Why Shareholders and Debt-Holders Value Internationally Diversified Firms: Evidence from the United States

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This paper empirically tests whether international diversification is associated with market value and debt. Specifically, we relate the levels of equity and debt to firms' foreign assets and foreign sales. We find that market value is positively related to international diversification, indicating significant gains to share-holders of these firms. Alternatively, the level of debt is positively (negatively) associated with the level of foreign assets (foreign sales. We also consider whether debt levels alter the valuation of foreign assets and foreign sales, finding that the association between market value and foreign assets is stronger for highly-leveraged firms.

INTRODUCTION

Over the last two decades, U.S. firms have substantially expanded their operations abroad. Cross-border investment, for example, has grown by more than 700 percent (World Trade Organization, 2008), international security offerings exceed $1.5 trillion (Choi and Meek, 2009), and global trade has surged from $1.6 trillion in 1990 to $6.37 trillion in 2007 (World Trade Organization, 2008). The expansion of multinational corporations (MNCs) has given rise to numerous studies on the economic characteristics of MNCs. For example, a number of studies investigate the benefits of diversification to shareholders. Several key findings have emerged: foreign operations reduces shareholder value by 24.78% (Doukas and Kan, 2006); foreign involvement destroys firm value by 18% (Denis et al,.2002); returns increase with diversification (Errunza and Senbet, 1981, 1984); U.S. MNCs' acquisitions of "fairly valued" foreign business units is associated with higher equity value (Santos et al., 2003), and foreign operations are associated with less accurate and more optimistic earnings forecasts (Duru and Reeb, 2002).

The empirical evidence regarding shareholder benefits of multinationals arising from foreign operations is, however, mixed. We extend this literature by analyzing foreign assets and foreign sales and their relation to firm value and debt to gain a deeper understanding of the information reflected in these two diversification measures. In particular, this study relates the levels of equity and debt value to a firm's relative foreign assets and foreign sales, which proxy for diversification.[1] From the perspective of financing and investing decisions, we could assume that a positive relation exists between debt and

diversification because foreign operations are likely funded with borrowed funds (Krull, 2004). Consistent with this view, Choi and Meek (2009, 13), report that "international offerings in bonds, syndicated loans, and other debt instruments have expanded dramatically since the 1990s. Investment banks, Morgan Stanley and Merrill Lynch estimate that world-wide retail hedge fund investments will grow to $2.5 trillion by 2010----."[2]

Because MNCs finance global economies and the rapid expansion of U.S. firms' foreign operations, the issues related to foreign operations are of considerable importance to managers, lenders and shareholders. Foreign operations that increase debt beyond the optimal level are believed to hamper the value of the firm and could threaten to induce instability in financial markets. Although there is substantial research on the performance of international diversified firms, this literature has not reached a decisive conclusion on these matters. Lang and Stulz (1994) suggest that results are sensitive to the measures used to perform the analyses, to the way these measures are standardized to facilitate the analyses across firms, and to the period under examination.

The motivation behind this study is to increase our understanding of the consequences of holding debt for firms engaging in foreign operations. Our findings may inform the ongoing debate among researchers that increasing foreign operations result in losses of shareholder value to the benefit of debt-holders. This paper empirically examines whether foreign sales and foreign assets influence debt and shareholder value; that is, whether foreign investment decreases shareholder value while increasing long-term debt. To date, this remains an empirical question. Analyzing how foreign operations affect value versus debt is justified because of the enormous wealth of U.S. investors in these firms. Understanding how foreign involvement impacts debt is essential and vital to managers who wish to maintain favorable firm ratings by debt-rating agencies. Debt-rating agencies periodically reevaluate a firm's credit-worthiness because higher leverage ratios increase the probability of bankruptcy. The objective of this paper is to determine the sign, magnitude, and statistical significance of the effect of international diversification on debt and firm value. The evidence presented will add an extra dimension to this literature and provides a basis with which future studies on debt and foreign operations can be compared.

The results of the study may inform serve the interests of several other groups. First, analysts and investors view geographic segment data as essential and vital to investment analysis; they demand segment data that enhances their ability to predict managerial actions that impact future cash flows (SFAS 131, FASB 1997).[3] Standard setters and regulators worldwide have made considerable efforts to expand and enforce geographic segment disclosure requirements (e.g., SFAS No. 131; No. 14R, International Accounting Standards Committee (IASC), 1997). Maines et al. (1997), Street et al. (2000), Herrmann and Thomas (2000) and Berger and Hann (2003) report that SFAS 131 provides reliable and useful geographic segment data for financial statement users in predicting future cash flows. Second, financial statement users likely find foreign long-lived assets more difficult to assess relative to other asset groups (e.g., inventory), as fair value data is generally more difficult to obtain for long-lived assets due to their lower liquidity.

Third, foreign operations directly affect performance and corporate tax burden, suggesting explicit and/or implicit incentives may exist for managers to expand overseas (Scholes and Woflson, 1992). Foreign involvement could be driven by managerial incentives. Jensen (1986) argues that firms with substantial free cash flows (i.e., cash flows in excess of those required to fund all projects with positive net values when discounted at the relevant cost of capital) will show a tendency toward investment in projects with negative net present values. Specifically, his work notes that managers are often tempted to use free cash flows to expand the size of the firm, even if the expansion is not profitable. That is, firms with high free cash flow are more likely to make non-value-maximizing investments as to entrench their positions in the firm. Reputational concerns may effectively check managers' opportunistic behavior to invest in projects with negative net present value.

Our conjecture is that if MNCs' securities enjoy greater value benefits because they take advantage of imperfections in the international market and investors react to it, then the current equity value of MNCs will be a positive function of the degree to which they engage in international operations. We expect this to be the case because foreign operations are commonly viewed to be associated with greater growth

opportunities (Bodnar and Weintrop, 1997). Further, if foreign operations suggest the need for additional financing, we will observe a positive relation between foreign operations and debt. Our tests predict an effect on foreign involvement, and previous research shows that information asymmetry problems for foreign involvement are more severe as compared to domestic operations (e.g., Thomas, 2009, 2004; Denis et al., 2002).

We focus on geographic segment data because firm performance is not likely to be as sensitive to disclosures related to domestic operations. Tihanyi and Thomas (2005) find that information related to domestic operations is much more widely available from alternative sources than for most U.S. firms and easier to process. Our investigation of geographic segment data on the market performance and debt of U.S. MNCs provide a strong setting for testing the shareholder benefits of international diversification.

The results of the analyses are mostly consistent with hypotheses. We find that firms' foreign assets and foreign sales are, on average, positive and significantly associated with firm value, supporting the view that international diversified firms are rewarded with high equity value. Turning to the debt analysis, we find a divergent effect of foreign assets and foreign sales on long-term debt: foreign assets have stronger association with debt, whereas foreign sales are inversely related to debt. The results hold after controlling for other identified determinants of value and debt (e.g., profitability, book value of equity, dividends, beta, growth and risk).

In a partitioned sample split on high, medium, and low debt-to-asset ratios, we find that the relation between market value of equity and foreign assets is stronger for firms with relatively greater leverage. These findings suggest that investors increase their assessment of firm value the most when high leverage firms diversify abroad because doing so reduces the probability of debt default due to higher growth opportunities abroad.[5] The evidence extends our understanding of how foreign operations impact debt. Our results suggest that researchers' conclusions regarding firm value loss to foreign operations are likely overstated. In comparing the impact of international diversification on the two stakeholders, shareholders and debt-holders, we find the benefits associated with diversification accrue principally to shareholders.

This paper proceeds as follows. Section II addresses theoretical consideration. Section III discusses the related literature and hypotheses development. The research method is discussed in Section IV. Section V discusses variable construction and data selection, while Section VI presents the results. Section VI addresses additional analyses and limitations and Section VII concludes the study.

THEORETICAL CONSIDERATIONS

Theoretical justification for the possible impact of foreign operations on shareholder value is provided by Bodnar et al. (1999), who argue that operating in multiple geographic locations creates additional options, including the ability to arbitrage temporary international market imperfections and to transfer profits or losses within the MNC family to take advantage of international tax differences. Differences in government regulations (e.g., taxes, accounting, subsidies) can also create potential gains for MNCs through cross-border arbitrage. Lessard (1983) suggests the motivation behind foreign operations is to improve the risk-reward tradeoff by taking advantage of the relatively low correlation among returns on assets in different countries. To the extent that such advantages exist, they should be reflected in firm value. Geographic diversity increases MNCs' operational flexibility and allows such firms to increase value by exploiting the increased uncertainty of international markets.

A conceptual link between foreign operations and debt stems from both theory and evidence. Firms may finance foreign operations with debt depending on the cost of debt relative to retained earnings. Low leveraged firms may finance foreign operations with debt, if the diversified firm is not credit-constrained.[6] It is possible that firms use debt to finance foreign operations because interest payments create tax savings for the global organization. Prior research indicates that firms have optimal debt levels depending on the tax savings of debt relative to the costs of debt. This reasoning is consistent with prior research that finds a positive relation between debt and tax liabilities (Miller, 1977; MacKie-Mason, 1990) and firms with high agency costs increase debt as a bonding mechanism (Jensen and Meckling, 1976).

Myers (1977) argues that debt can be an effective mechanism to monitor management to alleviate the overinvestment problem. As debt comes up for renewal, lender monitoring can be more effective in constraining the amount debt in a firm's capital structure. This agency theory based reasoning suggests a beneficial effect of debt as lender monitoring constrains the amount of debt in a firm's capital structure and consequently improves firm value if shareholders react to this monitoring.[7] This direct beneficial effect of debt suggests that greater foreign operations can simultaneously lead to higher levels of debt financing and foreign investment. We attempt to shed light on these direct effects of diversification on debt.

RELATED RESEARCH AND HYPOTHESIS DEVELOPMENT

A considerable inconsistency remains as to whether international corporate diversification yields any real economic benefit to the firm. Doukas and Travlos (1988) report that insignificant abnormal returns accrue to shareholders of internationally expanding firms; whereas acquisitions by firms not already operating in the targets firm's country are related to higher stock prices on average. Doukas and Kan (2006) develop and test predictions related to the sources of shareholder value loss. Using a sample of 612 firm-year foreign acquisitions completed by U.S. firms during the period 1992–1997, these authors report shareholder value loss to global diversification is a function of firm leverage and that not all equity firms' trade at a discount, indicating that foreign involvement does not harm firm value. Santo, Errunza and Miller (2003) examine the valuation effects of diversification by testing cross-border mergers and acquisitions of U.S. acquirers over the period 1990–1999. The authors find that on average, acquisitions of "fairly valued" foreign firms do not lead to value discounts, which suggests that diversification does not destroy firm value.

Errunza and Senbet (1981, 1984) examine the existence of monopoly rents associated with international diversification in a market-value theoretical framework. They argue that any advantages arising from foreign operations would be "priced out" in a rational and efficient market. Errunza and Senbet (1981) report a significant positive link between value and the degree of international diversification. Errunza and Senbet (1984) find an insignificant effect of foreign operations on value. Jacquillat and Solnik (1978) conclude that investing in multinationals is a poor substitute to international portfolio diversification. Levy and Sarnat (1970) argue that investment in a multinational firm is an alternative means of securing foreign diversification benefits without incurring the excessive transaction costs of foreign investments.

Past research on corporate international diversification identifies several alternative proxies for the degree of foreign involvement (Errunza and Senbet, 1984; Doukas and Kan, 2006; Dennis et al., 2002, Morck and Yeung, 1992, among others). In these studies, researchers predominately rely upon one measure of the degree of international diversification. In contrast to prior studies that focus on either foreign sales or foreign assets-based measures, we use foreign sales and foreign assets-based proxies and test their relation to changes in firm value and debt. Foreign sales and foreign assets are complementary measures of international involvement that capture different aspects of foreign activity.[7] As Errunza and Senbet (1984) and Aggarwal (1979) point out, measures of international diversification are not perfectly correlated. Olibe (2010) suggests that the relation between foreign sales and foreign assets are closer to independence than to a stronger positive relation. If foreign sales and foreign assets are moderately correlated, then tests based on both proxies should be more precise than those based on either measure alone.

We also partition firms into three groups—high-debt-asset, medium debt-to-assets and low debt-to-assets groups—and tests whether there are meaningful differences in the market's pricing of foreign assets and foreign sales with respect to the size of a firm's debt. That is, whether negative valuation to international diversification increases with higher debt in a firm's capital structure. Unlike previous studies, we provide evidence on the economic significance of estimated coefficients on the diversification measures. This is vital in that the coefficients underscore the value added through foreign operations.

There are several differences between our study and Doukas and Kan (2006) and Denis et al. (2002). One primary distinction is that, in contrast to these studies, we examine the effect of foreign operations on long-term debt. These studies also use firm-specific transaction data and analyze excesses in firm value; whereas, we utilize an aggregate data approach to study the impact of international operations on debt and value. Our study contributes to the research that examines the association between foreign sales and excess firm value. Studies like Doukas and Kan (2006) and Denis et al. (2002) treat leverage as endogenous, i.e., they ignore to tests how foreign operations impact long-term debt. Our study complements this research by examining the role of foreign sales in constraining debt in a firm's capital structure.

Hypotheses Development

Price Hypothesis

This section presents hypotheses that relate price and debt to international diversification. This paper examines the relation between two measures of international diversification (foreign assets and foreign sales), and two aspects of market measures (firm value and debt). Managers who make strategic operating decisions likely possess private information regarding economic factors underlying the likelihood that foreign assets and foreign sales will result in future earnings. For example, an increase in foreign sales implies future sales growth. Likewise an increase in foreign productive capacity implies future production growth, which in turn generates higher earnings for the firm that will be reflected in share price. As Kogut (1983) argues, "the primary advantage of the multinational firm, as differentiated from a national corporation, lies in the flexibility to transfer resources across borders through a globally maximizing network."[8]

Doukas and Travlos (1988) note that the valuation effects of diversification emanate from the following collection of valuable options: (a) "the firm's ability to arbitrage institutional restrictions (for example, tax regulations and financial limitations), (b) the cost savings obtained by joint production in marketing and in manufacturing" and (c) endowment to search and acquire information required by the firm in the conduct of foreign operations. "To the extent that these options can be exercised only by the multinational firm and cannot be traded and acquired by investors, the value of the firm should increase to reflect the incremental value of these options" (Doukas and Travlos, 1988, 1161-1162). Thus, a firm's foreign involvement may be viewed by market participants "as a signal to expand a firm's resources internationally that will enable the firm to exploit uniquely international distortions in capital markets."

Further, given a manager's penchant to maximize his or her own utility, foreign investments might generate rent for shareholders because managerial utility depends on firm value and shareholder satisfaction. It is well known that shareholder satisfaction and stock price increase with earnings growth and stability, and foreign operations are associated with higher growth opportunities (Bodnar and Weintrop, 1997). These factors suggest a positive relation between foreign operations and value. We hypothesize that the relation between foreign operations and firm value is positive. We base this hypothesis on the notion that firm value reflects the value of real options, i.e., opportunities to expand or contract the scales of operations (de Matos, 2001).[9] Chen and Zhang (2003), note that "real options exist in all types of business enterprises and industries, and they contribute significantly to firm value." This discussion leads to our first hypothesis (stated in the alternative form):

> **H1**: Ceteris paribus, greater international diversification, as measured by foreign assets and foreign sales, is associated with greater shareholder value.

To the contrary, negative market value may result if the firm's decision to expand abroad signals a firm's limited capacity to extract additional gains from its existing domestic operations. As Shapiro (1978) notes, for many firms engaging in international diversification is a matter of survival rather than a search for unexpected profits. Further, Jensen (1986) argues that firms with substantial free cash flow have a tendency to invest in "wasteful" projects with negative net present values. Jensen further notes that managers are often tempted to use free cash flows to build empires, even if this is not in the interests of

shareholders. This suggests that foreign operations can reduce shareholder value through "wasteful" investment. In addition, agency costs in monitoring and bonding foreign operations may also adversely affect the expanding firm's market value, if the market reacts to the risks inherent in foreign operations. If shareholders associate foreign operations with self-serving behavior on the part of managers, they may view foreign involvement as non-beneficial in this circumstance.

Long-term Debt Hypothesis

A conceptual link between international diversification and debt emanates from theory and evidence. Firms may finance investments differently depending on the cost of debt relative to internally generated funds. Highly leveraged firms may have higher costs of debt financing. Krull (2004) suggests that high-growth MNCs may finance their operations with both debt and internal funds. Beaver et al. (1970) suggest that debt can proxy for investment prospects. It may be inferred from these studies that debt may be a precursor of future value creation. Conversely, other studies suggest that firms have optimal debt levels depending on the tax savings of debt relative to the costs of debt (Dhaliwal et al., 1992; Graham, 1996) and that firms with high agency costs increase debt as a bonding mechanism (Jensen and Meckling, 1976).

Firms that prefer to finance foreign investments with equity to minimize the cost of debt may be more likely to use earnings or equity securities. These factors suggest a negative relation between debt and foreign operations. Reducing the level of debt in a firm's capital structure is essential, as debt-rating agencies periodically reassess firms' creditworthiness, which impact the cost of capital. Further, because of interest risk, the value of fixed income securities may decline when interest rates increase. This leads to the second hypothesis:

> **H2a:** Ceteris paribus, greater international diversification, as measured by foreign assets ratio, is positively related to long-term debt.
>
> **H2b**: Ceteris paribus, greater international diversification, as measured by foreign sales is negatively related to long-term debt.

Hypothesis H2b is based on the notion that sales, a nominal account, is more likely to be financed by short-term debt. Given the level of financing required to locate assets abroad, managers are likely to finance foreign production capacity through long-term debt, retained earnings and/or equity issuance.

VALUATION MODEL

Market-Based Measure of Performance

Accounting researchers typically use two basic valuation models in value relevance studies. The annual returns model describes the linkage between stock returns and accounting earnings (Ball and Brown, 1968; Easton and Harris, 1991). The alternative model—price-based valuation—is now used by many researchers (e.g., Ohlson, 1991, 1995; Barth et al., 1998; Burgstahler and Dichev, 1997; Chen and Zhang, 2003, among others). Price models have two advantages over return specifications, even though a price specification does not measure the influence of new information arriving in a period. First, to the extent "stock markets anticipate any components of accounting earnings and incorporate the anticipation in the beginning stock price (e.g., prices leading earnings), return models will bias earnings coefficients toward zero" (Liu and Liu 2007, 66).

Price specifications yield unbiased earnings coefficients because stock prices reflect the cumulative effect of earnings disclosure (Kothari and Zimmerman, 1985). Second, return models only permit the determination of the value relevance of earnings; whereas price models based on Ohlson (1995, 1999), show how a firm's market value is linked to equity book value and accounting earnings.[10] Third, given the low likelihood that returns will provide reliable estimates of future growth, share price better reflects growth of the firm.

Ohlson (1995) derives a valuation model based on the standard assumptions that underlie the dividend discount model, the clean surplus relation, and an assumed stochastic process for abnormal earnings. Ohlson's valuation framework expresses market value of equity at time *t* (MVE_t) as a function of book value of common equity (BVE_t), accounting earnings ($EARN_t$), dividend (DIV_t):

$$MV_t = \gamma_2 BVE_t + \gamma_3 EARN_t + \gamma_4 DIV_t + V_t \quad (1)$$

Where (using Ohlson's notation) MVt is stock price at time t, BVE_t is end-of-year book value of equity, $EARN_t$ is abnormal earnings for period t, DIV_t is dividends at period t, and V_t is other nonaccounting value-relevant information. As Collins, Pincus and Xie (1999) point out, "the value relevance of equity book value in the Ohlson's model stems from its role as a proxy for the present value of expected future normal earnings."[11] Since BVE_t can be decomposed into foreign assets (FAS_t) and all other net assets represented by domestic assets less total liabilities and preferred stock (BVE_t), equation (1) can be expressed as:[12]

$$MVt = \gamma_2 FASt + \gamma_3 BVE_t + \gamma_4 EARNt + \gamma_5 DIV_t \quad (2)$$

Scaling all variables by number of shares outstanding and adjusting for stock splits and stock dividends, as in Barth et al. (1991) and Louder et al. (1996), allowing for different coefficients for FAS_t and BVE_t, and adding an intercept, results in the empirical form of the models:

$$MV_{itk} = \gamma_0 + \gamma_1 FAS_{itk} + \gamma_2 AEARN_{itk} + \gamma_3 BV\text{-}ADJ_{itk} + \gamma_4 DIV_{itk} + \sum\gamma_5 FIRM_{it} + \sum\gamma_6 YR + \varepsilon_{itk} \quad (3a)$$

$$MV_{itk} = \gamma_0 + \gamma_1 FOSA_{itk} + \gamma_2 AEARN_{itk} + \gamma_3 BVE_{itk} + \gamma_4 DIV_{itk} + \sum\gamma_5 FIRM_{it} + \sum\gamma_{6t} YR + \varepsilon_{itk} \quad (3b)$$

Equations (3a) and (3b) are estimated separately for foreign assets and foreign sales from 1998 through 2009. The subscripts i, t, and k refer to company, year, and industry, respectively. Equity value can be viewed as equal to the value derived from existing operations plus the value of options to expand or to contract the operating scale. The notion that equity value reflects real options are empirically supported by Hayn (1996), and Burgstahler and Dichev (1997).

Variable Measures and Definitions

The dependent variable is the market value of common shares outstanding at the end of fiscal year t (#24 x #25), divided by the number of common shares outstanding for firm i at time t. Stock prices summarize not only investor assessment of firm asset values and expectations about future operating performance, but also the effects of firm investing and financing decisions. FAS_{it} is firm i's foreign assets (GDATA5). $FOSA_{it}$ is firm i's foreign sales. Foreign assets capture the firm's relative level of economic globalization and geographic location, and provide a measure of a firm's dependence on overseas production capacity, whereas foreign sales provide a measure of a firm's dependence on its overseas markets for sales revenues.

Control Variables

$AEARN_{it}$ is abnormal earnings and equals $NI_{it} - rBVE_{t-1}$; NI_{it} equals net income before extraordinary items and discontinued operations for fiscal year t; $BVE\text{-}ADJ_{it}$ is the book value of common equity at the fiscal year t, minus the foreign assets in model 3a. The Ohlson (1995) model suggests that book value of equity reflects the present value of expected future abnormal earnings since a firm can be expected to generate a return on its net assets that equals its expected cost of equity capital. As Collins et al. (1998) note, "omitting book value of equity induces material bias in earnings coefficients." Prior studies assert that both book value and earnings are relevant for valuation (Easton and Harris, 1991; Ohlson, 1995;

Burgstahler and Dichev, 1997). We expect the coefficients on BVE and AEARN to be positive. Similar to the specifications in Aboody et al. (1999) and Louder et al. (1996), both long-lived assets and book value adjusted for revalued and utility assets are included. In model (3b) equity book value is included without adjustment.

FIRM is a dummy variable included to control for industry-wide factors that might influence the results. YR is included to control for microeconomic factors (e.g., exchange rates or stage in economic cycle). Following Dichev et al. (1999) and Barth et al. (1999), the expected rate of return on book value of common equity, r, is set at 12%, the long-term return on equities. The error term reflects other information as well as random error. Except for industry and year dummies, all other variables are deflated by common shares.

Although defining AEARN based on net income before extraordinary items and discontinued operations violates the clean surplus assumption in Ohlson (1995), it eliminates potentially confounding effects of large one-time items and is consistent with prior empirical research (e.g., Dechow et al., 1999 and Barth, et al., 1999).[13] Ohlson (1999) concludes that this approach is justified in empirical work because one-time items have no predictive value. However, as in Aboody et al. (1999), we do not rely on the Ohlson's (1995) model as the basis for interpreting predictions because it relies on several restrictive assumptions such as clean surplus and a particular linear information model.[14]

This study uses levels, rather than the first-difference research design. As Beaver (2002, 462) instructs, a researcher "chooses the levels design when the problem is to determine what accounting numbers are reflected in firm value, whereas one chooses the first difference research design when the problem is to explain changes in value over a specific period of time." Thus, in the first differences formulation, the issue of timing of the information is essential.

Debt-holder Research Design

For methodological enhancement, we conduct a test of the impact of diversification on debt. We use a variant of Doukas and Kan (2006) framework to examine whether a firm's long-term debt is associated with international diversification. That is, we examine whether international diversification has an attenuating effect on debt. We use the same sample of firms and time period examined in the previous value tests to estimate the following models:

$$DEBT_{it} = \gamma_0 + \gamma_1 FATA_{it} + \gamma_2 BETA_{it} + \gamma_3 ROA_{it} + \gamma 4 MTB_{it} + \gamma_4 SIZE_{it} + \sum \gamma_{5k} FIRM_{Fit} + \sum \gamma_{6t} YR_{it} \quad (4a)$$

$$DEBT_{it} = \gamma_0 + \gamma_1 FOSA_{it} + \gamma_2 BETA_{it} + \gamma_3 ROA_{it} + \gamma 4 MTBit + \gamma_4 SIZE_{it} + \sum \gamma_{5k} FIRM_{Fit} + \sum \gamma_{6t} YR_{it} + \varepsilon_{it} \quad (4b)$$

Dependent Variable

The dependent variable is long-term debt (DEBT) for firm *i* at time t (#9) divided by total assets (#6), which proxy for debt-holder value (see, for example, Doukas and Kan 2006)). In structural-form credit models, leverage proxies for the distance to default. World-wide debt-to-total assets provide a measure for a global firm's reliance on debt financing. Prior research indicates that firms have optimal debt levels depending on the tax savings from debt relative to the costs of debt (Dhaliwal et al. 1992; Graham 1996).

Control Variables

Cross-sectional (levels) analyses of the market's valuation of geographic accounting data require additional accounting and market variables. Thus, equations (4a and 4b) control for several other determinants of debt identified in the literature. FATA is firm foreign assets (GDATA5). FOSA is firm foreign sales. These are the two test variables. Consistent with Doukas and Kan (2006) and Kaplan and Urwitz (1979), we control for the following variables: return on assets (ROA), growth (MTB), and a measure of systematic equity risk (BETA). Equally weighted BETA is derived from market-model regressions estimated over the eight-year period for firm I that has a minimum of 36 monthly returns.

ROA is net income before extraordinary items and discontinued operations divided by total assets. SIZE is the log of total sales for model 4a and the log of total assets for model 4b. SIZE is included to control for a variety of economic phenomena, including accounting practices and political costs (Barth, Beaver, Landsman, 1998). We expect a positive coefficient on SIZE. FIRM is a dummy variable included to control for industry-wide factors that might influence the results. YR is included to control for macroeconomic factors (e.g., exchange rates, inflationary pressures, trends in the economic cycle). Other variables are as previously defined. The variables in equations 4a and 4b, except for year and industry dummies are standardized by total assets.

EMPIRICAL MEASURES AND DATA

The sample is drawn from the Compustat Annual Geographic Segment file for 1998-2006.[15] The international corporate diversification measures employed are *foreign assets* and *foreign sales*. Equations (3a), (3b), (4a), and (4b) require that each firm have foreign assets and foreign sales, the variable of interest in the analysis. After the adoption of SFAS 131, firms began reporting identifiable long-lived assets. In addition, Compustat codes geographic asset data as missing if the firm does not report total assets, even though such a firm is likely reporting long-term assets. This further reduces the number of observations in foreign assets. Firms are also required to have long-term liabilities, and book- and market-values of equity through the examination period, 1998–2006. Table 1 summarizes the sample selection process. We include firm-year observations from 1998 to 2006 in the sample to capture the effect of SFAS No. 131.

International Diversification Measure

SFAS #131 (FASB, 1997) requires disclosure of sales revenues and fixed assets by geographic region for firms whose revenues or assets from one customer equal or exceed 10% of total revenues or total assets. Two measures are considered as proxies for the level of international diversification: (1) percentage of foreign assets to number of common shares outstanding (FAS), and (2) percentage of foreign sales (revenue) to total sales, i.e., sales to foreign customers (FOSA). FAS is selected because it reflects current and historical measures of a firm's productive assets located overseas. Further, foreign assets capture a firm's relative economic globalization and geographical structural location, and they provide a measure of a firm's dependence on overseas production. FOSA is selected for various reasons. First, foreign sales as a percentage of total sales generally reflects the proportion and significance of business transactions conducted in foreign countries versus total world transactions. Second, foreign sales are a relatively current measure of foreign activity while assets reflect current as well as historical measures. Finally, sales are relatively free of the allocations and estimations required to allocate assets.

SAMPLE CHARACTERISTICS AND EMPIRICAL RESULTS

Descriptive Statistics

Table 2 reports the cross-sectional annual mean, median, and standard deviation estimates of the variables used in the analysis (MV, DEBT, FAS, EARN, ROA BVE, FOSA, MTB, and SIZE). Untabulated minimum (maximum) values of market value of equity are $126.88 million ($508,329.46 million), minimum (maximum) total assets are $488 million ($647,483 million), and minimum (maximum) total sales are $310 million ($184,214 million). The mean (median) annual PRICE is $43.67 ($40.00), indicating PRICE exhibits a relatively normal distribution evidenced by similar mean and median. The average (median) long-term debt (DEBT) divided by total assets is 18.70% (18.47%), indicating that leverage is economically significant for the sample firms. The average (median) of foreign assets deflated by common shares is $13.47 ($8.71), and the mean (median) of foreign sales scaled by number of common shares outstanding is $14.62 ($10.74).[16] The average (median) book value is 2.53 (2.38), and net earnings per share (EPS) mean (median) is 1.88 (1.74). Long-term debt (DEBT) scaled by total assets has a mean of 18.70% and a median of 18.48% for the entire sample. The mean (median)

market-to-book ratio (MTB) average (median) is 4.20 (3.05) while the mean (median) of SIZE is 8.30 (8.26).

Because multicollinearity among the independent variables is a potential concern, Table 3 sets forth both Pearson and Spearman correlation coefficients for the set of variables. Shown above the diagonal is the Pearson (P) correlation and below the diagonal is the Spearman (S) correlation. Foreign assets (FAS) is positively and significantly correlated with MV ($P = 0.17$; S = 0.21), suggesting that foreign operations have the potential to improve share liquidity. Surprisingly, FAS is negatively and significantly correlated with book value of equity, adjusted for foreign assets ($P = 0.37$; S = 0.59). As expected, FAS is positively and significantly linked to EARN ($P = 0.31$; S = 0.44), suggesting the potential for foreign investments to produce higher operating profits. Foreign sales ratio (FOSA) is, as expected, significantly and positively correlated with MV ($P = 0.08$, S = 0.04), indicating that foreign operations have the potential to enhance value. As expected, DEBT is negatively and significantly correlated with MV ($P = -0.16$; S = -0.13). The natural log of total sales, a proxy for size, is significantly and positively correlated with MV ($P = 0.43$; S = 0.41), suggesting that large firms in good financial health command premium prices. Size also has a positive and significant correlation with DEBT ($P = 0.18$; S = 0.47), suggesting that large firms have higher levels of debt in their capital structures. FOSA is predictably positive and moderately correlated with foreign assets, suggesting higher level of assets generate superior sales volume. The correlation may not be perfect due to competition, market forces, etc., but at least it is positive.

Price and FAS Results

Table 4 reports the results of estimating Equation (3a) using OLS regression. To correct for heteroscedasticity, we use Huber-White robust standard errors (Rogers 1993). In the foreign assets estimate of Table 4, the coefficient on FAS (γ_1) is significant and positively related to market value of common equity (t-statistic = 3.20, $p < 0.01$). Thus, consistent with H1, we find evidence that foreign assets are incrementally priced in stock prices. Thus, foreign assets appear to have real economic consequences for firm value. The results point to the notion that foreign operations result in price risk, which increases the option value of shareholders' claims. Further, we report that a one standard deviation increase in foreign assets, on average raises firm value by 66.7 percent.[17] Our results are consistent with the predictions of option pricing theory, which suggest that investment objectives that increase the underlying risk of firm cash flows tend to have a positive influence on firm value.

With respect to the predictions on control variables, the signs on the coefficients are as expected. The coefficients on dividend (DIV), abnormal earnings (AEARN) and equity book value, adjusted for foreign assets (EBV-ADJ) have the expected sign, positive and significant (t-statistics = 11.92, 3.14 and 3.15, respectively), indicating that all three are significant contributors to stock price. The market's positive valuation of foreign investment reflects investors' views of the firm's ability to redirect investments to a profitable environment. Overall, the results strongly support rejection of the null hypothesis that foreign operations harm shareholder value. Untabulated univariate statistics reveal that the coefficient estimate on FAS (29.36) is positive and significant (t-statistic = 3.66), lending support that the multivariate results are not driven by industry classifications, year dummies, and other firm characteristics.

PRICE and FOSA Results

The results of estimating Equation (2) are presented in Table 5. Results for explanatory variables are generally consistent with expectations. The coefficient on FOSA (γ_1) is 0.21 and is significantly greater than zero (t-statistic = 3.23, $p < 0.01$). Thus, consistent with H1, we find that MNCs foreign operations do not erode shareholder value. The observed positive and significant coefficient on FOSA suggests higher shareholder value in the presence of greater foreign sales, consistent with H1. Further analysis indicates that a one standard deviation increase in foreign sales raises firm value by 11.19 percent of standard. These results strongly support the theoretical model's predicted link between firm-level foreign assets and shareholder value. Further analysis reveals that a one standard deviation increase in foreign sales, on average, raises firm value by 76.86 percent. As expected, the coefficients on earnings (AEARN) and dividends (DIV) are reliably positive and highly significant (t-statistic = 9.00, $p < 0.01$ for earnings and t-

statistic = 12.10, p <0.01 for dividends), whereas book value (BE) is insignificant and is of the opposite sign.

Untabulated univariate findings reveal that the incremental coefficient on FOSA is positive and significant at the 5% level (t-statistic =2.07). Overall, these results provide reasonably strong evidence consistent with investors' valuing the equity of internationally diversified firms'. That is, foreign operations are perceived as significantly beneficial to the firm.

Debt-holder Value and FAS Results

Table 6 reports the results of estimating Equation (4a), modeling the relation between foreign assets and long-term debt. In the estimate of Equation 4, the coefficient on FAS (γ_1) is significant and positive (t-statistic = 2.40, $p < 0.05$). Thus, consistent with H2a, we find evidence indicating that MNCs' foreign involvement is positively related to long-term debt. This may imply that international investments utilizing foreign assets as means of expansion increase debt levels, supporting the prediction of a linkage between FAS and debt. We also document that a one standard deviation increase in foreign assets, on average, induces a 32. 58 percent increase in long-term debt. BETA (γ_2) is positively and significant (t-statistic = 2.67, $p < 0.01$), which indicates that the net effect of systematic risk is an augmentation of debt. The coefficient on ROA (γ_3) is negative and significantly related to debt (t-statistic = -3.14; $p < 0.01$), suggesting that long-term debt diminishes with profitable operations. MTB (γ_4) is positive, but lacks statistical power (t-statistic = 0.39), whereas the coefficient on SIZE is reliably positive and significant (t-statistic = 5.22; $P < 0.01$), suggesting that large firms have the capacity for higher debt.

Debt-holder Value and FOSA Results

Table 7 reports the test of H2b, which posits that foreign sales are associated with lower debt in a firm's capital structure. Table 7 reveals that the incremental coefficient on FOSA (γ_1) is significant and negatively related to long-term debt (t-statistic = -2.19, $p < 0.05$), indicating that long-term debt decreases as foreign sales increase. This finding is consistent with H2b predicting an inverse relationship between foreign sales and leverage. This finding is important as firms wish to reduce the amount of debt in their capital structure and cost of debt to avoid unfavorable ratings by rating agencies, and also to abate the probability of debt default. Further analysis suggests that a one standard deviation increase in foreign sales ratio decreases long-term debt by 78.67 percent of standard deviation.

BETA coefficient is of the expected sign but lacks statistical power. This is consistent with the findings of Shin and Stulz (2000) who report that the positive relationship between value and systematic risk does not hold for larger firms, such as the MNCs in our sample. ROA is significantly and positively related to debt (t-statistic = -5.03), while MTB is significantly and positively related to debt (t-statistic = 7.82). The coefficient on SIZE is positively and significantly associated with debt (t-statistic = 3.35).[18] In summary, the valuation results provide consistent evidence that when diversification proxies are different, foreign assets and foreign sales have significantly different influences on debt. In addition, the evidence supports the inference that the results discussed in the price section are attributable, at least in part, to foreign activities that result in value creation.

ADDITIONAL ANALYSIS AND LIMITATIONS

Sample Partition

Possible Effect of Debt-Size on Shareholder Value

While the significant shareholder value effects of diversification are generally apparent for the sample firms, evidence gathered in aggregate has the potential to obscure meaningful differences across firms with different levels of long-term debt. By considering the stock-price implications of a sample partitioned on debt ratios, we can ascertain the extent to which debt-size plays a role in determining the price effects of foreign assets and foreign sales. To the extent that shareholder value is influenced by leverage, the potential exists for shareholder value to decline for firms with higher debt relative to equity in their capital structures. This prediction is in line with Doukas and Kan (2006), who predict and find

significantly negative relationship between long-term debt and excess valuation. We partition the sample into three groups—high, medium, and low debt-to-asset ratios—and test whether there are meaningful differences in the market's pricing of foreign assets and foreign sales with respect to the size of a firm's debt.

Market participants might increase their assessment of firm value when high debt-to asset ratio firms expand overseas because doing so lowers the probability of debt default due to the anticipated benefits associated with foreign operations. For firms holding lower proportions of debt, the negative or insignificant relation may derive investors bearing a higher proportion of risk for firms with low levels of debt in their capital structure. This discussion leads to the following hypotheses:

> **H3a:** Ceteris paribus, the market value of high and medium debt-to-asset ratio firms is positively associated with international diversification proxies.
>
> **H3b:** Ceteris paribus, the market value of low debt-to-asset ratio firms is negatively associated with international diversification proxies.

By considering the stock-price implications of a partitioned sample we can determine the extent to which debt-size plays a role in determining the price effects of foreign assets and foreign sales. After controlling for other important valuation effects, we report that the stock-price influence of foreign assets and foreign sales does indeed depend upon the amount of debt in a firm's capital structure. The valuation effects of foreign assets are typically greater for high debt-to-asset ratio firms relative to medium- and low-debt firms. These findings suggest that investors increase their assessment of firm value when high debt-to-asset ratio firms diversify abroad because doing so reduces the probability of debt default due to higher growth opportunities abroad (Bodnar and Weintrop, 1997).

Foreign Assets Results Partitioned on Debt-Ratio

Table 8 illustrates the influence of leverage size on the market effects of foreign assets using the partitioned sample. After controlling for other important valuation effects, evidence reported in Table 8 suggests that the association between stock-price and foreign assets does indeed depend on the amount of debt in a firm's capital structure. By way of contrast, some variability is present in terms of the valuation implications of high-debt class, medium-debt class, and low-debt class firms. First, the coefficient on FAS for high debt firms is 33.56 (t-statistic = 2.10) a relatively larger effect than that of FAS for medium debt and low debt firms of 24.14 (t-statistic = 2.11) and 17.93 (t-statistic = 2.55), respectively. The results indicate that the benefits associated with foreign operations accrue mostly to shareholders of high and medium debt firms. The results also suggest that investors increase their assessments of firm value when high debt-to-asset ratio firms expand overseas, in line with Doukas and Kan (2006).

Using a t-test of the difference in coefficients, the superiority of high-debt firms versus medium- and low-debt firms is statistically significant (t-statistic = 2.16 for medium-debt and 3.79 for low-debt firms). Further, it is evident that the adjusted R^2s of low debt firms (0.71) is greater than those of the high (0.60) and medium (0.38) debt-to-asset ratio partitions. These findings reveal that the market finds additional information on low-level and high-level debt-to-asset ratio firms.

Foreign Sales Results Partitioned on Debt-Ratio

The influence of debt on the stock market valuation of foreign sales is also evident in the findings reported in Table 8, panel B. Panel B, Table 8 shows that foreign sales is significantly positively related to shareholder value in all three partitions (t-statistic = 2.45 for high debt, 2.44 for medium debt, and 3.12 for relatively low debt). By way of contrast, foreign sales of the low debt partition is statistically significant at the 1% level, whereas for high and medium debt firms it is significant at the 5% level. For both the medium and low debt firms, the results exhibit the same general pattern. That is, foreign assets, FAS, is positively and significantly related to price with similar coefficient estimates across partitions.

Further, the explanatory power of medium debt (0.72) appears greater relative to the explanatory power of the high and low debt firms (0.45 for high debt and 0.66 for low debt firms). From a market value perspective, foreign sales of medium and relatively less-leveraged firms appear to have higher explanatory power, suggesting that foreign sales yield additional explanatory power for medium and low debt firms. While the evidence in Tables 9 and 10 is mixed, it nonetheless offers broad-based support for the impact of debt on valuation of foreign assets and foreign sales. These results support the theoretical model's predicted link between firm-level foreign operations and firm value considering debt as a moderating effect on these relations.

Limitations

In evaluating the results of the study, it is worth noting limitations apart from those typical of this type of analysis. First, we use U.S. data and thus the results may not be generalizable to other countries. Second, the validity of the results documenting how diversification translates into capital market benefits depends on the reliability of the estimated foreign assets and foreign sales and debt used in the study. As noted by Chen and Zhang (2003), geographic segment data contains considerable measurement errors. Third, our debt measure may not capture all of a firm's debt. Recently, the Wall Street Journal (July 10-11, 2010) reported that Bank of America "Admits Hiding Debt" in billions of dollars in an attempt to reduce the size of a unit's balance sheet to meet internal financial targets. Fourth, our sample period is six years, ending 2006, and thus the results may not be generalizable to other periods. Finally, these results have to be interpreted with caution, because they may also reflect—at least to some degree—variations in industry and/or firm characteristics not captured by our parsimonious model.

SUMMARY AND IMPLICATIONS

The primary aim of this paper is to empirically investigate the impact of international diversification on debt and shareholder value. Specifically, our study relates the levels of equity and debt values to foreign assets and foreign sales, which proxy for international diversification. Also examined is the empirical importance of debt and foreign operations. Firm value and debt summarize not only investors' assessments of a firms' asset values but also the effects of a firms' investing and financing decisions. Our results indicate that market value of equity is positively related to foreign activity (foreign sales and foreign assets). The level of debt is positively (negatively) associated with the level of foreign assets (foreign sales), implying that foreign operations are in part financed with debt. In terms of reducing debt, the results provide support for the benefits of international diversification by establishing a negative link between foreign sales and debt.

The study further finds that the relation between market value of equity and foreign assets is stronger for firms with relatively greater leverage but this is not the case with foreign sales.[19] We are unable to be definitive about the cause of the negative relation between foreign sales and share price at low debt levels. Investors may be overly pessimistic about bearing a higher proportion of the risk associated with foreign sales. These findings are robust to the inclusion of control variables such as growth, risk, size, earnings, and equity book value.

We expand on existing research that examines the benefits and costs of foreign operations by shedding light on how foreign operations are associated with value and debt. The paper presents the first empirical evidence that the amount of debt in a firm's capital structure is influenced by foreign operations. The debt findings contribute to the capital structure literature by providing evidence on how firm diversification structure influences MNC use of debt in making overseas investing and financing decisions. The results provide new evidence on foreign assets' and foreign sales' role as a value-relevant factor in determining the level of debt in a firm's capital structure. Our results have implication for accounting and investing professionals. In particular, foreign operations are associated with high equity value and debt, when foreign assets are applied as the measure of international diversification. Conversely, foreign sales are associated with less long-term debt. A major implication of this study is that firms should estimate their debt service capacity to reduce default risk as they expand overseas with

increased risk exposure. Research could expand the scope of this study by examining how foreign operations impact short-term versus long-term debt, as short-term debt comes up for renewal more frequently than long-term debt, increasing the monitoring role of debt.

Finally, given the current economic malaise, financial sector restructuring and corporate lending must be pursued together. However, policymakers focus almost exclusive the macroeconomic sector and not the real sector which generally produces economic growth. Unless the two are addressed together, the economy will continue to experience severe strain. Lenders cannot expect reliable debt service in excess of a firm's cash flows. Debt restructuring can produce triple effect—the banks can ensure themselves of repayments over time, viable firms can complete their projects or obtain fresh working capital, and the economy can benefit in a sustainable way.

ENDNOTES

[1] In contrast to most studies that rely on foreign sales, a nominal account, this study employs both permanent and nominal accounts in assessing the linkage between international investment and shareholder value and debt. This distinction is important because the balance sheet and income statement play different roles. A fundamental role of the balance sheet is to facilitate loan decisions and the monitoring of debt contracts, whereas the role of the income statement plays more toward predicting performance.

[2] Recently, the U.S. Bureau of Economic Analysis (2004) reports that U.S. firms overseas continue to achieve strong earnings from their foreign subsidiaries. Their earnings have surged from $52 billion in 1994 to more than $200 billion in the second quarter of 2004. In addition, the Wall Street Journal (October 8, 2004) underscored the gains of U.S. MNCs from their operations abroad with a cover page article captioned "Global Market is Good to US Firms".

[3] The Association for Investment Management and Research (AIMR) in its position paper (AIRM 1993, 59-60) states, "[Segment information] is vital, essential, indispensible, and integral to the investment analysis process… Different segments will generate dissimilar streams of cash flows to which are attached disparate risks and which bring about unique values."

[4] Bodnar and Weintrop (1997) regress annual returns of U.S. MNCs for 1985-1992 on changes in foreign and domestic earnings and find that, on average, foreign income is more highly valued. They attribute the higher capitalization of foreign earnings relative to domestic earnings to higher growth opportunities abroad.

[5] This study uses the book value of long-term debt as a proxy for debt-holder value because a firm's debt consists of both public debt (public bond) and private debt (bank loans).

[6] This study also uses long-term debt as a proxy for debt-holder value because a firm's debt consists of both public debt (public bond) and private debt (bank loans). Doukas and Kan (2006) use book value of long-term debt as a proxy for bondholder value (see Tables 1, 3 and 4, pp. 356, 360 and 363, respectively). An appropriate measure could be the pricing of bonds (i.e., actual bond values) or the spread of bonds.

[7] Foreign sales capture a firm's dependence on its overseas markets for sales revenues, whereas foreign assets provide a measure of a firm's dependence on overseas production. Foreign sales-based measures of international diversification mix export sales with foreign subsidiary sales and ignore geographic structural differences among firm, such as asset placement. Reeb et al. (1998) note that foreign assets as a proxy for international operations mitigates the problem of mixing export and foreign subsidiary sales, and it captures geographic structural information.

[8] See Kogut (1983) for an extensive discussion of the influence of these factors on firm value.

[9] Investment abroad involves risks due to several factors, such as illiquidity, the lack of public information, changes in exchange rates, unfavorable political and legal developments, or economic and financial instability. The finance and accounting literature suggests that foreign involvement is an important determinant of firm value and/or returns, because foreign operations are generally a high risk return that appears attractive to shareholders in anticipation of improved financial performance.

[10] In applying price specifications, various studies employ earnings bases (e.g., Collins and Kothari, 1989; Kothari and Zimmerman, 1995), whereas others indicate that stock price is associated with equity book value (e.g., Barth et al., 1998; Ohlson, 1991, 1995). These models, based on earnings and book values are viewed as alternative approaches.

[11] The model assumes that the financial statement line items, from which summary accounting numbers (e.g., book value of common equity and earnings) are derived, are given equal weights.

[12] Such a decomposition of BVE_t ignores the fact that foreign assets may be financed, at least in part, with liabilities. Failure to apportion the liability values between foreign assets and other assets implies that the measure of BVE_t includes the liability related to foreign assets.

[13] Ohlson (2000) points out that even bottom-line net income will not satisfy the clean surplus equation under the pooling-of-interest method of accounting for business combinations. The problem arises from recording equity transactions using non-market prices.

[14] The clean-surplus assumption requires that the book-value of common equity at time t be equal to the book value of common equity at time t-1 plus income in period t, adjusted by payments to or from stockholders during period t.

[15] The sample begins in 1998 because that is when SFAS 131 was implemented (the Financial Accounting Standards Board's FASB 1997), superseding SFAS 14. Under the new standards, firms no longer had to report industry and geographic segment information separately. Rather, firms are required to report one set of segment data corresponding to how they organize themselves internally for purposes of performance evaluation. As a result, post-1997 segment data are difficult to reconcile with prior segment data. Prior to SFAS 131, firms reported total assets. After the implementation of SFAS 131, firms began to report identifiable, long-lived assets. In addition, Compustat codes geographic asset data as missing if the firm does not report total assets, even though the firm is likely to report long-lived assets. This procedure resulted in a lot of missing observations for long-lived assets.

[16] The average (median) of foreign assets deflated by total assets is 34.26% (34.94%) of total assets, and the mean (median) of foreign sales to total sales is 39.61% (38.76%), indicating that both foreign assets and foreign sales are of economic significance to the firm.

[17] We assess the economic significance of international diversification proxies—foreign assets and foreign sales using "beta coefficients." I calculate standardized coefficients—also known as "beta" coefficients—for all the variables of interest (ASSET and SALE) and selected independent variables in Tables 4, 5 and 6. A beta coefficient is defined as the product of the estimated coefficient and standard deviation of its corresponding independent variable, divided by the standard deviation of the dependent variable. It converts the regression coefficients into units of sample standard deviations (see Woodridge 2003).

[18] Additional tests were performed to assess the sensitivity of the variable coefficients to (1) extreme outliers, and (2) multicollinearity. We compute the variance inflation factors (VIF) for the regressor variables. The measures indicate no substantial multicollinearity among the regressor variables, with firm size in equations (4), (5), (6), and (7) as the most collinear variable, having the highest VIF value of about 3 (see Neter et al. (1989, p. 407-411) for a further discussion on VIF).The last rows in Tables 4, 5, 6, and 7 show the results obtained by the DW test, through which I investigate serial correlation effects in the regression sequences. In general, values of the DW test close to 2 suggest the absence of serial correlation effects. As can be observed, the indices show no serial correlation effects for all *p* values. In addition, I chose the White test, which does not depend on the assumption of a normal error term. For all orders of regression, the values obtained are not large and statistically insignificant, indicating the absence of heteroskedasticity.

[19] A commonly used accounting indicator is debt coverage ratio, computed as interest expenses divided by earnings before interest and taxes. One of the weaknesses of the method is that these ratios do not reflect the possible differences in the volatility of the earnings stream between firms. To remedy the shortcoming of the debt coverage ratio, Wyman (1977) proposes a standardized Debt Coverage Ratio (SDCR), defined as SDCR = EBIT – FC/σ{EBIT], where FC = fixed cost, an.d σ{EBIT} = standard deviation of EBIT. An advantage of this ratio is that it captures the volatility of earnings in the standard deviation and the ratio can be applied to all kinds of industries and all types of firms, because it is standardized.

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APPENDIX

TABLE 1
SAMPLE SELECTION AND DISTRIBUTION OF SAMPLE

Panel A: Sample Selection	Firm Years
Initial observations with necessary data available in Compustat	114
Foreign Assets Test Samples:	
less observations missing foreign assets	(645)
less observations not reporting earnings	(15)
less observations not reporting equity book value	(34)
less observations missing market value of common equity	(46)
Final Sample (with foreign assets)	401
Foreign Sales Test Samples:	
Initial sample with necessary data available in Compustat	1141
less observations not reporting foreign sales	(258)
less observations missing equity book value	(34)
less observations missing market value of common equity	(46)
Final Sample	718

Panel B: Distribution of Foreign Assets and Foreign Sales by Industry

SIC Codes	Industry	Number of Firm-Year Observation	
		ASSET	SALE
1000 -1999	Mining/construction	61	14
2000 – 3999	Manufacturing	302	691
5000 -5999	Wholesale/retail	10	12
7000 – 9999	Services	15	65
1000 – 9999	Total	401	718

The selection process yielded 435 firm year-observations for foreign assets ratio and 780 firm year observations for foreign sales ratio, a total of 1215 firm-year observations.

TABLE 2
DESCRIPTIVE STATISTICS FOR THE REGRESSION VARIABLES

Variable	N	Mean	Std. Dev.	Q1	Median	Q3
MV	1031	43.6719	26.0729	25.7500	40000	56.5000
DEBT	910	.1870	.1262	.0906	.1847	.2668
FAS	401	13.4698	13.6297	5.2853	8.7108	16.9834
FATAÏ	401	.3275	.1512	..1866	.3446	.4297
FOSA	718	14.8388	13.7077	6.4295	10.7397	17.9566
BVE-ADJ	372	.9602	10.8424	-1.5805	2.0884	5.7564
BE	802	14.5354	9.013	8.0251	18.8603	18.9276
ROA	970	1.8849	1.9887	.8175	1.7350	2.8925
EARN	995	1.8027	2.7555	.7700	1.7100	2.9000
MTB	910	4.1972	8.1176	2.0060	3.0473	5.1241
BETA	995	1.1761	.6933	.7133	1.0779	1.5300
DIV	664	.9316	.5768	.4970	.8194	1.2366
LnSALE	998	8.4523	1.5416	7.6008	8.4415	9.4784
LnASSET	998	8.6968	1.5862	7.8304	8.6701	9.6067

MV_{it} = Market value of common equity (#24 x#25) divided by number of common shares outstanding (#25).
$DEBT_{it}$ = long-term liabilities for firm i at time t divided by total assets (#9).
FOSAit = sales to foreign customers for firm i at time t deflated by the number of shares outstanding (#24 x#25).
FASit = firm's identifiable foreign assets (GDATA5) file at time t deflated by the number of common shares outstanding (#24 x#25).
FATAit = firm's identifiable foreign assets (GDATA5) file at time t scaled by total assets (#6).
ROA_{it} = firm i return on assets for firm i at time t (used in long-term specifications).
$AEARN_{it}$ = firm i's abnormal earnings measured as net income before extraordinary items and discontinued operations, minus 0.12 xBVE (used in price specifications) deflated by the number of common shares outstanding (#25).
EBV_{it} = the book value of equity adjusted for foreign assets for firm i at time t, scaled by common shares (#25).
MTB_{it} = market-to-book ratio for firm i at time t scaled by the number of common shares (#60/#25).
BETAit = equal-weighted market returns (EWRETD) for firm i at time t.
DIVit = dividends excluding stock dividends for firm t at time t deflated by the number of common shares outstanding.
$LnSALE_t$ = logarithm of global sales for firm I at time t (#12).
$LnASSET_{it}$ = logarithm of total assets for firm i at time t (#6).

TABLE 3
PEARSON AND SPEARMAN CORRELATION MATRIX (PEARSON ABOVE THE DIAGONAL AND SPEARMAN BELOW THE DIAGONAL)

	MV	DEBT	FAS	FOSA	DIV	BVE	BVADJ	MTB	BETA	ROA	LN SALE	LN ASSET
MV	1	-.05	.47**	.03	.57**	.16**	-.28**	.15**	-.36**	.31**	.46**	.44**
DEBT	-.02	1	.10*	-.10**	.01	.12**	-.10	-.12**	-.15**	-.30**	.02	.07
FAS	.46**	.21**	1	.11*	.46**	.62**	-.69**	-.09	-.10	-.25**	.48**	.50**
FOSA	.03	-.18**	.17**	1	.02	-.02	-.23**	.04	.12**	.03	.01	.01
DIV	.59**	.07	.42**	-.05	1	.25**	-.22**	-.02	-.27**	.02	.38**	.38**
BE	.37**	.20**	.67**	-.14**	.45**	1	.14**	-.10**	-.01	-.11**	.16**	.16**
BE ADJ	-.17**	-.14**	-.51**	-.39**	-.13*	.18**	1	-.04	.07	.15**	-.35**	-.39**
MTB	.31**	-.25**	-.22**	.21**	-.01	-.45**	-.24**	1	-.10**	.23**	.07	.06
BETA	-.36**	-.15**	-.16**	.19**	-.25**	-.12**	.08	-.13**	1	-.16**	-.17**	-.14**
ROA	.31**	-.42**	-.31**	.07*	-.02	-.20**	.14**	.59**	-.19**	1	.22**	.15**
LNSALE	.43**	-.03	.45**	.05	.38**	.20**	-.30**	.20**	-.13**	.07*	1	.97**
LN ASSET	.42**	.03	.45**	.08*	.40**	.17**	-.31**	.20**	-.10**	-.00	.96**	1

** and * correlation is significant at the 0.01 and 0.05 level (2-tailed).

MV_{it} = market value of common equity (#24x#25) divided by the number of common shares outstanding for firm i at time t.

$DEBT_{it}$ = long-term debt for firm at time t deflated by total assets (#6).

FAS_{it}= firm *i*'s identifiable foreign assets (GDATA5) *t* scaled by the number of common shares outstanding (25).

$FOSA_{it}$ = firm i's foreign sales at time t divided by the number of common shares outstanding (#25).

DIVit = dividends (other than stock dividends) declared on common stock (#21) divided by the number of shares outstanding (#25).

$AEARN_{it}$ = firm *i*'s abnormal earnings measured as net income before extraordinary items and discontinued operations, minus 0.12 xBVE (used in price specifications) deflated by the number of common shares outstanding (#25).

$BEADJ_{it}$ = book value of equity excluding foreign assets for firm I at time t scaled by the number of common shares outstanding.

MTB_{it} = market-to book ratio for firm *i* (#60).

$BETA_{it}$ = equally weighted market model beta, obtained from model estimated over the eight year period for firm *i at time t* (a control for systematic risk).

ROA_{it} = income before extraordinary items and discontinued operations for firm i at time t scaled by total assets (#6)

$LnSALE_{it}$ = logarithm of global sales for firm i at time t (a control for size).

$LnASSET_{it}$ = logarithm of total assets for firm i at time t (a control for size).

TABLE 4
RESULTS OF TESTING HYPOTHESIS 1 (FOREIGN ASSETS)

$$MV_{it} = \gamma_0 + \gamma_1 FAS_{it} + \gamma_2 DIV_{it} + \gamma_3 AEARN_{it} + \gamma_4 BE\text{-}ADJ_{it} + \sum\gamma_5 FIRM_{it} + \sum\gamma_6 YR + \varepsilon_{it}$$

		Dependent Variable = PRICE	
Variable	Pred. Sign	Full Sample	
Intercept	?	20.992	
		(9.481)	***
FAS	+	12.765	
		(3.202)	***
DIV	-	18.206	
		(11.924)	***
AEARN	+	2.226	
		(3.135)	***
BVE-ADJ	+	1.076	
		(3.147)	***
N		384	
Adj. R^2		0.514	
F-Value		28.337	

N is not equal in each regression because of asymmetric reduction in the sample due to missing observations or outlier deletions. T-statistics are in parenthesis. As in prior research, the regression coefficients and t-statistics for the year and industry classification dummy are not formally presented in the table.
Coefficients and t-statistics for industry and year dummy variables are not reported.
***, **, * indicates that the coefficient estimate is significant at 0.01 and 0.05 (2--tailed).
MV_{it} = market value of common equity for firm it at time *t* divided by the number of common shares outstanding after year end (#25).
FAS_{it} = firm i's foreign assets divided by divided by the number of shares outstanding (#25).
AEARN = abnormal earnings measured as net income before extraordinary items and discontinued operations, minus 0.12 xBVE) by divided by the number of shares outstanding (#25).
DIVit = dividends (other than stock dividends) declared on common stock (#21) divided by the number of shares outstanding (#25).
$BVE\text{-}ADJ_{it}$ = equity book value (excluding foreign assets) for firm i at time t divided by the number of shares outstanding (#25).
IND = a vector of industry dummies based on two-digit SIC Codes.
YEAR = a vector of year dummies which takes the value of 1 when year = t and 0 otherwise.

TABLE 5
RESULTS OF TESTING HYPOTHESIS 1 (FOREIGN SALES)

$$MV_{it} = \gamma_0 + \gamma_1 FOSA_{it} + \gamma_2 AEARN_{it} + \gamma_3 DIV_{it} + \gamma_4 BVE_{it} + \sum\gamma_4 FIRM_{it} + \sum\gamma_5 YR + \varepsilon_{it}$$

		Dependent Variable = PRICE	
Variable	Pred. Sign	Full Sample	
Intercept	?	20.800	
		(10.649)	***
FOSA	+	.213	
		(3.230)	***
AEARN	+	2.968	
		(9.009)	***
DIV	-	16.450	
		(12.103)	***
BVE	+	-.038	
		(-.612)	
N		545	
Adj. R^2		0.464	
F-Value		43.899	

N is not equal in each regression because of asymmetric reduction in the sample due to missing observations or outlier deletions. T-statistics are in parenthesis. The regression coefficients for the year dummies and industry classifications are not formally presented in the table.

***, **, * indicates that the coefficient estimate is significant at 0.01, 0.05 and 0.1 2-tailed.

MV_{it} = market value of common equity for firm it at time *t* divided by the number of common shares outstanding after year end (#25).

$FOSA_{it}$ = firm i's foreign sales at time t divided by the number of common shares outstanding (#25).

$AEARN_{it}$ = abnormal earnings measured as net income before extraordinary items and discontinued operations, minus 0.12 xBVE.

DIV_{it} = dividends (other than stock dividends) declared on common stock (#21) divided by the number of shares outstanding (#25).

BVE_{it} = equity book value for firm i at time t deflated by the number of shares outstanding (#60/#25).

IND = a vector of industry dummies based on two-digit SIC Codes.

YEAR = a vector of year dummies which takes the value of 1 when year = t and 0 otherwise.

TABLE 6
RESULTS OF TESTING HYPOTHESIS 2 (FOREIGN ASSETS)

$$DEBT_{it} = \gamma_0 + \gamma_1 FATA_{it} + \gamma_2 BETA_{it} + \gamma_3 ROA_{it} + \gamma_4 MTB_{it} + \gamma_5 SIZEit + \sum\gamma_6 FIRM_{it} + \sum\gamma_7 YR + \varepsilon_{it}$$

Dependent Variable = DEBT

Variable [b]	Pred. Sign	Coefficient	
Intercept	?	40.994	
		(-4.462)	***
FATA	+	2.719	
		(2.403)	**
BETA	+	6.018	
		(2.669)	***
ROA	-	-22.805	
		(-3.316)	***
MTB	+	0.552	
		(0.388)	
SIZE	+	53.891	
		(5.216)	***
N		321	
Adj. R^2		0.249	
F-Value		9.17	

N is not equal in each regression because of asymmetric reduction in the sample due to missing observations or outlier deletions. T-statistics are in parenthesis. As in prior research, the regression coefficients and t-statistics for industry and year dummy variables are not reported.
***, **, * indicates that the coefficient estimate is significant at 0.01, 0.05 and 0.1.2-tailed tests.
$DEBT_{it}$ = long-term debt for firm *i* at time *t* scaled by total assets (#9/#6)
FAS_{it} = firm *i*'s identifiable foreign assets at time t scaled by total assets (#6).
$BETA_{it}$ = equally weighted market model beta, obtained from model estimated over the eight year period for firm *i at time t* (a control for systematic risk).
ROA_{it} = firm *i*'s earnings before extraordinary items at time t scaled by total assets.
MTB_{it} = market-to-book ratio for firm *i* at time *t* (#60).
$SIZE_{it}$= logarithm of global sales for firm i at time t (a control for size).
IND = a vector of industry dummies based on two-digit SIC Codes.
YEAR = a vector of year dummies which takes the value of 1 when year = t and 0 otherwise.

TABLE 7
RESULTS OF TESTING HYPOTHESIS 2 (FOREIGN SALES)

$$DEBT_{it} = \gamma_0 + \gamma_1 FOSA_{it} + \gamma_2 BETA_{it} + \gamma_3 ROA_{it} + \gamma_4 MTB_{it} + \gamma_5 SIZE_{it} + \sum\gamma_4 FIRM_{it} + \sum\gamma_5 YR + \varepsilon_{it}$$

Dependent Variable = DEBT [a]

Variable [b]	Pred. Sign	Coefficient	
Intercept	?	-0.268	
		(-.740)	***
FOSA	-	-0.693	
		(-2.185)	**
BETA	+	8.077	
		3.012	***
ROA	-	0.051	
		(-5.028)	***
MTB	+	0.056	
		(7.819)	***
SIZE	+	0.123	
		(3.348)	***
N		683	
Adj. R^2		0.160	
F-Value		11.003	

N is not equal in each regression because of asymmetric reduction in the sample due to missing observations or outlier deletions. T-statistics are in parenthesis. As in prior research, the regression coefficients and t-statistics for industry and year dummy variables are not formally reported.

***, **, * indicates that the coefficient estimate is significant at 0.01, 0.05.

$DEBT_{it}$ = long-term debt for firm *i* scaled by total assets (#9/#6).

$FOSA_{it}$ = firm *i*'s foreign sales at time t scaled by global sales (GDATA1/#6).

$BETA_{it}$ = equally weighted market model beta, obtained from market model estimated over the eight year period for firm *i* (a at time t (a control for systematic risk).

ROA_{it} = firm *i*'s earnings before extraordinary items at time t scaled by total assets (3137/#6).

MTB_{it} = market-to-book ratio for firm *i* at time *t* (#60).

$LnASSET_{it}$ = logarithm of total assets for firm i at time t (a control for size).

IND = a vector of industry dummies based on two-digit SIC Codes.

YEAR = a vector of year dummies which takes the value of 1 when year = t and 0 otherwise.

TABLE 8
LEVERAGE SIZE AND THE EFFECT OF FOREIGN ASSETS ON STOCK PRICE OF THE FIRMS, 1998-2006

$$MV_{it} = \gamma_0 + \gamma_1 FAS_{it} + \gamma_2 EARN_{it} + \gamma_4 BVE\text{-}ADJ_{it} + \gamma_5 DIV_{it} + \sum\gamma_4 FIRM_{it} + \sum\gamma_5 YR + \varepsilon_{it}$$

PANEL A

Leverage Size	Intercept	FAS	EARN	BVE-ADJ.	DIV	Adj. R^2	F	N
High	29.49	33.56	2.70	0.40	20.21	0.601	10.01	72
	(1.51)	(2.10)**	(7.55)***	(2.52)**	(5.07)***			
Medium	27.16	24.14	2.16	0.19	9.85	0.381	7.20	121
	(3.44)***	(2.11)**	(6.45)***	(1.32)	(2.58)**			
Low	-14.09	17.93	4.03	4.46	1.70	0.705	31.72	154
	(-1.92)	(2.55)**	(14.83)***	(12.21)***	(2.16)**			

LEVERAGE SIZE AND THE EFFECT OF FOREIGN SALES ON STOCK PRICE OF THE FIRMS, 1998-2006

$$MVit = \gamma_0 + \gamma_1 FOSA_{it} + \gamma_2 BVE_{it} + \gamma_3 EARN_{it} + \gamma_4 DIV + \sum\gamma_{5k} FIRM_{Fit} + \sum\gamma_{6t} YR_{it} + \varepsilon_{it}$$

PANEL B

Leverage Size	Intercept	FOSA	BE	EARN	DIV	Adj. R^2	F	N
High	27.04	19.82	0.13	1.72	0.47	0.445	13.83	192
	(5.20)***	(2.45)**	(1.07)	(6.38)***	(2.84)***			
Medium	-34.99	21.03	1.37	0.94	9.057	0.720	36.69	180
	(-4.42)***	(2.44)**	(7.97)***	(3.55)***	(16.32)***			
Low	-16.48	21.48	1.02	2.77	4.80	0.664	36.06	231
	(-2.25)**	(3.12)***	(3.85)***	(5.49)***	(13.28)***			

Note: Industry (FIRM) and year (YR) variables are estimated (but suppressed in each of the partition sample.
*. **, and *** indicates statistical significance at the 0.10, 0.05 and 0.011 level.
MV = market value of common shares outstanding at fiscal year-end.
$FOSA_{it}$ = firm *i*'s sales to foreign customers scaled by the number of common shares outstanding (#25).
BVE = book value of common equity as of fiscal year end divided by the number of common shares outstanding (25).
AEARN =abnormal earnings measured as net income before extraordinary items and discontinued operations, minus 0.12
xBVE scaled by the number of common shares outstanding.
DIV_{it} = dividend for firm *I (excluding stock dividend)* at time *t* scaled by the number of common shares outstanding (#25).
BVE-ADJ = book value of equity minus foreign assets for firm i at time t deflated by the number of shares outstanding (#25).
IND = a vector of industry dummies based on two-digit SIC Codes.
YEAR = a vector of year dummies which takes the value of 1 when year = t and 0 otherwise.