NBER WORKING PAPER SERIES

THE VALUATION OF THE FOREIGN INCOME OF U.S. MULTINATIONAL FIRMS: A GROWTH OPPORTUNITIES PERSPECTIVE

Gordon M. Bodnar
Joseph Weintrop

Working Paper 5904

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
January 1997

The authors wish to acknowledge the helpful comments of Ray Ball, Jane Bozewicz, Alvin Carley, Paul Fisher, Ken Froot, Bernard Goodman, Gerry Lobo, Aditya Kaul, S. P. Kothari, Steve Lilien, Yaw Mensah, Dennis Patz, Eric Press, Victoria Shoaf, Adrian Tschoegl, Jerry Zimmerman, and participants at the Wharton finance lunch, Frankfurt University (Germany), Rutgers University (New Brunswick), and Syracuse University. This paper has also been presented at the 1995 annual meeting of the American Accounting Association and the 7th Annual Conference on Financial Economics and Accounting. This research has been supported by a grant from the Center for International Business Education and Research (CIBER) at Columbia University and a grant (Weintrop) from PSC-CUNY. All errors are the responsibility of the authors. This paper is part of NBER's research program in International Finance and Macroeconomics. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

The Valuation of the Foreign Income of U.S. Multinational Firms: A Growth Opportunities Perspective

Gordon M. Bodnar and Joseph Weintrop

NBER Working Paper No. 5904
January 1997
JEL Nos. F3, M4
International Finance and Macroeconomics

ABSTRACT

This paper demonstrates the value-relevance of foreign earnings for U.S. multinational firms by examining the associations between annual abnormal stock performance and changes in firms' domestic and foreign incomes disclosed through SEC Regulation §210.4-08(h). For 2570 firm-year observations between 1985 and 1993, both foreign and domestic earnings changes have significant positive associations with annual excess returns measures; however, the association coefficient on foreign income is significantly larger than the association coefficient on domestic income. This indicates that foreign earnings disclosures are value-relevant and suggests that firm value is more sensitive to foreign earnings than domestic earnings. We demonstrate that this larger foreign association coefficient is consistent with differences in growth opportunities between domestic and foreign operations. To further support the growth opportunity interpretation of the results, we demonstrate that larger foreign association coefficients are not due to the influence of exchange rate changes or the result of methodological problems such as differences in the timing of foreign versus domestic earnings recognition or misspecification in the earnings expectation process.

Gordon M. Bodnar
Department of Finance
Wharton School
University of Pennsylvania
Philadelphia, PA 19104-6367
and NBER
bodnarg@wharton.upenn.edu

Joseph Weintrop
Department of Accounting
School of Business Administration
Baruch College
New York, NY 10010

1. Introduction

During the last 20 years, U.S. firms have substantially expanded their operations outside of the United States. Accounting regulators such as the Security and Exchange Commission (SEC) and the Financial Accounting Standards Board (FASB) have mandated that firms provide data on foreign operations. The maintained belief is that more data about these expanding foreign operations will contribute to better informed investors and more precise valuation of firms. This paper provides direct evidence on the association between foreign earnings and firm value based upon the firm's disclosure of its domestic and foreign earnings components as required by SEC Regulation §210.4-08(h), General Notes to Financial Statements - Income Tax Expense.

Utilizing this data on the breakdown of earnings into domestic and foreign components, we consider two questions: 1) are changes in the domestic and foreign components of earnings significantly associated with changes in the market value of the firm? and 2) are the domestic and foreign components of earnings capitalized by the market at a similar rate? For a sample of 2570 firm-year observations over fiscal years 1985 to 1993, we find that changes in both the domestic and foreign earnings components of U.S. multinational firms are significantly associated with annual abnormal returns. However, foreign earnings changes are capitalized into stock price at a significantly higher rate than domestic earnings changes. This suggests that the market views foreign and domestic income changes differently for purposes of firm valuation.

We consider possible economic explanations for this finding. We first consider whether the properties of exchange rate changes inherent in foreign earnings changes make foreign income changes more permanent than domestic earnings changes, resulting in the larger foreign association coefficient. Adjusting foreign earnings changes for the change in an average exchange rate over the year, we find that the association coefficient on the adjustment foreign earnings change remains significantly larger than the domestic association coefficient. We next consider the possibility that our finding is due to an economic difference in the earnings streams themselves. As previous research has demonstrated that association coefficients are increasing with the growth opportunities of a firm's operations (see, e.g., Collins and Kothari (1989)), we conjecture that this difference between foreign and domestic association coefficients is the result of greater opportunities for growth in foreign operations. Using foreign and domestic

changes in return-on-assets (ROA) as proxies for the foreign and domestic growth opportunities of the firm, we find that there is a significant positive relation between the difference in foreign and domestic association coefficients and the difference in foreign and domestic growth opportunities. Thus firms showing greater growth opportunities in the foreign market as compared to the domestic market have larger foreign association coefficients.

To demonstrate that our findings are the results of economic factors and not problems with our analytic framework, we consider several specification tests to check the robustness of our basic finding. Specifically, we consider several issues that could also cause differences in the foreign and domestic association coefficients. These include the timing/length of the return interval as well as problems with our simple specification of the earnings expectations process. Although we demonstrate that these issues affect the estimation of the segmental association coefficients, we show that our basic finding of a significantly larger foreign association coefficient is robust to these issues.

There is limited prior research on the value-relevance of the disclosure of foreign financial data. Kinney (1972) examines the association between market risk and the number of foreign segments. He finds a positive relation between risk and the number of reported geographic segments. More recently, Balakrishnan, Harris and Sen (1990) study 89 firms from 1979 to 1983 that complied with the *Statement of Financial Accounting Standards FASB No. 14: Financial Reporting for Segments of a Business Enterprise* (henceforth SFAS No.14) mandated disclosure requirements and find weak evidence that geographic segment data provide enhanced predictive ability of annual income and sales data. Most recently, and more closely related to this paper, Boatsman, Behn, and Patz (1993) address the issue of the value-relevance of selected geographic segments of income for a sample of 970 firm-year observations using data from SFAS No.14. They find no evidence of a difference among the changes in the estimates of the coefficients of segmental earnings and excess returns for a fifteen month window extending from the beginning of the fiscal year to the time of the filing of the Form 10-K (See Table 4, page 62).[1] Below we discuss possible explanations for the difference between the two sets of results and suggest that our use of SEC Regulation

[1] Boatsman *et al.* (1993) examine the value relevance of geographic income disclosures from SFAS No. 14 looking at both price reactions around the time of the release of the 10-K as well as long window associations of changes in geographic earnings with

§210.4-08(h) data provides a larger sample and more powerful tests.

The rest of this paper is as follows. Section 2 discusses our methodology and develops the our two hypotheses. Section 3 describes the mandated disclosure requirements and our sample selection. Section 4 contains the empirical tests and Section 5 provides an economic interpretation of the results. Section 6 considers several specification issues of our tests and Section 7 concludes.

2. Methodology and Hypothesis Development

The methodology for our analysis builds on the relation between earnings and returns documented by Ball and Brown (1968) and the subsequent literature which identifies a positive relation between the unexpected change in total annual earnings, ΔTERN, and some measure of the change in the value of the firm $\Delta V_{i,t}$.

$$\Delta V_{i,t} = \alpha_0 + \alpha_1 \Delta TERN_{i,t} + \varepsilon_{i,t} \quad (1)$$

Unlike event studies that examine short windows around earnings announcements (or other events), we are interested in the relation between earnings changes and price changes over the reporting periods. This approach is commonly referred to as an association study.[2]

Common extensions of the association literature have been to decompose the annual earnings change into vertical components (e.g., revenues, expenses, gross profits, and taxes) and to examine the associations between each component and returns (see, e.g., Lipe (1986), Rayburn (1986), and Wilson (1986)). In contrast, we are interested in examining the association of the cross sectional components of earnings based upon the location that the income is earned: at home or abroad. This breakdown of earnings is of interest from an economic perspective as it is likely that investors do not see these income streams as perfectly similar. Foreign operations incur additional risks (exchange rate, political, different business cycles) as well as opportunities (new markets for growth). In addition, foreign operations face the problems of conducting operations at a distance, making it more difficult for domestic investors to

---

stock returns. While they find a few cases suggesting some value relevance for geographic disclosures, they conclude that "...there is little evidence that these disclosures affect equity values." p. 46.

2 Association studies have a long history in accounting for measuring value-relevance (see, e.g., Beaver and Dukes (1972 and Gonedes (1972)). Collins and Kothari (1989) provide a summary of studies and implied assumptions in the association literature.

obtain information about a firm's economic situation. These unique features of foreign income can cause investors to incorporate foreign income into firm value differently than they do domestic income.

The decomposition of total income into domestic and foreign components leads to the following re-specification of (1):

$$\Delta V_{i,t} = \gamma_0 + \gamma_1 \Delta DERN_{i,t} + \gamma_2 \Delta FERN_{i,t} + \varepsilon_{i,t} \quad (2)$$

where $\Delta DERN_{i,t}$ is the change in the domestic component of total annual earnings and $\Delta FERN_{i,t}$ is the change in the foreign component of total annual earnings. This decomposition allows us to examine several questions about the market's valuation of multinational firms' activities. First, are changes in the domestic and foreign components of earnings associated with changes in the market value of the firm? This question considers whether the market incorporates each income stream independently when valuing the firm and involves testing $\gamma_1 = 0$ and $\gamma_2 = 0$. Second, are the association coefficients on domestic and foreign earnings changes equal? As mentioned above, because foreign operations have exposures to risks and rewards that differ significantly than those faced domestically, it is possible that the market capitalizes foreign income streams into price differently than domestic income streams. This involves testing the null hypothesis that $\gamma_1 = \gamma_2$.

One interesting aspect of this second question is that there are several economic arguments as to the relative size of the foreign and domestic association coefficient. On one hand, foreign earnings could be valued less highly than domestic earnings by the market because they are perceived to be less reliable and/or more uncertain. Foreign earnings numbers may be less reliable than domestic earnings because foreign currency accounting techniques combine non-cash flow adjustments with actual cash flow numbers making it difficult to determine the implications of reported foreign earnings for future cash flows.[3] In addition, foreign earnings streams can be more uncertain in economic value as they can face restrictions and uncertainties from foreign governments such that their availability to

[3] This is true of the temporal method of foreign currency consolidation used by foreign operations that have designated the U.S. dollar as functional currency. For more on this problem, see Bartov and Bodnar (1996).

shareholders is less certain than domestic earnings.[4] Moreover, if investors perceive foreign operations as riskier, in terms of greater non diversifiable risk, then they will require a higher rate of return on such activities. This higher required rate of return implies a higher discount rate for foreign earnings than domestic earnings.[5] All of these influences suggest the foreign association coefficients should be lower than domestic association coefficients as the market would rationally value an additional dollar of foreign earnings less highly than an additional dollar of domestic earnings.

Alternatively, there are influences suggesting that foreign association coefficients could be larger than domestic association coefficients. An extant literature in international finance (see, e.g., Frankel and Rose (1995) for a review) suggests that exchange rate changes are virtually unforecastable and have a significant permanent component. This implies that changes in the dollar value of foreign earnings resulting purely from exchange rate changes are both unforecastable and permanent. Thus, when an increase in the dollar value of foreign earnings results from a depreciation of the dollar (a pure price effect), this increase is both unanticipated and expected to be permanent, resulting in an unexpected increase in the dollar value of foreign earnings into perpetuity. Unless underlying earnings changes are as unexpected and permanent as exchange rate changes, the influence of exchange rates of foreign earnings will lead to a higher association between foreign earnings changes and stock returns than domestic earnings changes and stock returns.[6]

---

4 See Saudagaran (1993).

5 In a simple model, where earnings streams are assumed to evolve randomly and the value of the firm is equal to the present discounted value of the earnings stream, it is possible to show that the association coefficient between an earnings change and the market value of the firm will be equal to one over the market discount rate for that stream of earnings (see, e.g., Collins and Kothari (1989)).

6 Permanent changes in earnings by definition should lead to a larger impact on price today as the present value of the impact on cash flows is larger than for a similar sized temporary change in earnings. An earnings change that is perfectly unanticipated and permanent, by definition, should result in an association coefficient of approximately 1/r, where r is the firm's discount rate. Of course this will only result in larger foreign association coefficients to the extent that changes in domestic earnings are more predictable or perceived to be less permanent. Easton and Harris (1991) argue that under the specification of earnings as a random walk, changes in earnings represent permanent components and levels of earnings represent temporary components. They include both earnings levels and changes in a single regression with returns and find the earnings response coefficient for changes to be higher than it is for levels.

An additional reason for larger foreign association coefficients relates to differential growth opportunities perceived by the market in foreign versus domestic operations. Previous research (see, e.g., Collins and Kothari (1989)) demonstrates that association coefficients are an increasing function of the growth opportunities in the total firm's activities. The split between domestic and foreign income allows us to independently look at these two segments. In the evolution of the firm, foreign operations typically follow the development of successful domestic operations. Foreign operations represent expansions into new, less exploited markets (see, e.g., Kogut (1983) and Stopford and Wells (1972)). Since foreign operations generally represent a minority of most U.S. firms' total operations, given the size of the potential foreign market, the foreign markets offer greater potential for growth than the already more exploited domestic market. Because the opportunities for growth are greater abroad, successful foreign operations can be interpreted by the market as indicating the expectation of higher future foreign earnings. If foreign operations hold the possibility of greater growth than domestic operations, and earnings changes are an indication of the realizations of such growth opportunities, then one should expect a larger association between changes in firm value and foreign earnings changes than domestic earnings changes.

3. Mandated Accounting Disclosure Requirements and Sample Selection

3.1 Mandated Accounting Disclosure Requirements

Our primary source of segmental data comes from firms' compliance with the disclosure requirements of SEC Regulation §210.4-08(h), General Notes to Financial Statements-Income Tax Expense (henceforth Rule 4-08(h)), to determine the annual domestic and foreign income.[7] This regulation requires that "... disclosure shall be made in the income statement or a note thereto, of (i) the components of income (loss) before income tax expense (benefit) as either domestic or foreign;[8] (ii) the components of income tax expense, including (A) taxes currently payable, and (B) the net tax effects, as applicable, of timing differences" (17 CFR §210.4-08(h)(1)). Timing differences arise from foreign income because the U.S. tax liability on most income of foreign subsidiaries of U.S. corporations is payable

[7] This regulation can be traced back to the General Revision of Regulation SX (1980) and was first included in Compustat in 1984.

[8] For the purposes of the regulation, foreign operations are defined as operations that are located outside of the registrant's home country. Export income of the domestic parent is defined to be part of the domestic income segment.

only when the income is repatriated;[9] if income is not currently repatriated, a deferred tax timing difference is created. To provide information on the nature of a firm's tax status, Rule 4-08(h) requires disclosure of data on the domestic and foreign components of pre-tax income and the related tax calculations.[10] The disclosure of these data is subject to a *5 percent* materiality requirement.

This data allows the calculation of domestic and foreign after-tax earnings which (in most cases) reconciles directly with net earnings reported in the income statement. Any differences arise from untaxed income recognitions (primarily equity in net income of affiliated companies) that some firms report as part of total income but not part of taxable income and/or the allocation of minority interests in subsidiaries. Since there is no indication of the allocation of these items between foreign and domestic income, when they are present they drive a wedge between the firm's actual after-tax income and the sum of our domestic and foreign after-tax income.[11]

The use of Rule 4-08(h) disclosure data differentiates this paper from previous research on geographic segment information (e.g., Boatsman, Behn, and Patz (1993) and Balakrishnan, Harris and Sen (1989)). They use data from SFAS No. 14 which mandates the disclosure of a firm's geographic segments whenever a segment constitutes more than 10 percent of total assets, revenues or a broad-based definition of income.[12] For our study, we believe there are several reasons why Rule 4-08(h) data is superior to the SFAS No. 14. First, unlike SFAS No. 14 data on foreign income, Rule 4-08(h) domestic and foreign pre-tax income and the related taxes are applied on a consistent basis through the time period of our study and allow us to calculate foreign and domestic after tax income. Unlike SFAS No. 14 income data, which may be "... operating income, net income or some measure in between..." (SFAS No. 14),

---

9 One exception to this is income that falls under the definition of subpart F income. Such income, typically passive income or income from specific activities that may be associated with tax avoidance, does not receive U.S. tax deferral and is taxable by the U.S. in the year that it is earned.

10 This data is based on financial income from foreign sources and needs to be distinguished from the tax notion of foreign source income. Foreign source income denotes income from foreign sources that constitutes currently taxable income by the IRS.

11 Below we discuss the frequency of this problem in our data and how we deal with this issue in our empirical framework.

12 SFAS No. 14 supersedes the earlier disclosure requirements initiated by the SEC. In 1969, under SEC Release No. 33-4949, 33-4988, and 34-9000 (see, Swaminathan (1991)), the SEC required disclosure for firms that had revenues and/or earnings of greater than 10 percent outside of the United States. This supplemental disclosure data was found in the form 10-K, and it was used by Kinney (1972) among others.

our income measures are comparable across firms. Second, since the materiality criterion for this disclosure is lower than SFAS No. 14 (5 percent versus 10 percent), we have a larger sample than studies that use SFAS No. 14 data.

One drawback to the use of Rule 4-08(h) data is we are only able to obtain the total amount of income from foreign operations and thus are unable to study any associations between specific foreign segments (e.g., Europe, Asia, etc.) as in Boatsman, Behn, and Patz (1993). While it is plausible that there are differences across foreign activities, we believe these differences are economically less significant than the differences between domestic and foreign operations. Given the limited number of usable observations on distinct separate foreign segments, focusing on the broad categories should improve the power of tests on the value-relevance of foreign data.

3.2 Sample Selection

To construct our sample, we first search the Compustat Expanded Annual Industrial File for firms with both current and one-year lagged observations for the SEC mandated disclosures of domestic and foreign pre-tax annual income (Compustat annual data items 272 and 273). Although multinational firms have made these disclosures in their annual reports in accordance with Rule 4-08(h) since the integration of disclosures in 1980, the data are not included on the Compustat database until 1984. We also require current and lagged data for total and foreign income taxes (Compustat annual data items 16, 64 and 270, respectively). These variables are used to calculate domestic and foreign after-tax income for current and prior years. These measures are converted into domestic earnings per share, $DEPS_{i,t}$, and foreign earnings per share, $FEPS_{i,t}$, upon dividing by shares outstanding at the end of the respective fiscal year.[13] From these variables we create the change in domestic earnings per share, $\Delta DEPS_{i,t}$, and the change in foreign earnings per share, $\Delta FEPS_{i,t}$ by differencing with the previous year. For our tests we also extract current and lagged annual earnings per share, $TEPS_{i,t}$ (Annual Compustat item number 58), and create the change in total earnings per share, $\Delta TEPS_{i,t}$.[14]

---

[13] The appropriate adjustment is made when definitional changes in shares outstanding occur.

[14] In order to avoid confusion about the definition of foreign operations, especially when we consider the impact of exchange rate changes, only firms incorporated in the United States were included. Foreign firms listed on U.S. exchanges include U.S. operations in their definition of foreign income (see, e.g., Alcan). The foreign incorporation code in Compustat (FINC) is checked to insure only U.S. firms are included in the sample.

We also require that firms have 60 months of stock price return available preceding the current fiscal year on the Center for Research in Security Prices (CRSP) database for calculating changes in firm value.[15] Cumulative abnormal returns for firm i are calculated over a twelve-month period as:

$$CAR_{i,t} = \prod_{k=t_1}^{t_2}(1+(R_{i,k} - \hat{a}_i - \hat{b}_i \cdot R_{m,k})) - 1 \qquad (3)$$

where: $CAR_{i,t}$ is the annual cumulative abnormal return to firm i over the 12 month period beginning with the fourth month of fiscal year t and ending with the third month of the fiscal year t+1

$R_{i,k}$ is the monthly stock return for firm i in month k

$R_{m,k}$ is the monthly return to the value-weighted CRSP market index in month k

a_i, b_i are the parameters from the estimation of a market model on firm i over the 60 months prior to the beginning of the fiscal year t

t_1 , t_2 are the fourth month of fiscal year t and the third month of fiscal year t+1.

Finally, we require firms to have valid stock price data for the end of the first quarter of fiscal year t to normalize all the per share data.[16]

Later tests require data on the distribution of a firm's assets between domestic and foreign operations. We obtain foreign asset data from the 1994 Disclosure WorldScope database. This database contains information for the percentage of foreign (non-U.S.) assets and revenues. These data are provided under the disclosure requirements of SFAS No. 14. Due to the higher materiality requirement in SFAS No. 14 (10%) than Rule 4-08(h) (5%), these data are available only for a subset of our sample firms.

3.3. Descriptive Statistics

The initial sample consists of 2671 firm-year observations for 471 distinct firms. Due to the sensitivity of results in this area to outlying observations (see, Boatsman, Behn, and Patz (1993)), we conduct a three step approach to ensure that our results are not driven by outliers. First we examine the data for extreme observations. Three

---

15 All of the tests in section 4 (below) are replicated on raw returns with similar statistical results, though lower overall explanatory power.

16 See Christie (1987) and Collins and Kothari (1989) for a discussion of the benefits of deflating per share data by price. We also ran all of our tests deflating by price at the beginning of the first quarter and the results are fundamentally unchanged.

observations are eliminated based upon this criteria.[17] Second, we delete observations for which any regression variable is more than four standard deviations from its sample mean. This reduces the sample size by 93 to 2575 observations.[18] Finally, we carry out a Cook's Distance screen on equation (5) (below) to remove any remaining observations that have excessive influence on the reported results. This removes 5 additional observations.[19] Thus our final sample consists of 2570 firm-year observations for 459 distinct firms. Panel A of Table 1 contains descriptive statistics for this sample. Being multinational firms, the firm size of our sample is in all respects significantly greater than the Compustat universe. The medians of both total assets and market value are larger than the medians of the complete Compustat sample at the 1 percent level (tests not reported).

Our sample reveals substantial foreign activity. The foreign economic activity is measured in four different ways. For the full sample of 2570 observations we report foreign earnings (Rule 4-08(h)) as a percentage of total earnings. Since segment data is available only through SFAS No. 14, we report the percentage of foreign revenues, operating income, and assets for the subset of firms that make SFAS No. 14 disclosures which are available on the Disclosure WorldScope database.

As displayed in Panel A of Table 1, the median proportion of foreign to total earnings for the full sample is 21.4 percent. The median percentage of foreign revenues, operating income, and assets for the subset of firms making SFAS No. 14 disclosures is higher at 26.7 percent, 26.5 percent and 24.9 percent, respectively. Thus for the median firm, foreign activity accounts for approximately 20 to 25 percent of total activity, across measures. Panel B of Table 1 provides medians of these measures of foreign activity by fiscal year to indicate the changes in foreign activities

---

17 These observations include measures for ΔTEPS/P of 167.5 and -17.8, and CAR of 8123%. Each of these observations is more than twice as large as the next closest observation.

18 This 4 standard deviation criteria results in screens on ΔTEPS/P of approximately ±1.30, ΔDEPS/P of roughly ±1.25, ΔFEPS/P of approximately ±0.40, and CAR of approximately -75% and +300%. Many of these data determined cutoff criteria are consistent with arbitrary cutoff criteria used in other association studies (see Collins and Kothari (1989).

19 Cook's distance tests identifies individual observations that have an excessive impact on the regression results. For more on this test, see, e.g., Belsley, Kuh, and Welsch (1980). The removal of these five observations results in an increase in R-squared of 0.002 and an increase in the foreign association coefficient of approximately 0.1. However, this screen does not affect the statistical significance of any of the tests.

over time. The values generally trend upwards over the first half of the sample, then flatten out and fall off slightly as the sample size increases (entry of smaller, less international firms) in the later years.

Table 2 contains summary statistics and correlations for the variables used in the regressions. It is interesting to note that the correlation between the change in domestic earnings variable (DEPS/P) and foreign earnings variable (FEPS/P), although statistically significant, is economically small, 0.094. This suggests that foreign operations provide a substantial degree of diversification to the firm's income stream.

4. Empirical Tests and Results

4.1 The Association of Total Earnings with Abnormal Return

We begin our empirical tests with an estimation of the association coefficient between cumulative abnormal stock returns and total earnings changes to verify our sample selection procedures produce results are similar in nature to other association studies.[20] The standard association regression is given by:

$$CAR_{i,t} = \alpha_0 + \alpha_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \varepsilon_{i,t} \qquad (4)$$

where the change in earnings, ΔTEPS, is normalized by the firm's share price at the end of the first quarter of the current fiscal year and ε is the error term.[21] Panel A of Table 3 contains the results of the estimation of equation (4). The association coefficient for the total earnings change, α_1, is 0.611 and is significant at the 1 percent level.[22] The adjusted R^2 of the regression is 6.1%. Both of these results are consistent with the results of previous studies that

---

20 Kothari and Zimmerman (1994) argue that in situations where prices lead earnings, price/level regressions are better specified than return/changes regressions for estimating the price earnings relation. Tests (not reported) of our hypotheses using price/level regressions lead to similar qualitative results for all regressions reported in Table 3. The relation between foreign earnings and price is significantly large than the relation between domestic earnings and price. Given the similarity of the basic results, we report results for return/change regressions only as these are more commonly used in the literature.

21 The use of a naive prediction for the domestic and foreign components of earnings per share is consistent with Boatsman, Behn, and Patz (1993), Harris (1993) and Klassen, Lang and Wolfson (1993). In order to maintain consistency with these measures, we continued to use the naive model for the total earnings per share estimate even though there are models that have higher predictive powers. Potential problems with this specification for our tests is considered below in Section 6.

22 All t-statistics are based upon White (1980) heteroskedasticity consistent estimates of the standard errors and all significance levels are for one-tailed tests.

examine association coefficients for large samples of firms (e.g., Easton and Harris (1991), Collins and Kothari (1989)).

4.2. The Association of Foreign and Domestic Earnings with Abnormal Returns

We next consider the value-relevance of foreign and domestic earnings changes using cumulative abnormal annual returns. To do this we substitute domestic and foreign earnings changes for total earnings changes in equation (4). This replacement results in equation (5):

$$CAR_{i,t} = \gamma_0 + \gamma_1 \frac{\Delta DEPS_{i,t}}{P_{i,t}} + \gamma_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon_{i,t} \qquad (5)$$

where ΔDEPS and ΔFEPS are the changes in domestic and foreign earnings per share, respectively. As mentioned above, there are some cases in which the sum of domestic and foreign pre-tax income does not equal total pre-tax income on the income statement. There are 435 observations for which this difference is more than $100,000, of which 398 are due to the failure to allocate equity in net earnings of affiliates, minority interest in subsidiaries, and/or common expenses in pre-tax earnings.[23] As a result, the results of equation (5) are not directly comparable with the results of equation (4).

Panel B of Table 3 displays the results of the estimation of equation (5). Focusing on our first research question, we examine whether domestic and foreign earnings are each significantly related to cumulative abnormal returns (H_0: $\gamma_1 = 0, \gamma_2 = 0$). Both the change in domestic earnings and the change in the foreign earnings are positively associated with cumulative abnormal returns. The association coefficient for domestic earnings, γ_1, is 0.517, and the association coefficient for foreign earnings, γ_2, is 1.235. Both coefficients are significant at the 1 percent level. This indicates that U.S. multinational firms' returns are significantly related to changes in both total and foreign income.

---

23 These mis-matches are identified by a JJ footnote code in Compustat. A total of 457 observations with the JJ footnote were found; however, 22 of these were differences of less than $100,000. Of the remaining 435, 280 were due to a failure to allocate minority interest amongst foreign and domestic pre-tax income, 111 were due to a similar failure to allocate earnings in the net equity of affiliated companies, and 20 cases were due to failure to allocate common expenses when the geographic segment income disclosure was pre-tax income. The remaining 15 cases were found to be errors in Compustat's recording of the equity in earnings numbers. Dropping these 435 observations from the tests did not significantly affect the results.

A striking feature about the results in Panel B is the relative size of the association coefficients. The larger foreign association coefficient suggests that foreign earnings are capitalized into price at a higher rate than domestic income changes. To directly test the significance of the difference in association coefficients, we modify equation (4) by adding the foreign income change to the total income change to obtain equation (6):

$$CAR_{i,t} = \delta_0 + \delta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \delta_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon_{i,t} \qquad (6)$$

In this specification, δ_1 captures the level of the association coefficient common to both domestic and foreign earnings (henceforth referred to as the domestic association coefficient). The coefficient on ΔFEPS, δ_2, is now the *difference* between the foreign and domestic association coefficients, and the significance of the difference between the foreign and domestic association coefficients can be gauged directly by the significance of δ_2. There are two important benefits of this specification. First, this specification is robust to those cases where the sum of domestic and foreign earnings do not equal total earnings. Second, this specification also allows us to test the difference between the domestic and foreign association coefficients controlling directly for possible heteroskedasticity through the use of White (1980) corrected standard errors.

Panel C of Table 3 displays the results of the estimation of equation (6). The foreign association coefficient, δ_2, is significantly larger than the domestic association coefficient. The difference between the association coefficients is 0.727, with a t-statistic of 3.626 which is significant at the 1 percent level. The other regression outputs are nearly identical to the regression outputs of equation (5) reported in Panel B, suggesting that any error in the decomposition of total income has little impact on the results. This result indicates that the market perceives significantly different implications of changes in foreign earnings versus domestic earnings for the value of the firm. More specifically, the value of the firm is significantly more sensitive to changes in the foreign income than it is to changes in domestic income.

4.3. Cross-Sectional Regressions

To demonstrate that the finding of a significantly larger foreign association coefficient is not driven by either positive cross-sectional correlation among the residuals (resulting in overstated t-statistics for the parameter estimates) or remaining outlying observations, we report cross-sectional regression results in Table 4. The table displays the results for nine year-by-year regressions of total and foreign earnings changes on abnormal returns. The estimate of the difference between the foreign and domestic association coefficient, δ_2, is positive in eight of the nine cross-sectional regressions. This difference is statistically significant for six years: two years at the 1 percent level; one year at the 5 percent level; and three years at the 10 percent level (for one-tailed tests).[24] Thus our finding of a larger association coefficient on foreign earnings in the pooled regression does not appear to be driven by observations in a particular year or by the presence of positive cross-sectional correlation in the residuals.

5. Economic Explanations for the Results

The results from the previous section indicate that changes in the earnings from foreign operations are more highly associated with changes in firm value than changes in domestic earnings. This suggests that something about the foreign operations themselves may be responsible for this observed phenomena. In section 2, we offered two possible economic explanations for larger foreign association coefficients: exchange rate impacts and growth opportunities. In this section we test these two possibilities.

5.1. Exchange Rate Effects

The first economic explanation for the larger foreign association coefficient we examine relates to the one important difference between foreign income and domestic income changes: that foreign income changes incorporate within them an exchange rate change. The change in foreign income measured in U.S. dollars is a combination of the change in the amount of foreign currency income earned by the firm and the change in the appropriate dollar-foreign currency exchange rate over the year. As mentioned in section 2, exchange rate changes are, to a first approximation, unexpected and permanent. As a result, the changes in dollar-measured foreign income resulting purely from

---

24 The mean of the nine cross-sectional estimates of the domestic association coefficients, δ_1 is positive, 0.505, with a t-statistic of 5.660. The mean of the cross sectional estimates of the incremental foreign association coefficient, δ_2, is also positive, 0.794, with a t-statistic of 4.736.

exchange rate changes will be unexpected and permanent. The more unexpected and more permanent an earnings change is the higher is its association with returns. Theoretically, earnings changes that are completely unexpected and totally permanent should result in association coefficients of one over the firm's cost of equity capital (see, e.g., Collins and Kothari (1989)). If the other components of earnings changes (both foreign and domestic) are more predictable and/or less permanent than the exchange rate change component of foreign earnings changes, the association coefficient on foreign earnings change may be larger than the domestic association coefficient.

To consider whether the larger foreign association coefficient may be due to the valuation impact of exchange rate changes on foreign income, we adjust the change in foreign earnings for the change in exchange rate over the year. Ideally, we would like to know the various regions in which the firm is operating and which foreign currencies their operations are recorded in, the extent to which the firms have hedged their foreign earnings, and the method used to consolidate foreign financial statements. However, given that we only have information on unified foreign activities, we use an exchange rate index that measures the trade-weighted value of the U.S. dollar relative to the six other members of the G-7 countries (Canada, France, Germany, Italy, Japan, and the United Kingdom) for all firms.[25]

For each fiscal year we calculate the percentage change in the average of this index over that fiscal year, ΔAVGXR. This is because income flows are usually converted into dollars under U.S. GAAP using period average exchange rates. The foreign earnings change is then adjusted for the exchange rate change by subtracting the product of the dollar value of foreign earnings for fiscal year t-1 multiplied by percentage change in the average exchange rate index over fiscal year t:

$$\Delta FEPSVOL_{i,t} = \Delta FEPS_{i,t} - (FEPS_{i,t-1} * \%\Delta AVGXR_t)$$

The resulting value, ΔFEPSVOL, is a proxy for the change in the quantity of foreign currency earnings generated by the firm and represents the change in the dollar value of foreign earnings measured at a constant exchange rate. This variable measures only the change in the *volume* of the foreign currency earnings, which is a proxy for changes in

[25] The data on month-end exchange rates comes from the International Financial Statistics database of the International Monetary Fund. Weights for the exchange rate index come from the weights used in the Multilateral Exchange Rate Model of the International Monetary Fund (see, International Financial Statistics (1985)).

fundamental foreign currency profitability analogous to the way domestic income measures the change in domestic profitability. Summary statistics for the adjusted foreign earnings and its correlation with the other regression variables are reported in Table 2.

To test whether the larger foreign association coefficient is the result of an exchange rate change component in the foreign earnings change, we substitute the adjusted foreign earnings change, ΔFEPSVOL, in for the foreign earnings change variable, ΔFEPS, in (6). If the exchange rate change is causing the larger foreign association coefficient, then we should see no difference between the domestic association coefficient and the association coefficient on the exchange rate adjusted foreign earnings change. This specification provides us with equation (7):

$$CAR_{i,t} = \theta_0 + \theta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \theta_2 \frac{\Delta FEPSVOL_{i,t}}{P_{i,t}} + \varepsilon_{i,t} \qquad (7)$$

Table 5 contains the results of the estimation of (7). As expected, the domestic association coefficient changes little from the previous estimates; θ_1 is 0.523 with a t-statistic of 8.451 which is significant at the 1 percent level. Moreover, the same is true for the incremental foreign association coefficient on the adjusted measure of foreign earnings change. θ_2 is 0.708, with t-statistic of 3.581 which is significant at the 1 percent level. Thus, given that our trade-weighted exchange rate change is a reasonable proxy for the exchange rate change for each firm, these results suggests the change in foreign earnings due to changes in the exchange rate is not responsible for the significantly larger foreign association coefficient of U.S. multinational firms. The association of the change in the foreign currency volume component of foreign earnings is significantly larger than the association of domestic earnings changes.[26]

5.2. Growth Opportunities

As discussed in Section 2, growth opportunities have been demonstrated to be positively related to the size of association coefficients. Thus, a perception by the market of greater growth opportunities in foreign operations,

---

26 As a note, testing these two alternative hypothesis together (timing and exchange rate impacts) does not result in a rejection of the test that the association coefficient on foreign income remains significantly larger.

compared to domestic operations, is a plausible explanation for our finding. If this economic difference in the interpretation of earnings changes is driving our results, then we would expect that the difference between association coefficients should be systematically related to differences in the relative amount of growth opportunities between domestic and foreign operations.

Unfortunately, we know of no variable that directly measures growth opportunities. There is considerable extant literature suggesting that market-to-book is a reasonable surrogate for a firm's future growth opportunities (see, e.g., Smith and Watts (1992)). We cannot observe market-to-book for the foreign and domestic segments as market prices are not available on a segment basis. Thus we need to find a measure that is correlated with market-to-book and is available on a geographic segment basis. The measure we use is return-on-assets (ROA). This measure meets both criteria. It is available on a segmental basis because of the segmental disclosures and it is correlated with the overall market-to-book measure for the firm. For firms in our sample, the correlation of ROA with market-to-book is 0.45 and the correlations of domestic and foreign ROA with market-to-book are 0.39 and 0.19, respectively. Given these correlations with overall market-to-book, we assume that these segment specific measures would correlate well with segment specific market-to-book measures (if available), and therefore the growth opportunities of the two geographic segments.

One drawback to these measures is that due to biases in the measurement of segment variables foreign and domestic ROA are not always directly comparable. In particular, for our sample, domestic ROA is generally lower than foreign ROA.[27] In an attempt to avoid problems in comparing the levels of ROA between the domestic and foreign segments, we consider changes in segment ROA measures for our tests. Based upon the assumption that changes in segmental ROA measures are not predictable, we interpret increases in segmental ROA as representing positive news about the future growth opportunities for that segment. If the increase in ROA is greater for the foreign

---

[27] The mean foreign ROA for our sample, 0.068, is nearly twice as high as the domestic ROA, 0.036. This may be an economical result of greater required rates of return on foreign operations due to greater risks; however, such an explanation would suggest a lower association coefficient for foreign income than the less risky domestic income. Instead, we find that much of this difference in measured ROA appears to be due to freedom in the allocation of common assets and expenses under SFAS No. 14. For example, firms are not required to allocate common assets nor do all firms provide data on the elimination of intercompany accounts. Given our data source, unallocated assets are defined as domestic assets. This has the effect of depressing the domestic ROA measure. Similarly, problems also exist with the allocation of corporate expenses to foreign and domestic segment operating earnings. These allocation problems, to the extent that they are constant over time, can be "washed-out" by differencing.

segment than the domestic segment, we interpret this as suggesting relatively greater opportunities for growth in foreign operations (and vice-versa).

The change in ROA for both the domestic and foreign segment of firm i is defined as the segment operating

$$CAR_{i,t} = \delta_0 + \delta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \delta_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon_{i,t} \qquad (8)$$

$$\text{where} \quad \delta_2 = \pi_0 + \pi_1 (\Delta FROA - \Delta DROA)_{i,t}$$

income reported for fiscal year t divided by the segment assets reported for that segment at the end of fiscal year t less the equivalent measure for the previous year.[28] To test for a link between the incremental foreign association coefficient and relative growth opportunities, we first divide our sample with available data into groups based upon the relative changes in domestic and foreign ROA. We expect a difference in the significance of the incremental foreign association coefficient between these two groups. Firms with bigger changes in ROA for foreign operations than domestic operations are assumed to be indicating to the market that they possess greater opportunities for future growth abroad and are predicted to have a larger foreign than domestic association coefficient.[29]

Panel A of Table 6 displays the results of the estimation of (6) on firms divided by relative change in ROA for the foreign and domestic segments. For the 975 firm-years with the domestic ROA change is greater than the foreign ROA change, the estimate of the incremental foreign association coefficient, δ_2, is not significantly different from zero indicating that the domestic and foreign association coefficients are statistically similar. In contrast, for the 940 firm years when the foreign ROA change is greater than or equal to the domestic ROA change, we find that δ_2 is positive, 1.266, and significant at the 1 percent level. Thus, the finding of a significantly larger foreign association coefficient is conditional on whether foreign operations are indicating more growth than domestic operations (as measured by changes in ROA).

---

28 Segmental asset and operating income data are taken from Disclosure's WorldScope data base.

29 Firms for which changes in both domestic and foreign ROA measures are negative are excluded from the analysis as these cases do not provide a clear indication of relative growth opportunities.

To further examine the relation between changes in ROA and the incremental foreign association coefficient, we consider a specification where the incremental foreign association coefficient, δ_2, is modeled as a linear function of the difference between the changes in foreign ROA and the change in domestic ROA over the period t-1 to t.

The results of the estimation of (8) are displayed in Panel B of Table 6. The focus of attention is the parameter π_1 which is the coefficient on the incremental of the foreign association coefficient with respect to the difference segment ROA changes. If, as we predict the size of the incremental size of the foreign association coefficient is related to differential growth opportunities, we expect this coefficient to be positive. As can be seen from the table, the estimate of this coefficient is 0.825 and significant at the 10 percent level. This is despite our restriction that the relation be linear. The estimate of the coefficient π_0 is also positive, 0.659, and significant, suggesting either that our proxies for growth opportunities are not capturing all of the growth difference or that there are other factors lead to larger foreign association coefficients.

Overall, these results agree with our predictions and are supportive of our claim that differential growth opportunities are part of the economic difference between domestic and foreign earning streams. We interpret these results as consistent with the general view that foreign association coefficients are larger because successful foreign operations offer firms greater opportunities for future growth.

6. Alternative Explanations for Differences in Association Coefficients

The evidence above supports the claim that the differences in association coefficients are due to economic differences between domestic and foreign earnings streams. However, there are several specification issues related to our tests that could result in a larger association coefficient for foreign income than domestic income. In this section we examine three possible specification errors in our framework that have the potential to generate larger foreign than domestic association coefficients.

A. Timing Issues

One alternative reason a difference between foreign and domestic association coefficients is related to the structure of the mapping between annual returns and earnings changes. Foreign operations are physically removed

from the domestic market, and it is possible that information about their economic performance is not available to investors on as timely a basis. Ostensibly, the SEC and FASB mandates for expanded disclosure of foreign operations were made with the underlying belief that data about a firm's foreign operations is not as publicly readily available as a firm's domestic operations. If prices adjust currently in response to information about future earnings and information about the future performance of domestic operations is available to investors further in advance than information about foreign operations, then the temporal positioning and length of the return window can affect the estimate of the association coefficients.[30] In particular, if information about domestic earnings for period t is mostly known one year in advance, but information about foreign earnings in period t are learned about only during the fiscal year, the use of a fiscal year abnormal return would lead to a higher correlation between returns and foreign earnings changes than domestic earnings changes. This would not be because of a fundamental difference in the value-relevance of the earnings streams but rather a function of the timing of the information arrival. Thus tests examining the difference between domestic and foreign association coefficients need to be concerned about the placement and length of the window used to measure the change in firm value.

To address this possible explanation, we extend the excess return window backwards an additional 12 months in time (24 month window) to minimize any possible timing difference between domestic and foreign information revelation on the estimation of the association coefficients. This longer window increases the likelihood that we capture the complete relation between domestic earnings changes and firm value if a greater proportion of information in the current year's domestic earnings is incorporated into price prior to the beginning of the year relative to foreign earnings. If differences in the nature of the information environment are responsible for our results, we would expect to see the difference between the foreign and domestic association coefficients disappear as we extend the window backwards in time.

B. Misspecification of Earnings

30 Prior studies, such as Collins and Kothari (1989) and Kothari and Sloan (1992), provide evidence on the relation between information environments and the earnings response coefficient.

Another possible explanation for our findings is that there are measurement errors in our earnings expectations. If these expectation errors are systematically different across domestic and foreign earnings, then our association coefficients can be differentially affected leading to an observed difference in association coefficients. We consider two basic specification problems for our naïve expectation assumption that last period's earnings realization is the expectation of next period's earnings: (i) negative earnings realizations and (ii) special charges to earnings.[31]

Hayn (1995) points out that the use of a naïve model of earnings expectations leads to a potential bias in the interpretation of the findings when negative earnings values are used as the expectation of next period's earnings. She demonstrates that the inclusion of negative realized earnings results in downward biased association coefficients. As losses were more prevalent in domestic earnings than foreign earnings in our sample (31% to 18%), this problem could be responsible for the larger foreign association coefficients in our sample.

In addition, the time period under investigation featured a significant amount of corporate downsizing and reorganization. These activities resulted in large special charges to pre-tax income. If most of this activity focused on domestic operations, with the related charges taken only against the domestic segment income, this would reduce the association between domestic earnings and stock returns as the reported domestic earnings would not be a good predictor of the expected domestic earnings next period. Again, such a problem would result in the finding of larger foreign than domestic association coefficient.

To control for these earnings specification problems we make two adjustments to our tests. First, to control for negative earnings, we create dummy variables to segment out the earnings changes when either the current or lagged realization of earnings is negative. This allows us to determine an association coefficient for earnings changes involving only positive earnings realizations. Second, to control for special charges, we include the change in special charges (per share) as an additional variable in our specification. This variable is intended to control for cases when a special charge influences earnings, making them a poor expectation for future earnings.

---

[31] Note that is not possible for us to use market forecasts of earnings as these are not commonly made on a segmental basis.

C. Re-Testing

The result of incorporating the three specification issues discussed above into our analytic framework is reflected by equation (9):

$$CAR24_{i,t} = \lambda_0 + \lambda_1 \frac{\Delta TEPS_{i,t}}{P_{i,t-12}} + \lambda_2 TNEG_{i,t} \cdot \frac{\Delta TEPS_{i,t}}{P_{i,t-12}} + \lambda_3 \frac{\Delta FEPS_{i,t\,i,t}}{P_{i,t-12}} + \lambda_4 FNEG_{i,t} \cdot \frac{\Delta FEPS_{i,t\,i,t}}{P_{i,t-12}} + \lambda_5 \frac{\Delta SPEC_{i,t}}{P_{i,t-12}} + \varepsilon_{i,t} \quad (9)$$

$CAR24_{i,t}$ is the cumulative abnormal return for firm i over a 24 month period ending with the first quarter of fiscal year t+1.[32] $\Delta TEPS_{i,t}$ and $\Delta FEPS_{i,t}$ are, as before, the change in total and foreign earnings for firm i between over the fiscal year t and fiscal year t-1. $TNEG_{i,t}$ ($FNEG_{i,t}$) are dummy variables for firm i set equal to one if the current total (foreign) earnings, for fiscal year t are negative and are zero otherwise. $\Delta SPEC_{i,t}$ is the change in the special charges for firm i in fiscal year t over that reported in fiscal year t-1. All the variables are normalized by $P_{i,t-12}$, (the price of the firm at the end of the first quarter of the fiscal year t-1), which is the beginning of the return cumulation period.

The estimation of (9) is displayed in Table 7. The first thing to note about the results is that the specification adjustments dramatically increase the "domestic" association coefficient, λ_1, compared to estimates from previous tables. The estimate of λ_1, which is the association for positive total earnings realizations, is 2.384 and significant at the 1 percent level. This compares to estimates for the association on total income of 0.521 in Panel C of Table 3 when we ignore the timing issues and the negative earning realizations and special charges problem. This suggests that these specification issues are important factor when comparing different earnings streams within a company. However, despite these adjustments to our empirical framework, Table 7 reveals that the incremental foreign association coefficient (for positive foreign income realizations), λ_3, remains positive, 0.706, and is significant at the 10 percent level. This implies that the foreign association coefficient is still larger than the domestic association coefficient despite these adjustments, and thus our earlier finding is not driven purely by specification problems in our

32 To determine CAR24, we estimate the market model over a 48 month period ending three months before the return cumulation period.

framework. As predicted by Hayn (1994), the coefficient estimates on both the negative earnings dummy terms, λ_2 and λ_4, are negative, indicating that negative earning realizations bias the association coefficients downward. Lastly, the estimate on the special charge variable, λ_5, is also negative and statistically significant.[33]

Thus, our basic finding of a larger foreign association coefficient is robust to these three significant specification issues. This result points us back to the economic explanation offered above as an explanation for this finding. While not providing direct support for our growth opportunities story, the results of these specification tests increase our confidence that this phenomenon is not an outcome of the specific form of the testing framework, but has an explanation based in economic theory.[34]

7. Summary and Conclusions

In this paper we investigate the association between domestic and foreign annual earnings changes and cumulative abnormal returns for a sample of U.S. multinational firms over the period 1985-1993. We find that both domestic and foreign earnings are statistically significantly related to annual excess returns. Furthermore, the association coefficient for foreign operations is statistically greater than it is for domestic operations.

We find evidence consistent with a growth opportunity explanation for this result. We demonstrate that greater opportunities for growth in successful foreign operations result in a larger foreign association coefficient. Using annual changes in segmental return-on-assets as a proxy for growth opportunities, we find that the difference in magnitudes of the association coefficients is related to changes in these proxies for the relative opportunities for growth in foreign and domestic operations over the period. We also carry out specification tests to demonstrate that our findings are not the result of differences in the timing of information dissemination, or problems with the naïve earnings expectation process.

---

33 Tests (not reported) with segmental ROA similar to those displayed in Table 6 were carried out on a specification analogous to (9) with qualitatively similar results.

34 A similar result on the differential nature foreign income has been documented by Hines (1996) with respect to the sensitivity of dividend changes to foreign and domestic income changes. He finds that dividend changes of U.S. multinational firms are three times more sensitive to foreign income changes than domestic income changes. His analysis rules out obvious explanation such as tax treatments, and is left to surmise that it may have to do with signaling about future profitability (a story very similar to our growth opportunities evidence). We also carry out tests (not reported) to verify that his finding (differential dividend sensitivity)

while existent in our sample is not responsible for our results.

References

17 CFR Regulation 210.4-08.paragraph (h) General Notes to Financial Statements - Income Tax Expense.

Balakrishnan, R., T. Harris and P. K. Sen, "The Predictive Ability of Geographic Segment Disclosures," *Journal of Accounting Research,* (Autumn 1990): 305-325.

Ball, R., and P. Brown, "An Empirical Evaluation of Accounting Numbers," *Journal of Accounting Research,* (Autumn 1968): 159-178.

Ball, R., and R. Watts, "Some Time-series Properties of Accounting Income," *Journal of Finance*, (June 1972): 663-82.

Bartov, E. and G. M. Bodnar, "Accounting Methods, Information Asymmetry and Liquidity: Theory and Evidence," *Accounting Review*, (July 1996): 397-418.

Beaver, W. H. and R. E. Dukes, "Interperiod Tax Allocation Earning Expectations, and the Behavior of Security Prices,' *Accounting Review*, (July 1972): 320-332.

Beaver, W. H., R. A. Lambert and D. Morse, "The Information Content of Security Prices," *Journal of Accounting and Economics,* (March 1980): 3-28.

Belsley, D. A., E. Kuh, and R. E. Welsch, *Regression Diagnostics*, (New York: John Wiley and Sons): 1980.

Boatsman, J. R., B. K. Behn and D. H. Patz, "A Test of the Use of Geographical Segment Disclosures," *Journal of Accounting Research*, (Supplement 1993): 46-64.

Christie, A., "On Cross-Sectional Analysis in Accounting Research," *Journal of Accounting and Economics,* (July 1987): 231 - 258.

Collins, D. W. and S. P. Kothari, "An Analysis of the Inter-temporal and Cross-sectional Determinants of Earnings Response Coefficients," *Journal of Accounting and Economics,* (July 1989):143-181.

Easton, P. and T. Harris, "Earnings as an Explanatory Variable for Returns," *Journal of Accounting Research,* (Spring 1991): 19 - 36.

FINANCIAL ACCOUNTING STANDARDS BOARD, Statement of Financial Accounting Standards No. 14: Financial Reporting for Segments of a Business Enterprise. Stamford, Conn.: FASB, 1978.

Frankel, J. and A. Rose. "A Survey of Empirical Research on Nominal Exchange Rates," in The *Handbook of International Economics,* Grossman and Rogoff (eds.), New York: North Holland, 1995.

Gonedes, N. J., "Properties of Accounting Numbers: Models and Tests," *Journal of Accounting Research,* (Fall 1973): 212-237.

Harris, D., "Impact of Tax Law on Capital Location and Income Shifting," *Journal of Accounting Research,* (Supplement 1993): 111-140.

Hayn, C., "The Information Content of Losses," *Journal of Accounting and Economics* (Sept 1995):125-54.

Hines, J., "Dividends and Profits: Some Unsubtle Foreign Influences," *Journal of Finance,* (June 1996): 661 - 689.

INTERNATIONAL FINANCIAL STATISTICS, *IFS Supplement on Exchange Rates*, (Washington DC : International Monetary Fund, 1985

Kinney, W., "Covariability of Segment Earnings and Multisegment Company Returns," *Accounting Review*, (April 1972): 339-45.

Klassen, K., M. Lang and M. Wolfson, "Income Shifting in Response to Tax Rate Changes," *Journal of Accounting Research*, (Supplement 1993): 141-173.

Kogut, B. "Foreign Direct Investment as a Sequential Process," in Kindleberger and Audretsch (eds), *The Multinational Corporation in the 1980s*, (Cambridge MA: MIT Press) 1983.

Kothari, S. P. and R. Sloan, "Information in Prices About Future Earnings: Implications for Earnings Response Coefficients," *Journal of Accounting and Economics* (June/Sept 1992):143-173.

Kothari, S. P. and J. Zimmerman, "Price and Return Models," *Journal of Accounting and Economics*, 1994, forthcoming.

Lipe, R., "The Information Contained in the Components of Earnings," *Journal of Accounting Research*, (Supplement 1986): 37-64.

Rayburn, J. "The Association of Operating Cash Flow and Accruals with Security Returns," *Journal of Accounting Research*, (Supplement 1986): 112-154.

Ross, S. "The Determination of Financial Structure: An Incentive Signaling Approach," *Bell Journal of Economics*, (April 1977): 23-40.

Saudagaran, S. M., "Discussion of A Test of the Use of Geographical Segment Disclosures," *Journal of Accounting Research*, (Supplement 1993): 65-74.

Securities and Exchange Commission, Securities Exchange Act of 1933, Release No. 33-4949, Chicago: Commerce Clearing House, February 1969.

Securities and Exchange Commission, Securities Exchange Act of 1933, Release No. 33-4988, Chicago: Commerce Clearing House, July 1969.

Securities and Exchange Commission, Securities Exchange Act of 1934, Release No. 34-9000, Chicago: Commerce Clearing House, October 1970.

Securities and Exchange Commission, General Revision of Regulation SX, Federal Register Vol. 48, No. 188, September 23, 1980.

Smith, C. W., and R. Watts, "The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies," *Journal of Financial Economics*, (December 1992) : 263 - 292.

Stopford, J. M., and L. T. Wells, *Managing the Multinational Enterprise: Organization of the Firm and Ownership of the Subsidiaries*, (New York: Basic Books) 1972.

Swaminathan, S., "The Impact of SEC Mandated Segment Data on Price Variability and Divergence of Beliefs," *Accounting Review*, (January 1991):23-41.

Wilson, G. P., "The Relative Information Content of Accruals and Cash flows: Combined Evidence at the Earnings Announcement and the Annual Report Date," *Journal of Accounting Research*, (Supplement 1986): 165-200.

Table 1
Sample Characteristics

PANEL A : Quartiles of Pooled Sample

Variable	Q1	Median	Q3	N
Assets ($MM)	308.6	1191.2	4013.2	2570
Mkt Value ($MM)	205.3	976.6	3288.9	2570
Foreign Earnings (% of total)	3.66	21.4	50.0	2570
Foreign Revenues (% of total)	16.2	26.7	39.9	1970
Foreign Operating Inc. (% of total)	11.0	26.5	52.4	1979
Foreign Assets (% of total)	14.9	24.9	36.7	1979

PANEL B: Foreign Economic Activity Over Time

	Fiscal Year								
Medians	85	86	87	88	89	90	91	92	93
Foreign Earnings (%)	23.3	17.6	22.1	22.5	25.9	24.6	20.9	19.7	15.9
N	125	245	262	284	305	318	329	347	354
Foreign Revenues (%)	22.0	23.8	24.8	25.2	26.3	27.7	28.1	29.3	28.8
N	92	181	203	218	235	248	258	265	270
Foreign Operating Inc. (%)	23.8	22.6	25.1	26.0	26.6	28.9	28.4	26.7	26.3
N	93	182	204	219	236	249	259	266	271
Foreign Assets (%)	22.8	21.5	23.6	22.8	24.0	27.3	26.5	26.2	26.3
N	93	182	204	219	236	249	259	266	271

Table Notes: Descriptive statistics for the sample are drawn from Compustat, CRSP, and Disclosure. Assets, market value, and foreign earnings are from the Compustat database. Foreign earnings are the percentage of earnings reported from foreign sources based upon SEC Regulation §210.4-08(h). Foreign revenues, operating income and assets are from SFAS No. 14 disclosures contained in the Disclosure WorldScope database. Panel A: Q1 is the 25th percentile, Median is the 50th percentile, and Q3 is the 75th percentile. N is the number of firm-year observations. Panel B: Reported numbers are medians for fiscal years. N is the number of observations for each year.

Table 2
Summary Statistics for Empirical Variables

PANEL A : Distributional Characteristics

Variable	Mean	Median	Min	Max	Q3-Q1	N
ΔTEPS /P	-0.0017	0.0055	-1.153	1.056	0.0395	2570
ΔDEPS /P	-0.0011	0.0034	-1.153	0.939	0.0392	2570
ΔFEPS /P	-0.0006	0.0006	-0.352	0.359	0.0137	2570
ΔFEPSVOL /P	-0.0013	0.0003	-0.355	0.353	0.0135	2570
CAR (%)	1.14	-3.19	-62.71	167.89	35.71	2570

PANEL B: Correlations Among Regression Variables

	ΔDEPS/P	ΔFEPS /P	ΔFEPSVOL/P	CAR (%)
ΔTEPS/P	0.950 [0.0001]	0.395 [0.0001]	0.394 [0.0001]	0.249 [0.0001]
ΔDEPS/P	-	0.094 [0.0050]	0.095 [0.0040]	0.209 [0.0001]
ΔFEPS/P	-	-	0.996 [0.0001]	0.177 [0.0001]
ΔFEPSVOL/P	-	-	-	0.176 [0.0001]

Table Notes: Panel A: Distributional statistics for the variables used in the regression analysis. CAR is the cumulative abnormal return over the 12 month period running from the second quarter of the current fiscal year through the end of the first quarter of the subsequent fiscal year. ΔTEPS is the change in total earnings per share from fiscal year t-1 to fiscal year t; ΔDEPS is the change in the domestic component of earnings per share from fiscal year t-1 to fiscal year t; ΔFEPS is the change in the foreign component of earnings per share from fiscal year t-1 to fiscal year t; ΔFEPSVOL is the change in the exchange rate adjusted foreign earnings per share. This represents the change in the volume of foreign currency earnings converted into dollars at a constant exchange rate (i.e., a exchange rate-price free volume change). from fiscal year t-1 to fiscal year t; P is the price of the firm's share at the beginning of the second quarter of the fiscal year t. This price is used to normalize all the variables defined above. Q3 - Q1 is the inter-quartile range and N is the number of firm-year observations. Panel B reports Pearson correlations among these variables. Spearman correlations, not reported, are similar. Significance of correlation coefficients is reported within brackets below each correlation.

Table 3

Results of Pooled Time-Series Cross-Sectional Association Regressions of Annual Excess Returns and Changes in Earnings

PANEL A: Total Earnings

$$CAR_{i,t} = \alpha_0 + \alpha_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \varepsilon^1_{i,t}$$

α_0	α_1	Adj R^2	N
0.012	0.611	0.061	2570
(2.051)[b]	(10.63)[a]		

PANEL B: Domestic and Foreign Earnings

$$CAR_{i,t} = \gamma_0 + \gamma_1 \frac{\Delta DEPS_{i,t}}{P_{i,t}} + \gamma_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon^2_{i,t}$$

γ_+	γ_1	γ_2	Adj R^2	N
0.013	0.517	1.235	0.068	2570
(2.097)[b]	(8.376)[a]	(6.698)[a]		

PANEL C: Total and Foreign Earnings

$$CAR_{i,t} = \delta_0 + \delta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \delta_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon^3_{i,t}$$

δ_0	δ_1	δ_2	Adj R^2	N
0.013	0.521	0.727	0.069	2570
(2.104)[b]	(8.408)[a]	(3.626)[a]		

Table Notes: Panel A: $CAR_{i,t}$ is the cumulative abnormal return for firm i over the 12-month period running from the beginning of the second quarter of the current fiscal year through the end of the first quarter of the subsequent fiscal year. Firm specific estimates of the market model were obtained from a 60 month period prior to the current fiscal year; $\Delta TEPS_{i,t}$ is the change in total earnings for firm i from fiscal year t-1 to fiscal year t; $P_{i,t}$ is the price of firm i's equity at the end of the first quarter of the current fiscal year. In Panel B, $\Delta DEPS_{i,t}$ is the change in the domestic earnings of firm i from fiscal year t-1 to fiscal year t; $\Delta FEPS_{i,t}$ is the change in foreign earnings of firm i from fiscal year t-1 to fiscal year t. Panel C contains a re-specification of the equation in Panel B, restated to demonstrate the incremental association of $\Delta FEPS$ over $\Delta DEPS$. All regression are OLS. t-statistics are shown in parentheses based upon the White (1980) corrected standard errors. [a], [b] and [c] represent statistical significance at the 1, 5, and 10 percent levels respectively for one-tailed tests.

Table 4

Cross Sectional Regressions Excess Annual Returns on Domestic and Foreign Earnings Changes by Fiscal Year

PANEL A: Year-by-Year Regressions

$$CAR_{i,t} = \delta_0 + \delta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \delta_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon_{i,t}$$

Fiscal Year	δ_0	δ_1	δ_2	Adj R^2	N
1985	0.027	0.754	1.047	0.103	126
	(1.150)	(3.119)[a]	(1.466)[c]		
1986	-0.023	-0.063	0.547	-0.003	246
	(-1.421)	(-0.391)	(0.935)		
1987	0.049	0.431	0.259	0.037	261
	(2.600)[a]	(2.663)[a]	(0.312)		
1988	-0.032	0.394	0.655	0.038	285
	(-2.053)[b]	(2.082)[b]	(1.318)[c]		
1989	-0.060	0.742	1.169	0.140	304
	(-3.719)[a]	(4.072)[a]	(1.387)[c]		
1990	-0.029	0.535	1.434	0.116	318
	(-1.814)[b]	(2.727)[a]	(2.636)[a]		
1991	0.064	0.340	1.221	0.057	329
	(3.120)[a]	(1.763)[b]	(2.671)[a]		
1992	0.013	0.758	0.947	0.128	347
	(0.768)	(4.605)[a]	(2.062)[b]		
1993	0.103	0.659	-0.124	0.062	354
	(5.370)[a]	(4.393)[a]	(-0.248)		

Table Notes: The variables are as defined in Table 3. The estimates are from individual cross sectional OLS regressions by fiscal years. t-statistics are shown in parentheses based upon the White (1980) corrected standard errors. [a], [b] and [c] represent statistical significance at the 1, 5 and 10 percent levels respectively for one-tailed tests

Table 5
Examination of the Impact of Exchange Rate Changes

$$CAR_{i,t} = \theta_0 + \theta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \theta_2 \frac{\Delta FEPSVOL_{i,t}}{P_{i,t}} + \varepsilon_{i,t}$$

θ_0	θ_1	θ_2	Adj R^2	N
0.013	0.523	0.708	0.068	2570
(2.177)[b]	(8.451)[a]	(3.581)[a]		

Table Notes: The variables are as defined in Table 3. ΔFEPSVOL is the change in the exchange rate adjusted foreign earnings per share. This represents the change in the volume of foreign currency earnings converted into dollars at a constant exchange rate (i.e., a exchange rate-price free volume change). from fiscal year t-1 to fiscal year t. Regressions are OLS. t statistics based upon the White (1980) corrected standard errors are in given parentheses. [a], [b] and [c] represent statistical significance at the 1, 5 and 10 percent levels respectively for one-tailed tests.

Table 6

Relation Between Annual Excess Return and Total and Foreign Earnings Based Upon Changes in Relative Growth Opportunities

Panel A: Change in Return-on-Assets—Split Sample

$$CAR_{i,t} = \delta_0 + \delta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \delta_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon_{i,t}$$

ΔDomestic ROA > ΔForeign ROA

δ_0	δ_1	δ_2	Adj R^2	N
0.015	0.701	0.250	0.073	975
(1.409)[c]	(7.372)[a]	(0.767)		

ΔForeign ROA > ΔDomestic ROA

δ_0	δ_1	δ_2	Adj R^2	N
-0.008	0.324	1.266	0.058	940
(-0.802)	(3.510)[a]	(4.495)[a]		

Panel B: Change in Return on Assets—Continuous Specification

$$CAR_{i,t} = \delta_0 + \delta_1 \frac{\Delta TEPS_{i,t}}{P_{i,t}} + \delta_2 \frac{\Delta FEPS_{i,t}}{P_{i,t}} + \varepsilon_{i,t}$$

$$\delta_2 = \pi_0 + \pi_1 (\Delta FROA - \Delta DROA)_{i,t}$$

δ_0	δ_1	π_0	π_1	Adj R^2	N
0.012	0.551	0.659	0.825	0.065	1915
(1.799)[b]	(6.998)[a]	(2.626)[a]	(1.306)[c]		

Table Notes: Variable definitions are as in Table 3. The firms in Panel A must report a breakdown of assets between foreign and domestic for the current and prior year to be included in the analysis. The firms are divided into two groups based upon whether the change in domestic return-on-assets return (domestic income over domestic assets) from year t-1 to year t is greater than or less than or equal to the change in foreign return-on-assets (foreign income over foreign assets) over the same period. In Panel B the incremental component of the foreign association coefficient, δ_2, is modeled as a linear function of the difference between the change in foreign return on assets and the change in domestic return on assets over the period t-1 to t. t-statistics based upon White (1980) corrected standard error are reported in parentheses. [a], [b] and [c] represent statistical significance at the 1, 5 and 10 percent levels respectively for one-tailed tests. The number of observations is reduced relative to the previous tables due to a smaller number of firms disclosing information about the geographic breakdown of assets under SFAS No. 14.

Table 7
Joint Specification Tests for the Relation Between Excess Returns and Changes in Domestic and Foreign Income

$$CAR24_{i,t} = \lambda_0 + \lambda_1 \frac{\Delta TEPS_{i,t}}{P_{i,t-12}} + \lambda_2 TNEG_{i,t} \cdot \frac{\Delta TEPS_{i,t}}{P_{i,t-12}} + \lambda_3 \frac{\Delta FEPS_{i,t\,i,t}}{P_{i,t-12}} + \lambda_4 FNEG_{i,t} \cdot \frac{\Delta FEPS_{i,t}}{P_{i,t-12}} + \lambda_5 \frac{\Delta SPEC_{i,t}}{P_{i,t-12}} + \varepsilon_{i,t}$$

λ_0	λ_1	λ_2	λ_3	λ_4	λ_5	Adj R^2	N
-0.0002	2.384	-1.376	0.706	-0.418	-0.486	0.084	2409
(-0.026)	(7.357)[a]	(-4.066)[a]	(1.460)[c]	(-0.685)	(-2.752)[a]		

Table Notes: $CAR24_{i,t}$ is the cumulative abnormal return over the period beginning 24 months prior to the end of the first quarter of fiscal year t+1. Parameters for the market model used to calculate abnormal returns for each firm are estimated with monthly data over a 48 month period beginning 60 months prior to the beginning of fiscal year t.. $\Delta TEPS_{i,t}$ is the change in the total earnings of firm i from fiscal year t-1 to fiscal year t; $\Delta FEPS_{i,t}$ is the change in foreign earnings of firm i from fiscal year t-1 to fiscal year t. $TNEG_{i,t}$ ($FNEG_{i,t}$) is an indicator variable that is equal to one is the current or lagged total (foreign) income is less than zero and is equal to zero otherwise. $\Delta SPEC_{i,t}$ is the change in the reported special items (per share) in the firm's financial statement that flow through net income for the fiscal year t less the same item reported for fiscal year t-1. All the variables are normalized by $P_{i,t-12}$, (the price of the firm at the end of the first quarter of the fiscal year t-1, which is the beginning of the return cumulation period. t-statistics based upon the White (1980) corrected standard errors are in parentheses. [a], [b] and [c] denote statistical significance at the 1, 5 and 10 percent levels, respectively, for one-tailed tests. N is the number of firm-year observations; the number of observations differs from the previous tables because of progressively larger number of observations falling outside the outlier screening points.