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Untaxed and Taxed Entities in the Market for Commercial Real Estate

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This paper is a theoretical examination of untaxed and taxed entities that invest in real estate. The standard advice to real estate investors is to avoid using entities that are subject to taxation (such as C corporations in the U.S.) and employ entities that are not subject to taxation (such as limited liability companies, S corporations, and real estate investment trusts in the U.S.) in order to avoid double taxation of income. This paper shows that, in most situations, untaxed entities place a greater value of a given real estate property than does a taxed entity, which implies that taxed entities are at a distinct disadvantage at competing in the market for property. However, this conclusion is reversed if untaxed entities use a large amount of financial leverage compared to taxed entities and the borrowing rate for both is greater than the risk-free rate.

Keywords

Financial leverage; Asset valuation; Taxation

1. Introduction

Real estate investors are advised to use organizational forms that avoid double taxation and provide for limited liability. For example, the text by Brueggeman and Fisher (2011) includes a lengthy discussion of organizational forms. Entities in the U.S. that are not subject to taxation at the entity level include partnerships, limited liability partnerships, limited liability companies (LLCs), S corporations, and real estate investment trusts (REITs). They state that (2011, p. 579), "A disadvantage of a C corp is that it provides no option for pass-through taxation," and that (p. 578), "The flexibility of pass-through taxation, limited liability, and management structure have made the LLC an increasingly popular choice for ownership entity, especially for the ownership of commercial real estate."

This paper is a theoretical examination of four questions:

- What values do untaxed entities place on real estate investment properties, and how does value depend upon financial leverage?
- What values do taxed entities place on the same real estate investment properties, and how does value depend upon financial leverage?
- How do the answers to these first two questions depend upon whether the interest rate on borrowed funds is at the risk-free rate or at a higher rate?
- Do untaxed entities always place a higher value on a given investment property, or are there circumstances under which the taxed entity places the higher value on a property?

The paper combines the Modigliani-Miller (1958) propositions with regards to financial leverage with the standard capital asset pricing model to answer these questions. The basic result is that, if the interest rate on borrowed funds exceeds the risk-free rate, there are conditions under which the taxed entity will place a higher value on an investment property than will an untaxed entity. Those conditions involve a sizable amount of borrowing by the untaxed entity.

The final section of the paper includes an examination of the rules that govern REITs in several major countries. REITs are a popular choice for an entity that invests in real estate with limited shareholder liability and favorable income tax treatment. Corporate income tax rates for these countries are compared in this section.

2. Modigliani-Miller Propositions

Considerations of financial leverage implicitly or explicitly make use of the propositions of Modigliani and Miller (1958). MM Propositions I and II are as follows.

- The market value of a firm is independent of its capital structure. The basic proposition was demonstrated by assuming no taxation and a constant borrowing and lending rate, but was also demonstrated for the case in which the borrowing and lending rate increases with financial leverage. Alternatively, the average cost of capital is independent of financial leverage. Stiglitz (1969) provides a more general proof of Proposition I.
- The expected rate of return to equity invested in the firm [$E(R_e)$] is equal to expected rate of return in the absence of borrowing [$E(R)$] plus an amount that is a linear function of the ratio of debt to equity. That function is:

$$E(R_e) = E(R) + [E(R) - r_f](D/S), \tag{1}$$

  where r_f is the risk-free borrowing and lending rate, D is debt, and S is equity. $E(R)$ is the rate of return to the asset in the absence of borrowing and [$E(R)$ – r_f] is the risk premium for the investment without leverage. Clearly, the expected rate of return to equity is increased by borrowing if the expected rate of return to the investment without borrowing exceeds the rate of interest on borrowing.

Demonstrations of the MM propositions are included in the Appendix. The Appendix includes a generalization of the MM propositions to the case in which the interest rate on borrowed funds exceeds the (risk-free) lending rate and a generalization of Hamada's (1972) equation for the "beta" of a financial asset with leverage.

A fundamental point in this paper is that the value of a real estate investment is not independent of its capital structure because the borrowing rate is greater than the lending rate, especially if the borrowing rate increases with the loan-to-value ratio. Consider a modification of the demonstration of homemade leverage used by Modigliani and Miller (1958, pp. 270-271) for MM Proposition I. Suppose an investor owns a property (no borrowing) with value V_1 that produces annual income $Y_1 = X$, net operating income plus capital appreciation. Then suppose that this investor decides to sell this property and purchase a portion of the equity in another property with annual income X that is in the same "risk class," and lends the remaining amount of his/her funds to some other investor (e.g., purchases bonds). The investor's return from this alternative investment portfolio is

$$Y_2 = (e_2/E_2)(X - R_B B) + R_L L, \tag{2}$$

where e_2 is the investor's equity investment, E_2 is the total equity in the property, R_B and R_L are the borrowing and lending rates, B is the amount that was borrowed on the property, and L is the amount lent by the investor. The investor receives a share of the return to equity in the property plus interest on the amount lent. Under what conditions will the investor's income from the new portfolio equal X? We know that $V_1 = e_2 + L$ and $V_2 = E_2 + B$. Modigliani and Miller (1958, p. 270) propose homemade leverage where:

$$e_2 = (E_2/V_2)V_1 \text{ and } L = (B/V_2)V_1 .$$

Substitution of these amounts into Equation (2) produces

$$Y_2 = (V_1/V_2)X + (V_1/V_2)B(R_L - R_B) . \tag{3}$$

The arbitrage condition $Y_2 = X$ holds if $R_L = R_B$ and $V_1 = V_2$. This is MM Proposition I. However, if the borrowing rate that was used exceeds the lending rate available to the investor in question, then $Y_2 = X$ if

$$V_2/V_1 = 1 + (B/X)(R_L - R_B) < 1. \tag{4}$$

If the borrowing rate is greater than the lending rate available to the investor, then the value of the property in the new portfolio must be lower than the property with no borrowing, and the reduction in value depends upon the amount that was borrowed and the difference in the two interest rates. The borrowing rate in real estate increases with the loan-to-value ratio, so the lending rate can equal the borrowing rate if somehow the investor loans to some other real estate investors who have applied the same degree of leverage as was applied to the property involved in this example. This is an unlikely scenario, so in this paper, it is assumed that borrowing rates for real estate investors are greater than the lending rates that are available to them.

3. Modigliani-Miller and the Capital Asset Pricing Model

The basic approach in this paper is to embed the leverage question in the single-period capital asset pricing model (CAPM). This method originated with Hamada (1969), and this paper extends some of the results obtained therein. As presented in the text by Luenberger (1998) and many others, the assumptions of the CAPM are well known, and include:

- there are perfect capital markets. Information is available to all at no cost;
- assets are fixed in supply;
- investors are risk averters and maximize expected utility of wealth;
- portfolios are assessed based on expected rate of return and standard deviation of return; and
- the planning horizon is the same for all investors, who have identical estimates of the expected rates of return and standard deviations of returns.

Given these assumptions, the market equilibrium expected rate of return for any risky asset k is:

$$\begin{aligned} E(R_k) &= r_f + \beta_k [E(r_m) - r_f] \\ &= r_f + [\operatorname{cov}(R_k, r_m) / \sigma_m^2][E(r_m) - r_f] = r_f + \lambda \operatorname{cov}(R_k, r_m) \end{aligned} . \quad (5)$$

Here, r_m is the rate of return to the market portfolio, and λ is known as the price of risk. Empirical estimates of β, "beta," for commercial real estate tend to be less than 1.0. For example, Briedenbach, Mueller, and Schulte (2006) estimate a national commercial real estate beta of 0.46 using returns to the NAREIT Index for equity REITs for 1979-2000.

Consider an untaxed entity that invests in commercial real estate.The expected rate of return to that investment $E\ (R_{ut})$ is

$$E(R_{ut}) = [E(X) - iD_{ut}] / S_{ut}, \quad (6)$$

where X = net operating income for the year plus any percentage change in market value, D_{ut} is the amount borrowed at interest rate i, and S_{ut} is the equity investment. Interest rate i is the interest rate on borrowed funds for real estate investment, and assumed to be equal to or greater than the risk-free interest rate. The real property serves as collateral for the loan, so the interest rate charged to real estate investors is generally lower than the interest rate on unsecured personal loans. "Homemade leverage" in the form of personal loans normally cannot be employed in the case of real estate investments. The risk-free rate is the lending rate in this paper because investors can choose to invest in short-term government bonds. The *after-tax* expected rate of return to the equity invested in the property for a taxed entity is

$$E(R_t) = [E(X)(1-t) - i(1-t)D_t] / S_t, \quad (7)$$

where t is the tax rate and S_t is the equity investment. Interest is a deductible expense. Deductions for commercial real estate in the U.S. also include depreciation. The sum of depreciation deductions is "recaptured" when the property is sold. These complications are omitted in this paper. The tax rate in this model is the tax imposed on the investing entity such as a corporation that is subject to corporate income tax, and assumed to be the same for all forms of income. A further assumption about taxes is that all individuals are subject to the same personal income tax rate. This assumption means that the personal income tax drops out of the analysis.

Hamada's (1969) method is to solve Equations (6) and (7) for $E(X)$, insert the basic CAPM equilibrium condition from Equation (5), and equate the results:

$$S_{ut}[r_f + \lambda \operatorname{cov}(R_{ut}, r_m)] + iD_{ut} = [S_t /(1-t)][r_f + \lambda \operatorname{cov}(R_t, r_m)] + iD_t . \quad (8)$$

The two covariance terms are transformed as follows:

$$\operatorname{cov}(R_{ut}, r_m) = \operatorname{cov}(X, r_m) / S_{ut} \quad \text{and} \quad (9)$$

$$\text{cov}(R_t, r_m) = (1-t)\,\text{cov}(X, r_m)/S_t\,. \tag{10}$$

Substitution of these results into Equation (8) produces

$$S_{ut} r_f = S_t r_f\,/(1-t) + i(D_t - D_{ut})\,. \tag{11}$$

Three special cases of Equation (11) are of interest as preliminary steps.

1. The value of the property in the absence of borrowing is simply $V_{ut} = S_{ut}$ and $V_t = S_t$. In this case, V_t = (1-t) V_{ut}. If no borrowing takes place, the untaxed entities place a higher value on properties.

2. With borrowing, the value of the property is $V_{ut} = S_{ut} + D_{ut}$ and $V_t = S_t + D_t$. Assume that borrowing is at the risk-free rate r_f. In this case, r_f drops out of Equation (11) and

   $$V_t = V_{ut}(1-t) + tD_t\,. \tag{12}$$

   Because of MM Proposition I, V_{ut} does not depend upon financial leverage and is therefore a constant. Equation (12) is a version of the familiar result that the tax benefits of borrowing at the risk-free rate equal tD_t. The value of the property for the taxed entity equals the value of the property for the untaxed entity only if borrowing is 100% of the property value. This condition ordinarily cannot be met, so if borrowing is done at the risk-free rate, the untaxed entity places a higher value on a property than does the taxed entity.

3. Now assume that borrowing is done at interest rate i, greater than r_f. This is the more realistic case. Assume first that the untaxed entity does not borrow. With $D_{ut} = 0$, manipulation of equation (11) produces

   $$V_t = V_{ut}(1-t) + D_t[1 - i(1-t)/r_f\,]\,. \tag{13}$$

   Note that Equation (13) reduces to Equation (12) if $i = r_f$. The value of the property for the taxed entity changes with borrowing according to

   $$dV_t\,/\,dD_t = 1 - i(1-t)/r_f\,,$$

   so the value of the property is increased by borrowing only if the after-tax borrowing rate i(1-t) is less than the risk-free rate. In this case, because borrowing is now more costly with $i > r_f$, the taxed entity must borrow more than 100% of V_{ut} in order to make $V_t = V_{ut}$. For example, if $t = 0.35$, $r_f = 0.03$, and $i = 0.04$, $V_t = V_{ut}$ when $D_t/V_{ut} = 2.625$.

As a final and most important case, assume that the untaxed entity does borrow in order to assume more risk and increase the expected rate of return to equity according to MM Proposition II. Both entities borrow at interest rate i. In this case, the value of the property for the untaxed entity declines with leverage according to

$$V_{ut} = V_{D=0} + D_{ut}[1 - i / r_f], \tag{14}$$

and the value of the property for the taxed entity is a function of borrowing according to

$$V_t = (1-t)V_{D=0} + D_t[1 - i(1-t) / r_f]. \tag{15}$$

Here, $V_{D=0}$ is the value of the property for the untaxed entity with no borrowing (D=0). These results can be found by using the same procedure as in Equations (5) to (11). Note that Equation (14) reduces the MM Proposition I if $i = r_f$. Jaffe (1991) shows that the values of untaxed entities are invariant with respect to leverage if borrowing and lending rates are equal. Also, Equation (15) is identical to Equation (13). A demonstration of Equation (14) is provided in the Appendix. The value of the property for the taxed entity begins at a lower amount compared to the value of the property for the untaxed entity, $(1\text{-}t)V_{D=0}$ versus $V_{D=0}$, but this value for the taxed entity increases with leverage if $i(1\text{-}t)$ is less than r_f, and otherwise is constant [if $i(1\text{-}t)= r_f$] or declines with leverage at a slower rate compared to the value of the property for the untaxed entity; $1 - i(1\text{-}t)/r_f$ versus $1 - i/r_f$. The case in which the after-tax borrowing rate $i(1\text{-}t)$ is greater than the risk-free rate r_f is most likely. Examples of these two value functions are depicted in Figure 1.

Figure 1 shows that the value of the property for the taxed entity exceeds the value of the property for the untaxed entity if borrowing by the untaxed entity is sufficiently large. If the two entities borrow the same amount, and equating Equations (14) and (15), the values are equal at

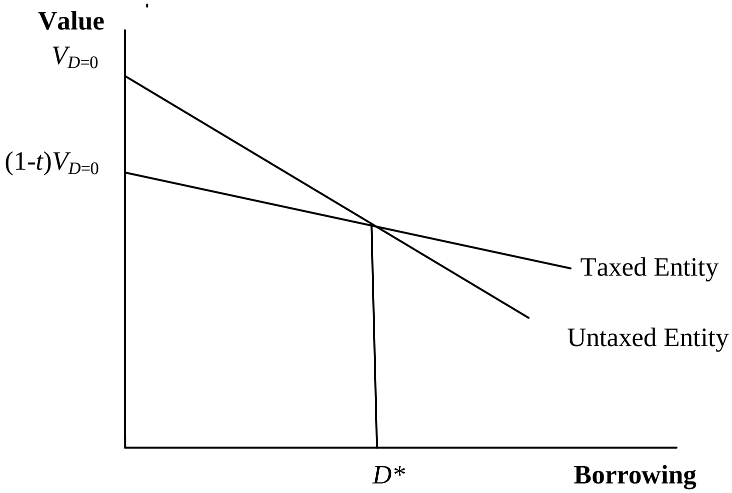
$$D / V_{D=0} = r_f / i. \tag{16}$$

For example, if $r_f = 0.03$ and $i = 0.05$, then the two entities attach the same value to the property if both borrow $D/V_{D=0} = 0.60$; i.e. borrowing equal to 60% of the value of the property for the untaxed entity in the absence of borrowing. If both entities borrow more than this amount, the taxed entity places the greater value on the property.

4. Market Equilibrium

Thus far the paper has considered only the individual property and individual real estate investing firm. Now consider the market for a particular type of commercial real estate. The supply of this asset is fixed (as are the supplies of all other assets), and the total value of the properties of this type is small in relationship to the total value of all assets. There are many investing firms. Firms whose returns are untaxed may choose to borrow in order to invest in this type of commercial real estate and increase the expected rate of return to equity. Borrowing by untaxed entities may enable the taxed entity to compete against the untaxed entity in the market for real estate investments by increasing their ability to make higher bids for property. What is the market equilibrium value of a particular type of commercial real estate, given that (potentially) two different types of investors are in the market?

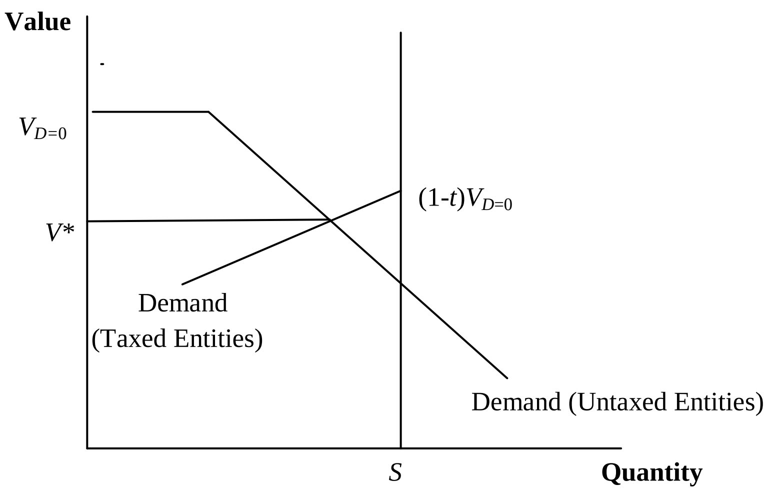
Figure 1 Value Functions for Untaxed and Taxed Entities



First, it is reasonable to presume that the interest rate for borrowing exceeds the risk-free rate. Market equilibrium is established by the willingness of the marginal investor to pay for the properties. Some tax-advantaged entities such as pension funds borrow little or nothing and have high reservation prices (but can purchase properties for less than their reservation prices).Other tax-advantaged entities borrow a great deal of money because they are equity constrained, or simply because they wish to increase the expected rate of return to equity by using financial leverage. Under these conditions, the taxed entities may be able to compete for investment properties. Figure 1 shows that if the marginal untaxed entity borrows amount D^*, then the taxed entity that borrows D^* is also a marginal investor. Indeed, the intersection of the two valuation functions in Figure 1 establishes the limits of borrowing by the untaxed entities. Untaxed entities that borrow more than D^* will lose out to taxed entities. Therefore, both untaxed and taxed entities can co-exist in the market for investment properties.

Figure 2 displays an example of equilibrium in the market for a particular type of commercial real estate property. Supply is fixed at S. The demand for this type of property by untaxed entities has a horizontal portion at $V_{D=0}$ for those entities that do not borrow, and then the demand price declines with quantity as untaxed entities that borrow are added - in order of the amount that they choose to borrow. The demand for property by taxed entities assumes that the after-tax cost of borrowing is greater than the risk-free interest rate, and so is drawn with a slight positive slope. The demand price for taxed entities rises with quantity because these entities are added from the right-hand side of the diagram in the order of the amount they choose to borrow (i.e., those that choose not to borrow are added first). Equilibrium is established at *V**, with some of the properties purchased by the taxed entities that choose to borrow the least.

Figure 2 Market for Real Estate Properties



Is the situation depicted in Figure 2 likely to occur? In particular, does the untaxed entity that borrows a substantial amount place a lower value on properties than the taxed entity that does not borrow (or borrows very little)? The valuation functions, Equations (14) and (15), can be used for simple numerical examples. From Equation (15), the taxed entity that does not borrow values a property at $V_t/V_{D=0} = (1-t)$. Manipulation of Equation (14) produces

$$V_{ut} / V_{D=0} = 1/\{1 - m[1-(i/r_f)]\}, \tag{17}$$

where *m* is the loan-to-value ratio (with borrowing). Many untaxed entities do a substantial amount of borrowing. For example, Chan, Erickson, and Wang (2003,) show that 187 U.S. REITs in 2000 borrowed an *average* of 50% measured as long-term debt to total capital and 46% measured as long-term debt to total market capitalization. An earlier study by Maris and Elayan (1990) found that 310 U.S. REITs in their sample borrowed an average of 36% in 1987, but that 16% of these companies borrowed more than 70% (measured as the ratio of debt to debt plus market value of equity). Suppose that the marginal untaxed entity borrows 75% and that the corporate income tax rate is 35% (the U.S. federal tax rate). These figures imply that $V_{ut}/V_{D=0}$ = (1-t) if the ratio of the borrowing rate to the risk-free lending rate (i/r_f) is 1.63. This means that, for example, if the risk-free rate is 3.00%, the borrowing rate can be as low as 4.89% for the taxed entity that does not borrow to place an equal value on an investment property as the marginal untaxed entity. In short, given that some untaxed entities employ substantial amounts of financial leverage, it is quite possible that taxed entities can effectively compete in the market for investment properties. Indeed, as shown in the next section, the corporate income tax rate is lower in many of the other countries in which untaxed REITs are allowed.

5. Implications for Foreign Investors

The model presented in this paper makes a simple distinction between untaxed and taxed entities, where the main distinction is between entities that are or are not subject to corporate income tax (with deductions for interest payments). Most nations have a corporate income tax. The KPMG (2009) survey of corporate tax rates includes 116 nations – from Afghanistan to Zimbabwe. Six of these impose no corporate income tax (Bahamas, Bahrain, Bermuda, Cayman Islands, Guernsey, and Isle of Man). The highest corporate income tax rate reported by KPMG (2009) is 55% in South Africa and United Arab Emirates. KPMG (2009) notes that some of these countries are limiting deductions for interest payments by corporations. Most nations permit the ownership of real estate by individuals and partnerships with tax liability only at the individual level. However, ownership by individuals or partners exposes one to unlimited liability whereas ownership of shares in a corporation does not. Consequently, many countries have forms of real estate ownership that combine exemption from income taxation and limited liability. Limited partnerships and LLCs are examples in the U.S. The REIT is an increasingly popular ownership vehicle around the world that combines limited liability and favorable tax treatment at the entity level. See Chan, Erickson, and Wang (2003) for a detailed survey of REITs in the U.S. and a discussion of the adoption and growth of this type of entity in several nations around the world.

This section has three purposes. The first is to present the basic features of REIT entities and corporate taxes in some major countries to illustrate how the model in this paper can be applied in these countries. The second purpose is to show some of the complexities involved in tax-advantaged REIT entities. The third is to describe the tax treatment accorded foreign investors in REITs in these same countries.

Table 1 Real Estate Investment Trust Features and Corporate Tax Rate: Various Countries

Country	Year of REIT	Leverage Limit	Dist'n of Op. Income	Capital Gain on Property	Income Tax on REIT	Capital Gain on Shares[a]	Foreign Share Holders	Corp. Tax Rate %
Belgium	1995	65%	80%	Reinvest in 4 yrs.	Exempt	No tax	Div. taxed[b] CG no tax	33.95
France	2003	None	85%	50% can be dist.	Exempt	Tax 30.1%	Div. taxed CG no tax	33.33
Germany	2007	55% Prop val.	90%	Must dist. 50%	Exempt	Tax 26.375%	Taxed CG may be exempt	29.44
Italy	1994	None	85%	No req. Taxed	Exempt	Taxed	Taxed	31.4
Netherlands	1969	60%	100%	Tax free CG reserve	Exempt	Taxed	No tax	25.5
Spain	2009	70%	90%	19% tax	19%	Div. no tax CG tax w/ exempts	Div. no tax CG tax w/exempts	30
UK	2007	Interest Cover >1.25	90%	No req. No tax	Exempt	Taxed	Taxed	28
Australia	1985	75%	100%	Must Dist. All	Exempt	Taxed	Div. no tax CG tax	30
Hong Kong	2003	45%	90%	No req. No tax	Exempt	No tax	No tax	16.5
Japan	2000	None	90%	Must dist. 90%	Exempt	10% to 2011	Div. tax CG no tax	40.69
Singapore	2002	35%	90%	No req. No tax	Exempt	No tax	No tax	17
South Korea	2001	10x net Worth	90%	Must dist. 90%	Exempt	No tax	Div. tax CG no tax	24.2
Canada	2007	None	100%	No req. No tax	Exempt	Taxed	Taxed	33
U.S.	1960	None	90%	CG not dist. Taxed at CG rate.	Exempt	Tax 35% (ST) 15% (LT)	Div. taxed CG taxed at 35%	40

Note: [a] Treatment of individual shareholders.
[b] Exempt from tax if REIT is 60% residential.

Sources: KPMG (2009, 2010).

Table 1 displays some information about REITs and the corporate income tax rate for fourteen major nations as provided by KPMG (2009, 2010).[1] The corporate income tax rate is a typical rate as estimated by KPMG (2009) to include national and state and local taxes. For example, the federal income tax rate in the U.S. is 35%, but KPMG states the rate as 40% as typical for the U.S. The corporate tax rate varies from a low of 16.5% in Hong Kong and 17% in Singapore to a high of 40% in the U.S and 40.69% in Japan. KPMG (2009) notes that interest expenses are deductible, but some countries currently are limiting the deduction in response to budget pressures. Twelve of the corporate income tax rates in Table 1 are less than the 35% used in the numerical example in the previous section, so it is possible that taxed entities in these countries can be more competitive in investment property markets than are taxed entities in the U.S. However, as shown in Table 1, nine of these countries place limits on the amount of leverage that REITs are permitted to use. It is likely that the marginal untaxed entity borrows to the allowable limit.

Consider the example of Singapore, which has a corporate income tax rate of 17% and employs a limit on REIT financial leverage of 35%. Insertion of these values into Equation (17) above produces a ratio of the borrowing rate to the risk-free lending rate of 1.59 at which $V_{ut}/V_{D=0}$ equals (1-t) = 0.83. At this ratio of interest rates, the untaxed entity at the limit of financial leverage and the taxed entity that does not borrow place the same value on an investment property. For example, if the risk-free rate is 3.00%, the borrowing rate implied is 4.77%.

The rules that govern REITs vary from country to country, but (except for Spain) they all include an exemption from income tax of dividend income paid to shareholders. Table 1 shows that the percentage of operating income that must be distributed to shareholders varies from 80% (Belgium) to 100% (Australia and Canada). Operating income that is not distributed is taxed. The rules that govern capital gains earned by REITs on the sale of properties considerably vary. Some countries require that those gains must be distributed to shareholders in the same percentage as operating income (with undistributed capital gains subject to taxation), while other countries require that some or all of the capital gains must be reinvested by the REIT. Five countries of the fourteen place no obligation on the use of capital gains; these gains are taxed in Italy and Spain and not taxed in the Netherlands, Hong Kong, and Singapore. The financial leverage employed by REITs is limited in nine countries, but not in the other five. Dividends received by individual domestic investors are taxed at normal income tax rates in thirteen countries (except Spain), but the treatment of capital gains on the disposal of shares varies. Those capital gains are taxed in the ordinary way in eight of the

[1] REITs with similar features exist in other nations, including Switzerland, New Zealand, Malaysia, South Africa, Taiwan, India, Turkey, Brazil, Bulgaria, and are soon to appear (or have already been established) in Pakistan, Philippines, United Arab Emirates, and Nigeria.

countries, but exempt from taxation in Belgium, Hong Kong, and Singapore and receive favorable tax treatment in Spain, Japan, and South Korea.

The tax treatment of individual foreign investors in REITs varies from country to country. Both dividends and capital gains upon disposal of shares are untaxed by the Netherlands, Hong Kong, and Singapore. Foreign investors are taxed by the other eleven countries, and the actual tax rate is determined by tax treaties. Some countries of these eleven provide a degree of favorable tax treatment of dividends (Italy, Spain, Australia, Japan) and/or capital gains upon disposal of shares (Germany, Spain, Japan, South Korea).

Foreign investors in U.S. REITs are subject to a 30% withholding rate on dividend income, which is taxed as ordinary income (subject to tax treaties). Capital gain distributions from the REITs are subject to a 35% withholding rate and taxed at the corporate income tax rate (35%). Capital gains upon disposal of shares are subject to a 10% withholding rate unless the REIT shares are traded on a regular securities market and the investor owns 5% or less of the shares *or* if the REIT is domestically controlled. In any case, capital gains upon disposal of shares are taxed at the corporate income tax rate of 35%. In short, capital gains received by individual foreign investors are subject to the corporate income tax, whereas domestic individuals are taxed at 15% on long-term capital gains.

6. Conclusion

This paper considers the market for commercial real estate in a world in which two types of investment entities exist; those that are not subject to taxation at the entity level, and those that are subject to taxation. As the real estate textbooks point out, untaxed entities have a substantial advantage over taxed entities in that they can provide greater cash flows to equity investors. This advantage translates into higher reservation property values, and therefore a greater ability to acquire investment properties. The dominance of untaxed entities in the market for investment properties is always found to be present if borrowing can be done at a risk-free rate of interest. However, if borrowing for real estate investment purposes must be done at an interest rate that exceeds the risk-free lending rate, then the dominance of untaxed entities in the market depends upon their level of borrowing. The simple model in this paper suggests that taxed entities can compete in the market for investment properties, but Section 5 shows that the real world of taxes and rules that apply to untaxed entities is complex and varies from country to country. The model in this paper represents only a starting point for more realistic models applied to particular situations.

So, why do many real estate investors borrow? A full answer to this question is beyond the scope of this paper. Taxation of the investing entity, such as a corporation subject to the corporate income tax, is one big reason. However, other investing entities use forms of business organization that are not subject to the corporate tax (such as REITs or LLCs). Interest on borrowing does not provide a tax deduction because there is no tax at the entity level. And yet many of these companies borrow. The reason simply may be that these companies are aware of the risk-return tradeoff and select the desired expected rate of return to equity and attendant level of risk. Market equilibrium in the market for (a fixed supply of) investment properties is established by the willingness of the marginal investment entity (untaxed or taxed) to pay.

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Appendix: Value, Risk, and Expected Return

This Appendix provides a demonstration for Equation (14) in the text for the value placed on a real estate investment by an untaxed entity that borrows at interest rate *i*, which is greater than the risk-free rate r_f. The Appendix also provides a demonstration of MM Propositions I and II. The expected rate of return for the untaxed entity that does not borrow is

$$E(R_{nd}) = E(X)/S_{nd} = r_f + \lambda \operatorname{cov}(R_{nd}, r_m), \tag{A1}$$

where *nd* stands for "no debt" and the other symbols are as defined in the text. The expected rate of return for the untaxed entity that does borrow amount *D* at interest rate *i* is

$$E(R_d) = [E(X) - iD]/S_d = r_f + \lambda \operatorname{cov}(R_d, r_m), \tag{A2}$$

where *d* stands for debt. Interest paid is not a deductible expense because the entity is not subject to income taxation.

The Hamada (1969) procedure is to solve both (A1) and (A2) for E(X) and equate the results:

$$S_{nd}[r_f + \lambda \operatorname{cov}(R_{nd}, r_m)] = S_d[r_f + \lambda \operatorname{cov}(R_d, r_m)] + iD. \tag{A3}$$

The covariance terms are transformed to be $\text{cov}(R_{nd},r_m) = \text{cov}(X,r_m)/S_{\text{nd}}$ and $\text{cov}(R_d,r_m) = \text{cov}(X,r_m)/S_d$, so

$$S_{nd} r_f = S_d r_f + iD. \tag{A4}$$

The value of the property in the absence of debt is $V_{nd} = S_{nd}$, and the value of the property with debt is $V_d = S_d + D$. Therefore, from (A4),

$$V_d = V_{nd} + D(1 - i / r_f). \tag{A5}$$

This is Equation (14) in the text. Note that, if $i = r_f$, Equation (A5) reduces to $V_d = V_{nd}$, which is MM Proposition I.

The effect of leverage on the expected rate of return for the untaxed entity can be derived. Equation (A1) can be rewritten as

$$E(R_{nd}) = r_f + \lambda\,\text{cov}(X, r_m) / S_{nd}, \tag{A6}$$

and Equation (A2) can be restated as

$$E(R_d) = r_f + \lambda\,\text{cov}(X, r_m) / S_d. \tag{A7}$$

Subtraction of (A6) from (A7), along with the result (A4), produces

$$E(R_d) - E(R_{nd}) = \lambda\,\text{cov}(X, r_m)[(S_{nd} - S_d) / S_d S_{nd}]. \tag{A8}$$

$$= \lambda\,\text{cov}(X, r_m)[(iD / r_f) / S_d S_{nd}] \tag{A9}$$

From (A1) and the transformation of the covariance term,
$\lambda\text{cov}(X,r_m) = S_{nd}[E(R_{nd}) - r_f]$, so

$$E(R_d) = E(R_{nd}) + [E(R_{nd}) - r_f][i / r_f](D / S_d). \tag{A10}$$

If $i = r_f$ equation (A10) is the standard MM Proposition II for the effect of leverage on the expected rate of return to equity. If the borrowing rate exceeds the risk-free rate, then the expected rate of return to equity must increase with financial leverage at a greater rate to compensate for the higher cost of borrowing. This result corresponds to the result in Equation (A5) that the value attached to the asset declines as borrowing increases if the borrowing rate exceeds the risk-free rate.

The expected rate of return to equity for the taxed entity is found by using the same procedure as in Equations (A6) – (A10), and is:

$$E(R_d) = E(R_{nd}) + [E(R_{nd}) - r_f][i(1 - t) / r_f](D / S_d). \tag{A11}$$

Here, $E\ (R_{nd})$ is the expected rate of return for the taxed entity with no borrowing. This result reduces to the standard MM Proposition II if the after-tax cost of borrowing equals the risk-free rate. Equation (A11) shows that taxed entities can also increase the expected return to equity by taking on more financial leverage. This result holds whether the after-tax cost of borrowing is greater than, equal to, or less than the risk-free rate – provided that the expected rate of return without borrowing exceeds the risk-free rate. Recall that the value of the property for the taxed entity declines with leverage if $i\,(1\text{-}t) > r_f$.

Equation (A11) is a slight generalization of what is known as Hamada's (1972) equation for the "beta" of a financial asset with leverage. Substitution of $r_f + \beta\,[E\,(r_m) - r_f]$ for $E\,(R_{nd})$ produces

$$E(R_d) = r_f + \beta\{1 + [i(1-t)/r_f)]D/S_d\}[E(r_m) - r_f]. \qquad \text{(A12)}$$

Hamada's equation for "beta" with leverage is

$$\beta_L = \beta[1 + (1-t)D/S_d].$$