually performs better than the FAS 52-exchange-rates approach, and for these two translation approaches the translation rates pertain to exactly the same current date. The rates applied to the numerator and to the denominator of the inventory turnover ratio generally pertain to dates that are temporally close to each other.

The findings of the inventory turnover ratio analysis are consistent with the findings of earlier research which has indicated that exchange rates fluctuate more than PPP-ratios. Therefore, changes in the exchange rates and the PPP-ratios do not agree with each other in the short run but may show a similar average development pattern when observed over a longer time frame. The differences between the correlation coefficients of the FAS 8-PPP-ratios approach and the FAS 52-exchange rates approach were small, however, the largest difference being .048.

To summarize, the FAS 52-with-PPP-ratios translation approach performed best of all four translation approaches. Second in performance, and very close to the FAS 52-PPP-ratios approach in performance, was the PPP-ratios approach of FAS 8 -- not the FAS 52-exchange rates approach. This finding diverges from the findings of the previously presented net income and financial ratios analyses. However, the difference between all four translation approaches with respect to inventory turnover performance was so small that no approach can be said to have clearly outperformed another approach.

The Spearman correlation test was in agreement with the Pearson correlation test under all four translation approaches. Sensitivity analyses showed that the time assumptions had no influence on the inventory turnover correlation coefficients. This is not surprising since the time assumptions in this study had no association with the cost of goods sold account nor the inventory account.

The following overall conclusions may be drawn when evaluating how well the different translation approaches preserve the inventory turnover ratio embodied in the foreign nontranslated financial statements:

1. The PPP-ratios translation approaches are preferable to the exchange rates translation approaches, especially for high net income growth companies.

2. None of the four translation approaches can be clearly recommended over the others.

Current Ratio

The current ratio correlation coefficients were very high, as displayed in Table 12, under all four translation approaches.

Both the FAS 52 translation approaches had a perfect correlation in all eight cases because according to the FAS 52 translation rules the closing rate at the end of the period in question should be applied to all balance sheet items. This means that the same translation rate is applied to the numerator, current assets, and the denominator, current liabilities, of the current ratio giving a correlation of 1.000.

The FAS 8-with-PPP-ratios translation approach performed extremely well in all eight cases the correlation coefficients ranging from .987 to 1.000. This translation approach performed slightly better for companies with low net income growth than for companies with high net income growth.

TABLE 12

SPEARMAN'S CORRELATION COEFFICIENT

FOR CURRENT RATIO

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.945	.958	.996	.998	.961	.960	.996	.996
FAS 8 PPP-Ratios	.987	.996	.999	.999	.993	.994	.999	1.000
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

The performance under inflationary conditions and the performance under noninflationary conditions were about the same.

The correlation coefficients of the FAS 8-with-exchange rates translation approach ranged from .945 to .998. This translation approach, like the FAS 8-PPP-ratios translation approach, performed slightly better in the low net income growth cases than in the high net income growth cases. The inflationary conditions of the operating economy of the subsidiary had no influence on the performance of the FAS 8-with-exchange rates translation approach.

None of the four translation approaches can be said to have outperformed the other translation approaches with respect to the current ratio correlation coefficients. The two FAS 52 translation approaches performed better than the two FAS 8 translation approaches. The largest difference

between any correlation coefficient of the FAS 8 approaches and the FAS 52 approaches was, however, only .055. Of the two FAS 8 translation approaches the PPP-ratios approach performed consistently better than the exchange rates approach, but not by a wide margin.

The two correlation tests, Spearman's rank correlation test and Pearson's Product-Moment formula test, were in good agreement with each other. Because the ten-year, twenty-year and five-year time assumptions had no association with current assets nor current liabilities sensitivity analyses showed no sensitivity of the correlation coefficients when the time assumption was changed.

In making an overall evaluation of how well different translation approaches preserve the current ratio embodied in the foreign nontranslated financial statements the following conclusions can be reached:

1. The two FAS 52 translation approaches are preferable to the two FAS 8 translation approaches.
2. None of the four translation approaches can be clearly recommended over the others.

The second conclusion is the same as one of the two conclusions made for inventory turnover.

Debt to Equity Ratio

The debt to equity ratio correlation coefficients, presented in Table 13, ranged from -.043 to 1.000.

Both of the FAS 52 translation approaches had a perfect correlation because of the nature of the FAS 52 translation rules, which state that the current rate should be used for all assets and liabilities. Because the numerator, long term debt, and the denominator, shareholders' equity, of the debt to equity ratio are translated at the same rate this ratio has

TABLE 13

SPEARMAN'S CORRELATION COEFFICIENT

FOR DEBT TO EQUITY RATIO

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.759	.771	1.000[1)]	.378	.917	.877	1.000[1)]	.458
FAS 8 PPP-Ratios	.967	.913	.999[1)]	-.043	.959	.928	1.000[1)]	.935
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

[1)] Long term debt was present in a few periods only giving the numerator and consequently the ratio the value zero in the periods where long term debt was absent. This provides for a close to perfect correlation.

exactly the same value after translation as before translation, and this gives a perfect correlation.

The results for the FAS 8-with-PPP-ratios translation approach's performance in the LOHI cases are not dependable. During 1976-1981 the LOHI company had long term debt in a few periods only. This gave a zero value to the numerator of the debt to equity ratio for the periods where long term debt was absent which in turn gave a zero value to the ratio itself. If the ratio has the value zero before translation it will have it after translation, and this gives a perfect correlation. The perfect correlations in the non-long term debt periods, naturally, raise the overall correlation.

The FAS 8-with-PPP-ratios translation approach showed a very good performance in seven of the eight cases, with the correlation coefficients ranging from .913 to 1.000. The FAS 8-with-PPP-ratios approach

showed a very weak performance in the noninflationary LOLO case. The Spearman's correlation coefficient was only -.043 and the Pearson's correlation coefficient only -.048. Sensitivity analyses showed a .454 correlation coefficient under the twenty-year time assumption and a .734 correlation coefficient under the five-year time assumption, that is, a range of 1.188. The range was .229 under the Pearson test. The results were approximately the same for the return-on-equity ratio in the corresponding noninflationary LOLO case. This is not surprising since equity is the common denominator for both ratios. As was speculated in the analysis of the return-on-equity ratio, the retained earnings balance of the LOLO company being negative may be a major reason for the unstable and low correlation coefficient in the noninflationary LOLO case. However, the corresponding inflationary LOLO case had a high and stable correlation coefficient. Further research is needed to clarify the FAS 8-with-PPP-ratios translation approach's performance under noninflationary conditions in the translation of low net income growth companies with monetary liabilities exceeding monetary assets.

Like with the FAS 8-PPP-ratios approach, limited attention should be paid to the high correlation coefficients in the LOHI cases of the FAS 8-exchange-rates approach because of the frequent absence of long term debt in the LOHI company. The FAS 8-exchange rates translation approach performed poorly in both the LOLO cases. The Pearson test showed a correlation of only -.079 in the noninflationary LOLO case while the Spearman correlation coefficient was .378. In the inflationary LOLO case the coefficients were .633 (Pearson) respective to .458 (Spearman). The low correlations may have been, at least partially, caused by the retained earnings balance of the LOLO company being negative for 1976-1981. The

best performance of the FAS 8-with-exchange rates translation approach, when excluding the LOHI cases, was achieved in the inflationary high net income growth cases, the correlation coefficients being .917 and .877. Overall, the FAS 8-with-exchange rates approach showed a better performance for the debt to equity ratio under inflationary conditions than under noninflationary conditions. For many of the other ratios investigated in this study the FAS 8-exchange-rates approach performed worse under inflationary conditions.

The two FAS 52 approaches performed better than the FAS 8 approaches in all eight cases. The difference was substantial in the noninflationary LOLO case. In the other cases the superiority of the FAS 52 translation approaches over the FAS 8 translation approaches was not that extensive, especially not in relation to the FAS 8-with-PPP-ratios approach.

Of the two FAS 8 translation approaches the PPP-ratios approach performed better than the exchange rates approach in the majority of the eight cases. Both translation approaches had a low correlation coefficient in the noninflationary LOLO case the correlation coefficient being higher for the exchange rates approach (.378) than for the PPP-ratios approach (-.043). The Pearson test showed approximately the same correlation for the two translation approaches in this case. The difference in performance between the two FAS 8 translation approaches was somewhat greater under noninflationary conditions than under inflationary conditions.

In making an overall evaluation of how well the different translation approaches preserve the debt to equity ratio embodied in the foreign nontranslated financial statements the following conclusions may be drawn:

1. Both the FAS 52 translation approaches are preferable to either of the two FAS 8 approaches.

2. The PPP-ratios translation approach of FAS 8 is preferable to the exchange rates translation approach of FAS 8 for all companies and under all conditions, except perhaps in the translation of a company where low net income growth is combined with monetary liabilities exceeding monetary assets when the company operates in a noninflationary environment.

3. The PPP-ratios translation approach of FAS 8 can in most instances be regarded as acceptable to use for translation.

Overall Evaluation

The Quade test, described in the 'Performance Evaluation of Translation Approaches' section, was applied to test for overall difference between the different translation approaches (treatments). By overall difference is meant a difference on the basis of the combined results from the net income and all the eight financial ratios analyses, when each of these financial figures are weighted equally. The .01 α-level was selected as the significance level. At this α-level, with $k_1=3$ ($k_1=k-1$) and $k_2=213$ ($k_2=(k-1)(b-1)$), the value of the F distribution was 3.78. The value of the test statistic $T_1(142.30)$, $T_1=(b-1)B_1/(A_1-B_1)$, was greater than 3.78, the .99 quantile of the F distribution; therefore the null hypothesis, that is, that there is no difference between the four translation approaches, was rejected at the .01 significance level. Because the null hypothesis was rejected multiple comparisons were made in order to find out between which treatments a difference existed. Two treatments (translation approaches) were considered different if the difference between their sums $S_i-S_j(S_j=\sum_{i=1}^{b} S_{ij})$ exceeded the value of the following formula.

$$t_{1-\alpha/2}\left[\frac{2b(A_1-B_1)}{(b-1)(k-1)}\right]^{\frac{1}{2}}$$

The above statistic had a value of 1134.33 at the .001 α-level. If the difference between the sums of two translation approaches was greater than 1134.33 the approaches were considered to be significantly different from each other at the .001 α-level. The differences between the four translation approaches' sums are displayed in Table 14.

TABLE 14

THE QUADE TEST

FAS 52 Exchange Rates - FAS 52 PPP-Ratios = 1252

FAS 8 PPP-Ratios - FAS 52 Exchange Rates = 3291.5

FAS 8 Exchange Rates - FAS 8 PPP-Ratios = 2253

As can be seen from Table 14 there was a significant difference between the four treatments, that is, the four translation approaches, at the .001 α-level. The smallest difference, as based on the Quade test, existed between the two FAS 52 approaches. Because the FAS 52-PPP ratios approach performed better than the FAS 52-exchange rates approach, the FAS 52-exchange rates approach performed better than the FAS 8-PPP-ratios approach and the FAS 8-PPP-ratios approach performed better than the FAS 8-exchange rates approach, there is no need to apply the Quade test to find out if differences exist between the FAS 52-PPP-ratios approach and either of the two FAS 8 approaches or between the FAS 52-exchange rates approach and the FAS 8-exchange rates approach. Differences obviously exist.

Based on the correlation tests, specifically the Spearman test, the PPP-ratios approach of FAS 52 performed better than the exchange-rates approach of FAS 52 in thirty two of the seventy-two cases (four companies X two translation currencies X nine financial figures/ratios). In thirty-nine cases the two approaches were even and in one case the exchange rates approach performed slightly better. According to the Pearson test, the exchange rates approach did not perform better in any case.

A comparative analysis of the two FAS 52 approaches based on the Spearman correlation coefficients is displayed in Table 15.

TABLE 15

COMPARISON OF THE

FAS 52 TRANSLATION APPROACHES

	Great Britain				West Germany			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
Net Income	P	(P)	(P)	(E)	(P)	(P)	(P)	D
Return on Assets	(P)	(P)	(P)	D	(P)	(P)	(P)	D
Return on Equity	(P)	(P)	(P)	D	(P)	(P)	D	D
Gross Margin	D	D	D	D	D	D	D	D
Profit Margin	D	D	D	D	D	D	D	D
Earnings per Share	P	(P)	(P)	D	(P)	(P)	(P)	(P)
Inventory Turnover	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)
Current Ratio	D	D	D	D	D	D	D	D
Debt to Equity Ratio	D	D	D	D	D	D	D	D

P = PPP-ratios approach performed better
E = exchange rates approach performed better
D = no difference in performance
( ) = approach in question performed only slightly better

It has to be noted that of the thirty-nine even cases thirty-two were even because of the FAS 52 translation rules that gave a perfect correlation with respect to the gross margin, profit margin, current ratio and debt to equity ratio cases. It can be said that the PPP-ratios approach performed consistently as well as or better than the exchange rates approach although the difference in most cases was small. Consequently, the PPP-ratios approach of FAS 52 is preferred to the exchange rates approach of FAS 52.

A comparison between the FAS 8-with-PPP-ratios translation approach's correlation coefficients and the FAS 52-with-exchange rates translation approach's correlation coefficients, displayed in Table 16,

TABLE 16

COMPARISON BETWEEN THE FAS 52-EXCHANGE-RATES
TRANSLATION APPROACH AND THE FAS 8-PPP-RATIOS TRANSLATION APPROACH

	Great Britain				West Germany			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
Net Income	52	52	(52)	(52)	52	52	52	(52)
Return on Assets	52	52	52	(52)	52	52	52	(52)
Return on Equity	52	52	52	52	52	52	52	(52)
Gross Margin	52	52	D	52	52	52	D	52
Profit Margin	52	52	52	(52)	52	52	52	(52)
Earnings per Share	52	52	(52)	(52)	52	52	52	(52)
Inventory Turnover	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)
Current Ratio	(52)	(52)	(52)	(52)	(52)	(52)	(52)	D
Debt to Equity Ratio	(52)	(52)	(52)	52	(52)	(52)	D	(52)

52 = FAS 52-exchange rates approach performed better
8 = FAS 8-PPP-ratios approach performed better
D = no difference in performance (in all cases the correlation was 1.000)
( ) = approach in question performed only slightly better

showed that the latter approach performed better than the former approach in sixty of the seventy-two cases. In eight cases the FAS 8-PPP-ratios approach performed better than the FAS 52-exchange rates approach, but only slightly better. This was for the eight inventory turnover cases. In four cases the two approaches were even. Overall, the FAS 52 translation approach is clearly preferred to both the FAS 8 translation approaches.

In comparing the two FAS 8 approaches on the basis of Spearman's correlation test, it can be noted that the PPP-ratios approach performed better than the exchange rates approach in sixty-two of the seventy-two cases. In five cases the two appraoches were even and in five cases the exchange rates approach performed better. The comparison of the two approaches is illustrated in Table 17.

The exchange rates approach was clearly more sensitive to the ten-year time assumption than the PPP-ratios approach with respect to net income, return on assets, profit margin and earnings per share. The PPP-ratios approach was more sensitive than the exchange rates approach with respect to debt to equity ratio. Overall, the PPP-ratios approach of FAS 8 is clearly preferred to the exchange rates approach of FAS 8. Looking in more detail, the PPP-ratios approach is preferred to the exchange rates approach in the following cases:

- high net income growth companies regardless of asset structure, when translating from a noninflationary economy.
- low net income growth companies with monetary assets exceeding monetary liabilities, when translating from a noninflationary economy (weak preference)
- low net income growth companies regardless of asset structure, when translating from an inflationary economy

TABLE 17

COMPARISON OF THE

FAS 8 TRANSLATION APPROACHES

	Great Britain				West Germany			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
Net Income	P	P	P-	P	E	(P)	P	P
Return on Assets	P	P	P-	P	P	P	P	P
Return on Equity	P	P	P-	E	P	P	P	P
Gross Margin	P	P	D	P	P	P	D	P
Profit Margin	(P)	P	P	P	P	P	P	P
Earnings Per Share	P	P	P-	P	E-	(P)	P	P
Inventory Turnover	(P)	P	D	(P)	(P)	(P)	D	(P)
Current Ratio	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)
Debt to Equity Ratio	P	P	(E)-	E-	(P)	(P)	D	P

P = PPP-ratios approach performed better

E = exchange rates approach performed better

D = no difference in performance (in all cases the correlation was 1.000)

( ) = approach in question performed only slightly better

- = Spearman's test indicated this approach to be better but Pearson's test indicated the other approach to be better

- high net income growth companies with monetary liabilities exceeding monetary assets, when translating from an inflationary economy.

In two cases, low net income growth companies with monetary liabilities exceeding monetary assets, when translating from a noninflationary economy, and high net income growth companies with monetary assets

exceeding monetary liabilities, when translating from an inflationary economy, the results were somewhat conflicting. As a whole the PPP-ratios approach performed better than the exchange rates approach in these cases.

Pearson's Correlation Test

The Pearson correlation coefficients were mostly in agreement with the Spearman correlation coefficients. Generally the Pearson coefficients were, as expected, a little higher than the Spearman coefficients because of the characteristics of the Pearson test. The Pearson correlation coefficients for net income and the eight financial ratios are displayed in Tables 18 through 26.

TABLE 18

PEARSON'S CORRELATION

COEFFICIENT FOR NET INCOME

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.291	.515	.721	.948	.570	.764	.541	.928
FAS 8 PPP-Ratios	.496	.801	.657	.989	.562	.817	.732	.997
FAS 52 Exchange Rates	.935	.956	.983	.999	.896	.943	.986	.999
FAS 52 PPP-Ratios	.993	.997	.998	.999	.957	.977	.990	1.000

TABLE 19

PEARSON'S CORRELATION COEFFICIENT

FOR RETURN ON ASSETS

Translation Methods	Companies & Currency: Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.370	.521	.648	.945	.088	.549	.40[illegible]	.932
FAS 8 PPP-Ratios	.502	.676	.547	.993	.653	.845	.638	.997
FAS 52 Exchange Rates	.988	.994	.998	1.000	.986	.993	.998	1.000
FAS 52 PPP-Ratios	.999	1.000	1.000	1.000	.999	1.000	1.000	1.000

TABLE 20

PEARSON'S CORRELATION COEFFICIENT

FOR RETURN ON EQUITY

Translation Methods	Companies & Currency: Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.381	.530	.677	.019	.090	.618	.416	.348
FAS 8 PPP-Ratios	.511	.672	.555	-.251	.644	.855	.615	.833
FAS 52 Exchange Rates	.986	.995	.998	1.000	.985	.994	.998	1.000
FAS 52 PPP-Ratios	.999	1.000	1.000	1.000	.999	1.000	1.000	1.000

TABLE 21

PEARSON'S CORRELATION COEFFICIENT

FOR GROSS MARGIN

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.145	.066	1.000[1)]	.598	.171	.327	1.000[1)]	.651
FAS 8 PPP-Ratios	.815	.458	1.000[1)]	.913	.884	.685	1.000[1)]	.968
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

[1)] The current rate was applied to cost of goods sold because of high inventory turnover.

TABLE 22

PEARSON'S CORRELATION COEFFICIENT

FOR PROFIT MARGIN

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.541	.461	.576	.933	-.106	.436	.401	.926
FAS 8 PPP-Ratios	.599	.620	.522	.991	.631	.789	.625	.997
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

TABLE 23

PEARSON'S CORRELATION COEFFICIENT

FOR EARNINGS PER SHARE

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.283	.512	.730	.967	.521	.761	.601	.962
FAS 8 PPP-Ratios	.478	.799	.671	.992	.563	.816	.745	.998
FAS 52 Exchange Rates	.918	.955	.985	.999	.876	.941	.986	1.000
FAS 52 PPP-Ratios	.990	.997	.998	1.000	.944	.976	.993	1.000

TABLE 24

PEARSON'S CORRELATION COEFFICIENT

FOR INVENTORY TURNOVER

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.928	.915	1.000[1)]	.965	.947	.937	1.000[1)]	.963
FAS 8 PPP-Ratios	.992	.993	1.000[1)]	.995	.996	.996	1.000[1)]	.998
FAS 52 Exchange Rates	.962	.971	.990	.978	.961	.971	.991	.981
FAS 52 PPP-Ratios	.997	.998	.999	.998	.998	.999	1.000	.999

[1)] The numerator and the denominator were both translated at current rates because of high inventory turnover.

TABLE 25

PEARSON'S CORRELATION COEFFICIENT

FOR CURRENT RATIO

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.949	.969	.999	.999	.962	.983	.999	.999
FAS 8 PPP-Ratios	.991	.996	1.000	1.000	.994	.999	1.000	1.000
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

TABLE 26

PEARSON'S CORRELATION COEFFICIENT

FOR DEBT TO EQUITY RATIO

Translation Methods	Companies & Currency							
	Noninflationary Great Britain (L)				Inflationary West Germany (MK)			
	HIHI	HILO	LOHI	LOLO	HIHI	HILO	LOHI	LOLO
FAS 8 Exchange Rates	.929	.789	.999[1)]	-.079	.979	.827	.999[1)]	.633
FAS 8 PPP-Ratios	.994	.962	1.000[1)]	-.048	.994	.969	1.000[1)]	.868
FAS 52 Exchange Rates	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
FAS 52 PPP-Ratios	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

[1)] Long term debt was present in a few periods only giving the numerator and consequently the ratio the value zero in the periods where long term debt was absent. This provides for a close to perfect correlation.

The Pearson correlation coefficients are commented on only with respect to the cases where a greater difference between the Pearson and Spearman coefficients existed. Such cases were present only under the FAS 8 translation approaches. With respect to net income the Pearson correlation coefficients indicated a somewhat better performance for the FAS 8-with-PPP-ratios translation approach in the inflationary HIHI case than the Spearman coefficient did. The Pearson net income correlation coefficient differed from the Spearman net income correlation coefficient also in the noninflationary LOLO case of the FAS 8-with-exchange rates translation approach. The Pearson correlation coefficient was very high in the noninflationary LOLO case. The Pearson correlation coefficient indicated that the FAS 8-exchange-rates approach performed better in this case than in any of the other seven cases. According to the Spearman correlation coefficients the best performance of the FAS 8-exchange-rates approach with respect to net income was achieved in the noninflationary LOHI case. Of the four inflationary cases of the FAS 8-with-exchange rates approach the LOLO case had the highest correlation coefficient for net income according to the Pearson test. The LOLO case had the lowest correlation coefficient of the inflationary cases according to the Spearman test.

The net income results for the two FAS 8 translation approaches were somewhat mixed in two cases, namely the noninflationary LOHI case and the inflationary HIHI case. In the former case, Spearman's test indicated an advantage of the PPP-ratios alternative over the exchange rates alternative while Pearson's test indicated a slight advantage of the exchange rates alternative over the PPP-ratios alternative. In the latter case, Spearman's test showed the PPP-ratios approach as being clearly weaker while

Pearson's test indicated equal performance of the two translation approaches. The PPP-ratios alternative was clearly better in the noninflationary HIHI case.

With respect to the return on assets ratio there was a larger magnitude difference between the two correlation tests' correlation coefficients in the LOHI cases of the FAS 8-PPP-ratios translation approach. The Pearson correlation coefficients were clearly lower than the Spearman correlation coefficients in the LOHI cases.

According to the Pearson test the best performance of the FAS 8-with-exchange rates translation approach with respect to the return on assets ratio was achieved in the LOLO cases. Spearman's test showed that the best performance for this translation approach was achieved in the LOHI cases. These contradictory findings are exactly similar to the net income findings for this translation approach.

A comparison between the two FAS 8 translation approaches with respect to the return on assets ratio showed good agreement between the two correlation tests, except that the Pearson correlation coefficient differed from the Spearman coefficient in the noninflationary LOHI case. The Pearson coefficients indicated that the exchange rates approach performed better than the PPP-ratios approach in this case while the Spearman coefficients indicated that the PPP-ratios approach performed better in all the cases.

The Pearson test results differed slightly from the Spearman test results with respect to the return-on-equity ratio of the noninflationary LOHI case of the two FAS 8 translation approaches. The Pearson correlation coefficients indicated a slightly better performance for the exchange rates alternative than for the PPP-ratios alternative. The Spearman coefficients indicated the PPP-ratios approach to be better.

The Pearson profit margin correlation coefficients were lower than the Spearman profit margin correlation coefficients in the LOHI cases of the FAS 8-PPP-ratios translation approach. Otherwise, the two correlation tests were in good agreement on the profit margin cases of the FAS 8-PPP-ratios translation approach.

The Pearson profit margin correlation coefficients differed substantially from the Spearman profit margin correlation coefficients in both the LOLO cases of the FAS 8-with-exchange rates approach. According to the Pearson coefficients, the best performance of the FAS 8-exchange rates translation approach was clearly achieved in the two LOLO cases the correlation coefficients being as high as .938 and .926. According to the Spearman test the best performance was obtained in the noninflationary LOHI case. The reason for the discrepancy between the two correlation tests in the LOLO cases is unknown. The two correlation tests were in fairly close agreement on the other profit margin cases of the FAS 8-exchange rates approach.

In comparing the two FAS 8 approaches with respect to the profit margin a difference between the results of the two correlation tests was found in the noninflationary LOHI case. In this case the Pearson test showed a slight advantage of the exchange rates approach of FAS 8 over the PPP-ratios approach while the Spearman test showed a slight advantage of the PPP-ratios approach in this case.

Sensitivity Analyses

As previously noted the assumption was made that the selected companies' property, plant, equipment and other long-term assets on the books at the beginning of 1976 had been acquired in their entirety ten years prior to 1976. The same assumption was made for capital. Retained earnings were assumed to have been evenly earned during the ten years preceding 1976. The correlation coefficients displayed in all the correlation tables reflect these assumptions. It was considered necessary to perform sensitivity analyses with respect to the ten-year assumption in order to be assured that the assumption did not have any major impact on the research results. Two sensitivity analyses were employed to investigate the effect that the ten-year assumption may have had on the correlation coefficients. In the first sensitivity analysis the ten-year assumption was replaced by a twenty-year assumption for the accounts mentioned. In the second sensitivity analysis the ten-year assumption was replaced by a five-year assumption. As expected, the FAS 8 approaches were more sensitive than the FAS 52 approaches because of their reliance on historical rates. The FAS 8-exchange rates approach appeared to be more sensitive than the FAS 8-PPP-ratios approach, but the change in assumptions had no major influence on the correlation coefficients of any translation method.

With respect to net income the range between the highest and lowest value of the correlation coefficient of a case under the three different time assumptions was below .050 for all but two of the thirty-two cases. The translation of the HIHI company's financial statements into German marks under the FAS 8-with-exchange rates translation approach

provided a .625 correlation coefficient under the ten-year and twenty-year assumptions, and a .565 correlation coefficient under the five-year assumption, that is, a range of .060. In the inflationary HILO case, the same translation approach provided a .615 correlation coefficient under the ten-year assumption, a .623 correlation coefficient under the twenty-year assumption and a .525 correlation coefficient under the five-year assumption, that is, a range of .098. This variation must be considered small and did not change the relative performance of the FAS 8-with-exchange rates translation approach in any respect.

The sensitivity analyses showed that a change in the ten-year time assumption had no major influence on the return-on-assets correlation coefficients. The range between the highest and lowest value of the correlation coefficient of a case was below .050 in all except three of the thirty-two cases. The sensitivity of the noninflationary cases was practically nonexistent with a range of .010 or below. Translation from an inflationary economy was somewhat more sensitive but generally the sensitivity was low in all the cases. The widest range was obtained for the FAS 8-exchange-rates translation approach in the inflationary HIHI case, the range being .140. The ten-year and twenty-year assumptions showed a correlation coefficient of .139 while the five-year assumption showed a correlation coefficient of .279 in this case. Under all three time assumptions the correlation coefficient was low. The different time assumptions did not affect the relative performance of the FAS 8-exchange-rates approach in this case as related to other cases under this or the other three translation approaches. The FAS 8-PPP-ratios translation approach had a range of .110 for the correlation coefficient values in the

HIHI inflationary case. The correlation coefficient was .712 under the ten-year assumption, .602 under the twenty-year assumption and .619 under the five-year assumption. The third case with a range above .050 for the correlation coefficient was the HILO inflationary case under the FAS 8-exchange rates translation approach. The range was .061 in this case with a correlation coefficient of .454 under the ten-year assumption, .445 under the twenty-year assumption and .506 under the five-year assumption. The relative performance in the three described cases as related to other cases was not affected by the time assumptions.

Sensitivity analyses showed that a change in the long-term assets, capital and retained earnings time assumption had no major influence on the return-on-equity correlation coefficients, except for the noninflationary LOLO case under the FAS 8-with-PPP ratios translation approach. The sensitivity of the FAS 8-PPP-ratios translation approach in the noninflationary LOLO case has been extensively described. Of the other thirty-one cases all but two had a correlation coefficient range below .060 and all but three below .050. The inflationary HIHI case had a range of .175 under the FAS 8-exchange rates translation approach. The ten-year assumption correlation coefficient was .131, the twenty-year assumption correlation coefficient was .126 and the five-year assumption correlation coefficient was .301. Under all these three time assumptions the correlation coefficient was low, and the relative performance in this case was not significantly altered by a change in the time assumption. The inflationary HIHI case had a correlation coefficient range of .142 under the FAS 8-PPP-ratios translation approach. The correlation coefficients were .774 for the ten-year assumption, .632 for the twenty-year assumption

and .650 for the five-year assumption. The different time assumptions did not alter the relative performance of the FAS 8-PPP-ratios approach in any respect. The third case with a correlation coefficient range exceeding .050 in the sensitivity analysis was the inflationary HILO case when translated according to the FAS 8-exchange rates approach. The range was .060 in this case with a correlation coefficient of .421 under the ten-year assumption, .416 under the twenty-year assumption and .476 under the five-year assumption. The relative performance in this case was unaffected by the time assumption.

According to the results of the sensitivity analyses there was absolutely no difference between the correlation coefficients of the gross margin under the ten-year, twenty-year and five-year assumptions. The reason for this is self-evident, that is, the assumptions made in this study concerned certain balance sheet items only, namely property, plant, equipment, and other long-term assets, capital and retained earnings. No income statement accounts were directly affected.

Sensitivity analyses showed that the ten-year time assumption had basically no influence on the profit margin research results. For the noninflationary cases the sensitivity was practically non-existent, the widest range of the values of any correlation coefficient being only .019. Of the inflationary cases three had a sensitivity range exceeding .050. The widest range (.250) was present in the inflationary HIHI case when the FAS 8-exchange rates translation approach was the translation method applied. The ten-year and twenty-year assumptions had a correlation coefficient of -.147 while the five-year assumption had a correlation coefficient of .103. All three values indicated a very low

correlation. The correlations were lower than the correlation of any other case. Therefore, the sensitivity range of .250 in the inflationary HIHI case did not change any findings with respect to the FAS 8-exchange rates translation approach's performance in this case relative to other cases. The performance was poor and inferior to the performance of any other case under any of the translation methods analyzed. The inflationary HIHI case under the FAS 8-PPP-ratios translation approach had a sensitivity range of .154. The ten-year assumption gave a .545 correlation, the twenty-year assumption a .391 correlation and the five-year assumption a .413 correlation. The FAS 8-PPP-ratios approach performed under all three assumptions better than the FAS 8-exchange rates approach in the inflationary HIHI case. Under the twenty-year and five-year assumptions the FAS 8-PPP-ratios approach performed slightly better under noninflationary than under inflationary conditions. The situation was the reverse under the ten-year assumption. Otherwise, the FAS 8-PPP-ratios approach's relative performance in the inflationary HIHI case, as related to the results of other cases under this translation approach and the other translation approaches, was not altered by a change in the time assumption.

The third case with a sensitivity range over .050 was the inflationary HILO case under the FAS 8-exchange-rates translation approach. The sensitivity range was .100 the correlation coefficient being .363 under ten-year assumption, .352 under the twenty-year assumption and .452 under the five-year assumption. Under the five-year assumption, the correlation of .452 slightly exceeded the correlation of .442 of the corresponding noninflationary case. Otherwise, the relative performance of

the FAS 8-exchange-rates translation approach in the inflationary HILO case was not altered in any way by changing the time assumptions. The finding that the sensitivity of the inflationary HIHI case under the FAS 8-exchange-rates translation approach and under the FAS 8-PPP-ratios translation approach and the sensitivity of the inflationary HILO case under the FAS 8-exchange-rates translation approach were higher than the sensitivity of any other cases was consistent with the findings of the net income, return-on-assets and return-on-equity analyses.

According to the results of the sensitivity analyses the ten-year assumption had no impact at all on the inventory turnover ratio results and the current ratio results. This is not surprising since the time assumption had no association with the cost of goods sold account, current assets including the inventory account, nor current liabilities.

With respect to the debt-to-equity ratio sensitivity analyses showed that a change in the ten-year time assumption had basically no effect on the value of the correlation coefficients, except for the described noninflationary LOLO case under the FAS 8-with-PPP-ratios approach. In all other cases the range of the correlation coefficient values was below .050.

CHAPTER V

CONCLUSIONS, UTILIZATION OF RESEARCH RESULTS AND FUTURE RESEARCH

Conclusions

This research study was the first or one of the first research studies in which an empirical longitudinal investigation of the effects of applying various resource translation approaches to actual companies' financial statements was undertaken. The study was unique in its use of a "reverse" approach; possible confounding effects from restating the foreign financial statements to reflect U. S. generally accepted accounting principles were eliminated by this approach. The reverse approach may prove to be useful for future empirical investigations of translation approaches. A computer translation technique was used to perform the technical part of the translation process.

The small sample size, the limited range of differently structured companies and the limited range of environmental conditions of this research study limit the generalizability of the conclusions reached and the recommendations made in the study. The conclusions and recommendations may be generalizable to companies with characteristics and operating conditions similar to the ones present in this study, and they may provide some useful insights for analysis of other companies.

There were two major objectives of the research study. These were:

1. To examine whether there is a difference among alternative translation approaches in their ability to preserve the integrity of net income embodied in the foreign financial statements of foreign entities.

2. To examine whether there is a difference among alternative translation approaches with respect to the extent to which they retain the integrity of financial relationships in the functional currency.

With respect to the cases of this study the research results lead to the following conclusions, which are equally applicable to both research questions (objectives):

1. The FAS 52 translation approaches are preferable to the FAS 8 translation approaches.

2. The PPP-ratios translation approaches are preferable to their exchange rates counterparts.

3. The difference between the PPP-ratios approach of FAS 52 and the exchange rates approach of FAS 52 is greater (to the PPP-ratios approach's advantage) for high net income growth companies than for low net income growth companies, except for financial relationships for which the FAS 52 translation rules provide perfect correlation (preservation) for both approaches.

4. The translation approaches investigated perform generally better for low net income growth companies than for high net income growth companies irrespective of inflationary conditions. The FAS 8-exchange rates translation approach is an exception in this respect.

5. The FAS 8-exchange rates translation approach's performance is in most cases not only poor but also inconsistent.

The reason for why a certain translation approach performs better than another translation approach may be straightforward in some circumstances but indeterminable from the findings of this study in other circumstances. In the latter circumstances further research is desirable in order to clarify the reasons for the apparent superiority of one approach over the other.

The FAS 8 translation approaches are less able than the FAS 52 translation approaches to reflect the financial results and relationships embodied in the foreign nontranslated financial statements primarily because of FAS 8's extensive reliance on historical rates and because of the FAS 8 requirement for inclusion of translation gains and losses in reported net income. FAS 8's reliance on historical rates combined with the requirement to disclose translation gains/losses in net income often results in reported exchange gains/losses where the reverse may have occurred from an economic standpoint. Net income, return-on-assets, return-on-equity, earnings per share and profit margin are the financial figures/ratios, of those investigated, that are most affected by the interaction between the use of historical rates and the disclosure of translation gains/losses in income because net income is the common major component of these figures/ratios. This conclusion is supported by the research results of this study.

The gross margin, current ratio and debt-to-equity ratios are affected only by FAS 8's reliance on historical rates, that is, the difference between the FAS 52 translation approaches' performances and the FAS 8 translation approaches' performances with respect to these three ratios exists because the FAS 8 rate applied to the numerator of the ratio differs from the rate applied to the denominator of the ratio while for FAS 52 the same current rate is applied to the numerator as well as the denominator of the ratio. The results of this research study showed that the difference in performance between the FAS 52 translation approaches and FAS 8 translation approaches was less for the gross margin,

the current ratio and the debt-to-equity ratio than for the other financial figures/ratios investigated, except for the inventory turnover ratio.

The inventory turnover ratio differed from the other ratios in that it was the only ratio for which the FAS 8-PPP-ratios translation approach obtained a better result than the FAS 52-exchange rates translation approach. In using a FAS 8 translation approach the rate applied to the numerator of the inventory turnover ratio generally pertains to a date close in time to the date of the rate applied to the denominator of the inventory turnover ratio. Because PPP-indices usually are very stable in that they do not fluctuate extensively, temporally close PPP-ratios are likely to be very similar to each other. In using a FAS 52 translation approach the current average rate for the period is applied to the numerator of the inventory turnover ratio while the current rate at the end of the period is applied to the denominator of the inventory turnover ratio. Because exchange rates are unstable in that they continuously fluctuate under the current dirty floating system, the exchange rate at the end of a quarter may be substantially different from the average exchange rate of the quarter in question. These circumstances caused the performance of the FAS 8-PPP-ratios approach to be superior to the performance of the FAS 52-exchange rates approach with respect to the inventory turnover ratio investigated in this study.

The PPP-ratios translation approaches performed better than their exchange rates counterparts because, as already explained, exchange rates are less stable than PPP-ratios. Changes in the exchange rates and the PPP-ratios do not agree closely with each other in the short run but may show a similar average development pattern when observed over a longer

time frame. According to the research results of this study the PPP-ratios approach of FAS 52 performed consistently as well as or better than the exchange rates approach of FAS 52. The PPP-ratios approach of FAS 8 did not perform consistently as well as or better than the exchange rates approach of FAS 8 but overall the PPP-ratios approach performed clearly better than the exchange rates approach.

The difference between the PPP-ratios approach of FAS 52 and the exchange rates approach of FAS 52 was greater (to the PPP-ratios approach's advantage) for high net income growth companies than for low net income growth companies. Exchange rates are seemingly less suitable as the equilibrating mechanism for high net income growth companies than for low net income growth companies. Further research is needed to clarify the specific reasons for the inferiority of exchange rates in this respect and whether the inferiority of the exchange rates approach of FAS 52 to the PPP-ratios approach of FAS 52 is accentuated with increasing net income growth.

The PPP-ratios translation approach of FAS 8 and both of the FAS 52 translation approaches performed better for companies with low net income growth than for companies with high net income growth, especially when the companies' monetary liabilities exceeded the monetary assets. Whether the translation was from an inflationary or a noninflationary economy made no difference. This finding is particularly interesting since both the low net income growth companies used in the study had a much more erratic net income pattern than the two high net income growth companies used. Further research that includes companies with several different net income growth levels is needed to clarify this finding.

The FAS 8-exchange rates translation approach was the only one of the four translation approaches investigated that did not show a better performance for low net income growth companies. The FAS 8-exchange-rates approach not only had low correlation coefficients but these coefficients also formed an inconsistent and unsystematic pattern in that they were extremely low in some cases and medium low in other cases. The lack of consistency may suggest that there is no reasonable way for managers of international enterprises to intuitively compensate or adjust for the FAS 8-exchange-rates approach's translation results.

The following conclusion pertains to the second research objective only, which was to examine the ability of different translation approaches to preserve the integrity of financial relationships in the functional currency.

> 6. With respect to the return-on-assets, return-on-equity, and profit margin ratios the PPP-ratios approach of FAS 8 performs relatively better than the exchange rates approach of FAS 8 in the translation from an inflationary economy as compared to the translation from a noninflationary economy. The difference between the performances of the two FAS 8 translation approaches with respect to the other financial ratios investigated is generally unaffected by the inflationary conditions.

The reason is unknown for why the PPP-ratios approach of FAS 8 performed relatively better with respect to the return-on-assets, return-on-equity and profit margin ratios than the exchange rates approach of FAS 8 when translating from an inflationary economy than when translating from a noninflationary economy. Net income is the common component of these three ratios and therefore a similar finding with respect to net income and earnings per share could have been expected. That was not the

result, and this is an area for future research. Whether a higher inflation rate than the ones used in this study would accentuate the difference between the FAS 8-PPP-ratios approach's performance and the performance of the FAS 8-exchange rates approach with respect to the three first-mentioned ratios is of particular interest.

An overall evaluation of the research findings with respect to the PPP-ratios approaches leads to the following conclusion:

> The good performance of the PPP-ratios translation approaches deserves more research attention. Therefore, it seems preferable that much of future research in the translation area be concentrated on developing and investigating various PPP-ratios translation alternatives.

Utilization of Research Results and Accounting Policies

The research results of this study provide standard-setting bodies in the U. S. and abroad with useful information about the after-translation effects of translation approaches similar to FAS 8 (monetary-nonmonetary approach) and FAS 52 (current rate approach) over a long time period. Information is provided about the superiority of the FAS 52 approaches over the FAS 8 approaches and about the reasons for this superiority. Information also is provided about the superiority of the PPP-ratios approaches over their exchange rates counterparts and the reason for this superiority. The research results also show that the difference between the PPP-ratios approach of FAS 52 and the exchange rates approach of FAS 52 is greater for high net income growth companies than for low net income growth companies, and that all the translation approaches investigated, except the FAS 8-exchange rates approach, generally perform better for low net income growth companies than for high net income

growth companies. By giving attention to these results standard-setting bodies should be in a better position to make decisions concerning future translation standards.

This research study also provides specific information about the use of PPP-ratios as the translation factor. Accounting authorities have not explored the possible use of PPP-ratios but the results of this research study indicate that, in setting new translation standards and in issuing translation recommendations, the authorities should pay serious attention to the use of PPP-ratios as the translation factor. The PPP-indices used in this study were constructed from available price indices; it seems reasonable to believe that if PPP-indices were especially designed and maintained for the purpose of accounting resource translation, they would provide higher correlations than those of this study.

The research results provide information about the after-translation effects of applying different translation approaches to the financial statements of companies with certain general asset structure and certain categories of net income growth rate. For a company that fits fairly closely one of the four categories used in this research study, the effects that the application of the different translation approaches probably would have on translation of the foreign operations can be estimated. If an enterprise does not consider that the official accounting translation standard provides information that is sufficiently useful, it can, at least for internal use, select the translation approach that best provides its management with the information its management desires.

It can be stated that in terms of how well the results of a translation approach reflect the net income and the financial results

and relationships embodied in the foreign nontranslated financial statements, the FAS 52 translation approaches definitely can be recommended over the FAS 8 translation approaches. Naturally, other criteria than those applied in this study can be used to evaluate translation approaches. Of the two FAS 52 approaches the PPP-ratios approach performs consistently as well as or better than the exchange rates approach and therefore is preferred. Generally, the differences between the translated results of these two approaches are small so that the exchange rates approach may be favored for the practical reason that exchange rates are more readily available. On the other hand, PPP-ratios may have a greater social utility in that they are regarded by many as having the advantage over exchange rates of not introducing destabilizing hedging activities into the foreign exchange markets.

Objections have been raised against the possible use of PPP-ratios for translation of financial statements of companies that are regarded as an extension of the parent company's operations. The reason given is that subsidiaries that are so regarded repatriate large amounts of cash to the parent, and the U. S. dollar equivalent of these cash flows is affected by changes in the exchange rates between the country of the foreign affiliate and the U. S. because the cash to be repatriated is converted at the prevailing exchange rate. Critics of PPP-ratios approaches assert that PPP-ratios do not sufficiently incorporate the effects of exchange rate changes on repatriated cash but that exchange rates do. If this criticism is valid a criterion should be established for when a foreign entity is considered independent and when it is considered an extension of the parent's operations. The criterion could be the degree of cash

repatriation from the foreign subsidiary, the extent of trade between the parent and the subsidiary, and/or the degree of parent financing in the subsidiary. Some other criterion may also prove to be relevant.

The International Accounting Standards Committee (IASC) makes a distinction between parent-integrated foreign entities and self-contained foreign entities in its new Exposure Draft, 'Accounting for the Effects of Changes in Foreign Exchange Rates.' For parent-integrated foreign entities an approach similar to FAS 8 is suggested by the IASC and for independent foreign entities an approach similar to FAS 52 is suggested. Different factors to consider in determining the independence of a foreign entity are given in the Exposure Draft but no exact criteria nor cut-off point for when a company is considered to belong to one category or the other is given. No attention is paid to a PPP-ratios approach in the Exposure Draft. A re-state-translate translation approach is suggested for the translation of financial statements of companies located in highly inflationary economies.[1] The research results of this study suggest that a preferable variant of the International Accounting Standards Committee's suggestion may be to use the PPP-ratios approach of FAS 8 for parent-integrated foreign entities and the PPP-ratios approach of FAS 52 for self-contained foreign entities because of the superiority of the PPP-ratios approaches over the exchange rates approaches.

Future Research

Some of the future research areas of importance in accounting translation have already been mentioned. There are several other areas of importance that have not been discussed.

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[1] International Accounting Standards Committee. Accounting for the Effects of Changes in Foreign Exchange Rates (Exposure Draft 23, March 1, 1982), para. 14-17, 33-35.

The indices used in this research study were economy-wide country PPP-indices. In future research industry or even firm specific indices could be obtained and utilized. Naturally, it is more difficult to obtain such indices but the good performance of the PPP-ratios approaches in this study suggests that it may be worthwhile. Industry or firm specific indices may provide better results than the price indices used in this research study.

With respect to indices representing the economy of a country other indices than wholesale price indices may be used as PPP indices. One such index is the GDP-implicit deflator. The GDP-implicit deflator is not available on a quarterly basis but it may be possible to estimate the quarterly GDP indices from the annual GDP indices on the basis of the time patterns of other indices that are available quarterly or monthly provided that the GDP-implicit deflator has a known relationship to these other indices.

Different ways of constructing and maintaining PPP-indices specifically for accounting translation purposes deserve research attention. Such indices would probably provide better results than the PPP-indices used in this study. One way to develop such indices would be the Foreign Currency Translation Index (FCTI) method. The FCTI method involves the development of a set of indices of the relative values of resources in the major trading countries. Such indices could be developed by the American Institute of Certified Public Accountants or the Financial Accounting Standards Board. Each index would establish a correspondence between resource prices at each point in time at which the FCTI is calculated. Preferably, a different index would be provided for each major sector of each

country relative to the same sector of the other country. Steel industry, paper products and agriculture are examples of possible sectors. The broadness of a sector is one of the issues that requires research during the development of an FCTI approach.[2]

Current cost (replacement cost) accounting was not used in this research study because of the lack of availability of current cost data for companies for the periods under examination. A current cost accounting alternative and also a price level accounting alternative are possible future extensions of this research effort. The revised Exposure Draft on foreign currency translation of FASB contained price level adjustment provisions to be applied prior to translation, and the International Accounting Standards Committee is considering the application of inflation adjustment of financial statements of foreign entities located in highly inflationary economies. For these reasons the impact of price-level accounting on the translation results must be considered to be of great interest.

The current-noncurrent translation method was not tested in this research project because at the present time there is no serious consideration of this translation method as a FASB standard. The current-noncurrent translation method may, though, be included in a possible future extension of the research project. Also, the effects of modifying translation approaches now in use may merit an investigation; one suggested

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[2]Scott, G. M. "FASB 8, The Foreign Currency Translation Index and Bounded Horizons" (Collected Papers of the Northeast Regional Meetings of the American Accounting Association, April 1979), pp. 12-13.

modification of FAS 8 is to translate at the current rate the locally sourced inventories that turn over at least once a year.

Only two levels of net income growth and monetary items (asset) structure were used in this research study in order to keep the research project to manageable size. A possible extension would consist of adding more categories of both net income growth and monetary asset structure. The differentiated effects that different degrees of net income growth and different levels of monetary asset structure may have on translated data could be explored and hopefully clarified in such a research extension. Because all the translation approaches, except the FAS 8-exchange rates approach, generally performed better for low net income growth companies than for high net income growth companies, an investigation into how gradual the deterioration in performance is with rising net income growth is of particular interest.

Another variable of research interest is inventory turnover. Companies with different inventory turnover ratios are of special interest because the FAS 8-PPP-ratios approach performed better than the FAS 52-exchange-rates approach for all eight cases of inventory turnover but only for these eight of all of the seventy-two cases investigated in this study. The inventory method investigated was First-In First-Out, and the FAS 8-PPP-ratios approach should do worse the slower the inventory turnover is because under this translation approach the difference between the rate applied to the numerator and the rate applied to denominator of the inventory turnover ratio generally increases with an increasing time span of inventory turnover. Consequently, the difference between the FAS 52-exchange rates approach and the FAS 8-PPP-ratios approach should

decrease with an increasing time span of inventory turnover until a point where the FAS 52-exchange rates approach starts to provide better translation results than the FAS 8-PPP-ratios approach. The relationship between the time span of inventory turnover and the superiority of one of the two translation approaches over the other warrants particular research attention. This relationship is naturally affected by the pair of currencies involved and the time period in question.

The effects of applying other inventory valuation methods than First-In First-Out need also to be researched. Specifically, Last-In First-Out deserves research attention because of the extensive use of this inventory valuation method by industrialized companies.

Different levels of long term assets and shareholders' equity have some impact on the translation results of FAS 8 because historical rates are applied to long term assets and capital. The capital accounts are translated at historical rates also when applying FAS 52. Research into the effects of varying the levels of shareholders' equity and long term assets probably would provide additional useful information about the FAS 8 and FAS 52 translation approaches. Different levels of depreciation may also be worthy of investigation.

Two countries besides the U. S. were included in this study. A worthwhile extension of the research study would be to include more countries. With respect to the return-on-assets, return-on-equity and profit margin ratios it may be particularly worthwhile to include countries with highly inflationary economies; this is because the research results of this study suggested a relatively clearer superiority of the PPP-ratios approach of FAS 8 over the exchange rates approach of FAS 8

for these ratios when translating from an inflationary economy than when translating from a noninflationary economy. Whether or to what degree the difference is accentuated by increasing inflation rates needs to be clarified.

An empirical investigation into the effects of FAS 52 on companies' hedging activities is a research project of great future interest; this may provide an indication of the extent of social utility of applying FAS 52 as compared to applying FAS 8. Such an investigation can be undertaken after the FAS 52 translation rules have been in effect a sufficiently long time period for the effects to be determinable.

A promising direction for future research would be to contrast the PPP-ratios approach of FAS 52 and the exchange rates approach of FAS 52 by altering the values of variables that could accentuate and clarify the differences between the two approaches with respect to translation results. Net income growth seems to be one such variable. This direction would not have been discerned without this research study. Computer simulation may be an appropriate methodology for such a research study and also for many of the other research projects suggested.

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APPENDIX I

TOP TEN INDIVIDUAL PROBLEMS IN ORDER OF PERCEIVED IMPORTANCE

(Most Important First)

(Based on a 4 point scale, 1=extremely important, 2=moderately important, 3=less important, 4=not important)

Rank	Category/ Prob.#	Problem	Rating: Round 2	Rating: Round 3
1.	H-4	Problem. There is a lack in many countries of adequately trained accounting educators.	1.32	1.64
1.	B-1	Problem. In a world of shifting exchange rates, it is difficult to measure the economic effect of exchange rate changes on a particular company having dealings with foreign affiliates or other foreign operations, or the net effect of these rate changes on a system of interrelated companies in different countries; in some circumstances the swings in the parities of currencies are largely unrelated to the operations of affiliated companies in that country.	1.52	1.64
3.	A-1	Problem. An auditor's report may not be easily or properly interpreted by readers in another country because it is prepared on the basis of the auditing standards and using accounting terminology of another country, or because different types of attestations are used in various countries which have different meanings.	1.44	1.68
3.	F-1	Problem. Different rates and structural characteristics of inflation in different countries make it difficult to achieve comparability of financial status and results among companies in different countries for external financial reporting.		

Rank	Category/ Prob.#	Problem	Rating: Round 2	Rating: Round 3
5.	F-2	Problem. The lack of uniformity in approaches of inflation accounting as indicated by the emergence of different inflation accounting systems in different countries, (such as different versions of current-value accounting) further hampers comparability among unrelated companies as well as among affiliated companies in different countries.	1.76	1.74
6.	G-1	Problem. The lack of international accounting standards greatly diminishes the usefulness of financial statements to users in countries other than the country on whose accounting standards the statements are based.	1.55	1.81
7.	A-7	Problem. (Added from ROUND TWO): Basic principles of independence and ethics differ among countries' auditors.	---	1.84
8.	B-6	Problem. Translation gains and losses other than on currency conversion transactions-in-process often do not reflect economic reality.	1.91	1.85
9.	C-2	Problem. The necessity in many countries to conform financial accounting and reporting to the tax law impedes the development of sound accounting standards and affects the international comparability of the published financial statement.	1.68	1.86
10.	B-8	Problem. Too many translation approaches are now in existence around the world.	1.83	1.89

APPENDIX II

COMPANIES SELECTED

Eli Lilly and Company	=	HIHI
Chesebrough-Pond's Inc.	=	HILO
Abe Schrader Corporation	=	LOHI
Grolier Incorporated	=	LOLO