WP 30_11

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FEE STRUCTURE, FINANCING, AND INVESTMENT DECISIONS: THE CASE OF REITS

Fee Structure, Financing, and Investment Decisions: The Case of REITs

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Abstract

We propose a model to show how the fee structure of listed Real Estate Investment Trusts (REITs) can increase instead of decrease Management Company opportunistic behaviors. Distinguishing between performance fees paid on the fund market value and management fees paid either on the Net Asset Value (NAV) or on the Gross Asset Value (GAV), we show that only the former aligns the Management Company and shareholder interests. In particular, we demonstrate that management fees lead Management Companies to make suboptimal financing and investment decisions in order to maximize their own wealth at the expense of shareholders. We test the predictions of the model empirically using a panel of Italian listed REITs.

JEL Classification: G20, G23, G28, C23

Keywords: Real Estate Investment Trusts, Fees, Debt, Investment

Acknowledgements: We are grateful to all the members of the finance group at the Department of Management, University of Bologna for their helpful comments. We would also like to thank Massimiliano Castellani (Department of Economics, University of Bologna), Paolo Foschi (Department of Statistics, University of Bologna), David Hillier (University of Strathclyde, Glasgow) and Joseph Tanega (Department of Advanced Legal Studies, University of Westminster, London) for their advice. Lastly, we are also indebted to Marco Savioli (Department of Private Law, University of Siena) for his assistance. The usual disclaimers apply.

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-1- Introduction

This paper focuses on the relationship among the REIT fee structure and the two primary Management Company decision variables: debt issues and investments. A fee structure based on NAV or GAV may lead Management Companies to suboptimal investment and financing decisions. This specific topic belongs to the literature on REITs that has recently developed due to the increasing popularity of these investment instruments among investors.

REITs are usually closed-end funds. Hence, most articles focus on the closed-end fund discount puzzle (Lee et al. 1991; Malkiel 1995; Dimson and Minio-Kozerski 1999). REIT discount can be explained by size, leverage, concentration (in terms of sector and location), and overhead expenses (Capozza and Lee 1995), presence of outside directors (Friday and Sirmans 1998), ownership structure (Friday and Sirmans 1998; Capozza and Seguin 2003), entrepreneurial ability of the fund management (Adams and Venmore-Rowland 1990), and investor overreaction (Barkham and Ward 1999).

Some other contributions focus on REIT performances and their determinants. Earlier studies focus on the performances of US REITs (Kuhle et al. 1986; Firstenberg et al. 1988; Chan et al. 1990; Sagalyn 1990; Peterson and Hsieh 2003). Recent studies find small abnormal returns in international real estate markets (Ling and Naranjo 2002; Bond et al. 2003). REIT performances are generally explained by momentum, size, turnover and analyst coverage (Chui et al. 2003), diversification and liquidity effects (Capozza and Seguin 1999), external advisory contracts (Capozza and Seguin 2000), insider ownership (Capozza and Seguin 2003; Han 2006), institutional ownership (Wang et al. 1995), and independent boards (Ghosh and Sirmans 2003; Feng et al. 2005).

Jenkins (1980), Fletcher and Diskin (1994) and Capozza and Seguin (2000) study the interrelations between fee structure and debt policy. Compensating Management Companies on total asset value is an incentive for them to increase the fund asset value by means of debt issues (even beyond any consideration on the optimal capital structure).

Our study focuses on this stream of research and asserts that REIT fee structures drive not only Management Company financial decisions but also their trading policy. Our model shows that performance fees paid on the fund market value align the Management Company and shareholder interests. Conversely, management fees paid on NAV or GAV lead Management Companies to suboptimal financing and investment decisions in order to receive more fees.

To test our model, we use data on the Italian REITs during the period between 2006 and 2009. Concentrating on Italian funds provides us with an ideal setting for the analysis of the interrelation between REIT fee structure and management decisions.

- Italian families are characterized by a high propensity for real estate investments[1]. According to a Bank of Italy survey (2009), 61% of an Italian family's total assets are represented by real estate

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[1] In 2008, the real estate division represented 19.5% of the Italian GDP.

investments. In Italy, the ratio of real estate investments to disposable income is 4. In France and Germany this ratio is equal to 2.5 and 3.1 respectively.

- Despite the importance of the real estate sector in Italy, empirical results on REITs are still missing (a few exceptions are Benedetto and Morri 2009; Biasin et al. 2010; Biasin and Quaranta 2010; Lee and Morri 2009).

- The fee structure is usually considered in the framework of agency problems (Fletcher and Diskin 1994; Capozza and Seguin 2000; Alshimmiri 2004). Several studies denounce low protection and a high exposure to expropriation risk for the Italian (minority) shareholders (La Porta et al. 1998; Melis 2000; Bigelli and Mengoli 2004). In this context, REIT shareholder interests may not be effectively safeguarded.

This paper is organized as follows: section 2 presents a theoretical model for the REIT fee structure; section 3 describes the empirical setup used to test the theoretical model; section 4 states a set of testable hypotheses and presents the results of our empirical analysis; section 5 draws the conclusions.

-2- Theoretical model

In this section, we present a model, which forms the basis of our regression analysis.

Management Companies are in charge of making investment and financing decisions in the interests of shareholders. As in all corporations, the separation of ownership (REIT shareholders) and control (Management Company) often leads to agency problems. Agency problems occur when managers have an incentive to pursue their own interests instead of shareholder interests (Berle and Means 1932; Jensen and Meckling 1976). Several academics have suggested mechanisms to prevent managers from maximizing solely their own utility (Fama and Jensen 1983; Jensen and Ruback 1983; Agrawal and Mandelker 1987). These devices can be either external (such as the market for corporate control) or internal (such as a board of directors or managerial remuneration). Unfortunately, if these devices are not well calibrated, manager decisions can be distorted and agency problems intensified. Our work is based on this consideration. We analyze how the REIT fee structure can induce the Management Company to make suboptimal investment and financing decisions, from a shareholder's perspective.

We assume the fund market value to be a function, v, of Management Company investments, $I \in R^{+\,2}$, and debt, $D \in R^{+}$, policies.

- On one hand, I optimal level can be obtained ordering investments by their incremental rate of return and then taking on the investments until the incremental rate of return is greater or equal to the capital market rate. If the incremental rate of return on investments is below the capital market rate, the Management Company should distribute cash to the REIT shareholders instead of investing it: the owners are better off by investing the cash directly in the capital market.

- On the other hand, D is the optimal level of debt that coincides with the minimum point on the cost of capital curve. If a fund is financed at a less than the optimal level of debt, the Management Company can

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[2] The model can also be expressed in terms of net investments. In that case, $I \in R$.

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raise the fund value by increasing D (thus, lowering the cost of capital). This point is in contrast to the Modigliani-Miller Theorem (1958) on capital structure and coherent with the traditional view (Durand 1959; Robichek and Myers 1966; Stiglitz 1974). More specifically, capital structure is important because several deviations from perfect market conditions may occur in the real world.

To operationalize these concepts, let $v(I,D)$ be twice continuously differentiable strictly concave on the

non-negative orthant with an interior maximum. We can use an additively separable function for simplicity,

$$v(I,D) = v^1(I) + v^2(D). \tag{1}$$

Since v is strictly concave, the first-order necessary and sufficient conditions (FOCs) for maximization are,

$$
\begin{aligned}
v_I &= \frac{\partial v^1(I^*)}{\partial I} = 0 \\
v_D &= \frac{\partial v^2(D^*)}{\partial D} = 0
\end{aligned}
, \tag{2}
$$

where v_I and v_D indicate partial derivatives evaluated at the point in which v reaches its maximum value, (I^*, D^*).

Another characteristic of REITs, which is important in developing our model, is the NAV. The NAV is the net fair value of the fund determined periodically (usually every six months) by independent experts. The NAV represents the fundamental value of the REIT and for this reason it should be in line with the fund market value. However, the empirical evidence presented in the introduction section shows that REITs are generally quoted at a discount from NAV. This discount is sometimes huge.

In general, it is reasonable to think that independent experts evaluate the fund on the basis of the investments made by the Management Company. As long as the independent experts believe that the Management Company chooses investments which have an incremental rate of return above the capital market rate, their valuation of NAV increases, otherwise their valuation of NAV decreases[3]. Thus, we assume the NAV to be a concave function of I, $n(I)$. Finally, the GAV can be obtained as an accounting identity by summing NAV and debt, $g(I,D) = n(I) + D$.

The Management Company should choose the level of I and D that maximizes shareholder wealth, i.e., I^* and D^*. However, if the REIT fee structure does not align the Management Company and shareholder interests, the formers may be tempted to choose I and D so that their wealth is maximized, i.e., I^M and D^M.

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[3] Obviously, if we considered the time effect in a dynamic model, which we do not do, the valuation of NAV could change because of changing economic conditions.

In general, REIT fees can be categorized in two main classes: management fees and performance fees[4].

- Management fees are generally paid once a year (sometimes twice) as a fixed percentage of NAV or GAV.

- Performance fees are generally composed of periodic fees (usually paid once a year) and final fees (paid at the end of the fund life). They are based on agreed measures of performance, generally expressed as a function of the fund internal rate of return or market value[5]. In reality, in some cases performance fees are sometimes paid on NAV or GAV. In this circumstance, there is not a significant difference between management and performance fees. For this reason, in our model we only consider performance fees that are paid on the fund market value.

Since the REIT fee structure may differ among funds, there are at least three possible cases to consider for the Management Company objective function. In the first case, the Management Company receives only a performance fee paid on the fund market value (case 1). In the second and third case, the Management Company receives both a performance fee and a management fee either on NAV (case 2) or GAV (case 3).

- **Case 1 – The Management Company receives only a performance fee, $\pi \in (0,1)$**

The Management Company objective function is

$$m(I, D; \pi) = \pi \left[v^1(I) + v^2(D) \right].$$ [3]

Since m is strictly concave, the first-order conditions for maximization are necessary and sufficient,

$$
\begin{aligned}
m_I &= \pi \frac{\partial v^1(I^M)}{\partial I} = 0 \\
m_D &= \pi \frac{\partial v^2(D^M)}{\partial D} = 0
\end{aligned}
$$ [4]

As both members of the previous two expressions can be divided by π without affecting the results, the FOCs of this problem are identical to those in system [2] and the following observation is straightforward.

- **Observation 1** – If the Management Company receives only a performance fee on the fund market value, the Management Company and shareholder interests are aligned, and the Management Company chooses the optimal level of investment and debt.

Thus, in case 1, $I^M = I*$ and $D^M = D*$.

- **Case 2 – The Management Company receives a performance fee, $\pi \in (0,1)$, and a management fee on NAV, $\phi \in (0,1)$**

The Management Company objective function is

$$m(I, D; \pi, \phi) = \pi \left[v^1(I) + v^2(D) \right] + \phi n(I).$$ [5]

Since m is a sum of a strictly concave function and a concave function, it is a strictly concave function.

Thus, the first-order necessary and sufficient conditions for maximizing m are,

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$$m_I = \pi \frac{\partial v^1(I^M)}{\partial I} + \phi \frac{\partial n(I^M)}{\partial I} = 0$$
$$m_D = \pi \frac{\partial v^2(D^M)}{\partial D} = 0$$

[6]

The optimal choice of I^M and D^M depends on the value of the parameter ϕ. To determine how I^M and D^M respond to changes in ϕ, we differentiate the FOCs with respect to ϕ,

$$m_{II} \frac{dI^M(\phi)}{d\phi} + m_{I\phi} = \left(\pi \frac{\partial^2 v^1(I^M)}{\partial I^2} + \phi \frac{\partial^2 n(I^M)}{\partial I^2} \right) \frac{dI^M(\phi)}{d\phi} + \frac{\partial n(I^M)}{\partial I} = 0$$
$$m_{DD} \frac{dD^M(\phi)}{d\phi} + m_{D\phi} = \left(\pi \frac{\partial^2 v^2(D^M)}{\partial D^2} \right) \frac{dD^M(\phi)}{d\phi} = 0$$

[7]

where all partial derivatives are evaluated at the point (I^M, D^M).

Solving the previous system for $\frac{dI^M(\phi)}{d\phi}$ and $\frac{dD^M(\phi)}{d\phi}$, we have

$$\frac{dI^M(\phi)}{d\phi} = -\frac{m_{I\phi}}{m_{II}} = -\frac{\dfrac{\partial n(I^M)}{\partial I}}{\left(\pi \dfrac{\partial^2 v^1(I^M)}{\partial I^2} + \phi \dfrac{\partial^2 n(I^M)}{\partial I^2} \right)}.$$
$$\frac{dD^M(\phi)}{d\phi} = 0$$

[8]

Since m is strictly concave, $m_{II} < 0$. Thus, the sign of $\frac{dI^M(\phi)}{d\phi}$ agrees with the sign of $\frac{\partial n(I^M)}{\partial I}$.

Furthermore, $\frac{dD^M(\phi)}{d\phi}$ is always null. The following observation is then straightforward.

- **Observation 2 –** If the Management Company receives a performance fee on the fund market value and a management fee on NAV, the Management Company and shareholder interests are, in general, not aligned. The Management Company chooses a suboptimal level of investment either too high – if $\frac{\partial n(I^M)}{\partial I} > 0$ – or too low – if $\frac{\partial n(I^M)}{\partial I} < 0$. The Management Company chooses the optimal level of investment, only if $\frac{\partial n(I^M)}{\partial I} = 0$. However, the level of debt is at its optimal value.

The condition $\frac{\partial n(I^M)}{\partial I} = 0$ means that if the fund market value and NAV are maximized at the same point[6], the management fee is irrelevant for the investment policy.

- **Case 3 – The Management Company receives a performance fee, $\pi \in (0,1)$, and a management fee on GAV, $\phi \in (0,1)$**

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[6] This is because the objective function is additive.

The Management Company objective function is

$$m(I, D; \pi, \phi) = \pi [v^1(I) + v^2(D)] + \phi [n(I) + D].$$ [9]

Also in this case m is strictly concave.

Thus, the first-order necessary and sufficient conditions for maximizing m are,

$$m_I = \pi \frac{\partial v^1(I^M)}{\partial I} + \phi \frac{\partial n(I^M)}{\partial I} = 0$$
$$m_D = \pi \frac{\partial v^2(D^M)}{\partial D} + \phi = 0$$ [10]

The optimal choice of I^M and D^M depends on the value of the parameter ϕ. To determine how I^M and D^M respond to changes in ϕ, we differentiate the FOCs with respect to ϕ,

$$m_{II} \frac{dI^M(\phi)}{d\phi} + m_{I\phi} = \left(\pi \frac{\partial^2 v^1(I^M)}{\partial I^2} + \phi \frac{\partial^2 n(I^M)}{\partial I^2} \right) \frac{dI^M(\phi)}{d\phi} + \frac{\partial n(I^M)}{\partial I} = 0$$
$$m_{DD} \frac{dD^M(\phi)}{d\phi} + m_{D\phi} = \left(\pi \frac{\partial^2 v^2(D^M)}{\partial D^2} \right) \frac{dD^M(\phi)}{d\phi} + 1 = 0$$ [11]

Solving the previous system for $\frac{dI^M(\phi)}{d\phi}$ and $\frac{dD^M(\phi)}{d\phi}$, we have

$$\frac{dI^M(\phi)}{d\phi} = -\frac{m_{I\phi}}{m_{II}} = -\frac{\dfrac{\partial n(I^M)}{\partial I}}{\left(\pi \dfrac{\partial^2 v^1(I^M)}{\partial I^2} + \phi \dfrac{\partial^2 n(I^M)}{\partial I^2} \right)}.$$
$$\frac{dD^M(\phi)}{d\phi} = -\frac{m_{D\phi}}{m_{DD}} = -\frac{1}{\pi \dfrac{\partial^2 v^2(D^M)}{\partial D^2}}$$ [12]

As in the previous case, the sign of $\frac{dI^M(\phi)}{d\phi}$ agrees with the sign of $\frac{\partial n(I^M)}{\partial I}$. Since m is strictly concave, $m_{DD} < 0$. Thus, in this case the level of debt is suboptimal and always increases in ϕ. The following observation is thus straightforward.

- **Observation 3** – If the Management Company receives a performance fee on the fund market value and a management fee on GAV, the Management Company and shareholder interests are not aligned. The Management Company chooses a suboptimal level of investment either too high – if $\frac{\partial n(I^M)}{\partial I} > 0$ – or too low – if $\frac{\partial n(I^M)}{\partial I} < 0$. The Management Company chooses the optimal level of investment only if $\frac{\partial n(I^M)}{\partial I} = 0$. The level of debt is always too high.

Furthermore, observing the first equations of system [8] and [12], the next observation follows.

- **Observation 4** – If the Management Company receives a performance fee on the fund market value and a management fee based on NAV or GAV, the level of investment is not affected by the choice of the base for the management fee (GAV or NAV).

It is evident from the previous analysis that only performance fees are specifically designed to reduce agency conflicts: only maximizing the shareholder wealth by means of optimal investment and financing decisions, the Management Company maximizes the performance fee amount it receives. In contrast, management fees may lead Management Companies to opportunistic behaviors. The model suggests that the Management Company assumes more debts when management fees are paid on GAV (and not on NAV), and tends to choose an (equal) suboptimal level of investment either case of a management fee paid on GAV or NAV.

-3- Empirical setup

To test our theoretical model empirically, we use a panel dataset of Italian REITs. In this section, we briefly review the main characteristics of the most common panel estimators (Baltagi 2005; Verbeek 2008).

The standard model used in many empirical cases is

$$y_{it} = \alpha + \mathbf{x'}_{it}\,\boldsymbol{\beta} + u_{it} \qquad\qquad i = 1,\ldots,N; \qquad t = 1,\ldots,T, \qquad\qquad [13]$$

where y_{it} is the response variable for the unit i at time t, α is a scalar, $\boldsymbol{\beta}$ is a $k \times 1$ vector of partial effects, and $\mathbf{x}_{it}$ is a $k \times 1$ vector of covariates. In most applications, it is common to choose a one-way error component model for the disturbances, u_{it}, that is

$$u_{it} = \mu_i + v_{it}, \qquad\qquad [14]$$

where μ_i denotes an unobservable time-constant unit effect and v_{it} indicates an idiosyncratic error term.

There are several classes of panel models that can be used in empirical research. The most common choices are the Between (BE), the Fixed Effects (FE), the OLS and the Random Effects (RE) model.

- The BE estimator exploits the between dimension of the data (differences between individuals). The BE estimator is consistent if the covariates are strictly exogenous and uncorrelated with the unobservable time-constant unit effects.

- The FE estimator uses the within dimension of the data (differences within individuals). The FE estimator requires the covariates to be strictly exogenous, but does not impose any restriction on the correlation between explanatory variables and unobservable time-constant unit effects. The FE model has the attraction of needing weaker assumptions than those needed by other estimators.

- The OLS estimator exploits both the within and the between dimensions of the data, but not efficiently. Consistency of this estimator requires the explanatory variables to be uncorrelated with the unobservable time-constant unit effects and the idiosyncratic error term.

- The RE estimator uses both the within and the between dimensions of the data efficiently. Consistency requires all the covariates to be strictly exogenous and independent of the unobserved time-constant unit effects, a condition that rarely holds in economic applications.

-4- Empirical results

-4.1- Description of the variables

We base our empirical analysis on a sample composed of all the 22 Italian listed REITs. We collected all the data from the compulsory half-year reports that all funds published in the 4-year interval 2006-2009. Starting from the second half of 2006, the total number of observations is 154. In what follows, we propose a short description of the variables we use in the subsequent regression analysis.

$\ln(debt_{it})$	is the natural logarithm of the total debt of the fund i at time t. The average value of the total debt (in levels) for all REITs is 128.59 million Euros; the standard deviation is 133.06 million Euros.
inv_{it}	is the value of net investments (in millions) of the fund i, defined as the difference between asset investments and disposals realized at time t. The average value of net investments for all REITs is -7.96 million Euros; the standard deviation is 42.77 million Euros[7].
$gavfees_i$	is a dummy variable equal to 1 if management fees are paid on GAV and 0 otherwise (i.e., paid on NAV). 45.45% of REITs have a management fee paid on GAV.
$\ln(nav_{it})$	is the natural logarithm of the NAV of the fund i at time t. The average value of the NAV (in levels) for all REITs is 270.87 million Euros; the standard deviation is 118.14 million Euros.
$residuallifetime_{it}$	is the residual time to maturity expressed in years of the fund i at time t. The average residual time to maturity in 2009 for all REITs is 11.05 years; the standard deviation is 3.33 years.

-4.2- Regression analysis

This section reports the results of our regression analysis. Before each regression model, we present an exploratory panel plot of the relationship between the response variable and the explanatory variable of interest (Peng 2008).

It is worth noting that not all the observations presented in section 2 can be tested empirically using the sample of Italian REITs. Observation 1 and observation 2 cannot be tested because all the Italian REITs exhibit both performance fees and management fees. Testing these observations would require a sample of funds that did not exhibit any management fees. The third and fourth observations, however, may be tested using available data.

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[7] In the theoretical model, investments were supposed to take only non-negative values. Investments as defined here, however, can take both positive and negative values. This difference, however, is irrelevant, because the theoretical model can be easily generalized considering investments that can assume any real values, $I \in R$, leaving all the implications of the model unchanged.

The first hypothesis we want to test posits that:

- **Hypothesis 1 (H1)** – If management fees are paid on GAV rather than on NAV, the REIT is more indebted.

As a first naïve test of H1, figure 1 plots the debt-to-GAV ratio. The figure is divided in three panels. In the central panel, the time series observations of each REIT are discretized and assigned to distinct color categories: light colors indicate low values, dark colors indicate high values. The black horizontal line divides the funds in two groups: GAV-fee-based funds are on the top, NAV-fee-based funds are on the bottom. REITs on the top present a higher level of debt: a result in line with H1. The right hand side panel shows boxplots of the time series data of each fund. Again, GAV-fee-based funds exhibit a higher level of debt than NAV-fee-based funds. The bottom panel illustrates mean values of debt-to-GAV ratio across all REITs for each time point and shows an upward trend in the level of debt. This upward trend can be explained in terms of asset disposals: as REITs approach their maturity, asset disposals increase, GAV reduces and the debt-to-GAV ratio increases. An alternative story is that since REITs are characterized by a high debt capacity, they benefited from the cut in interest rates as part of the expansive monetary policy pursued by the European Central Bank to counteract the financial crisis.

[Figure 1]

As a more formal test of H1, we propose a panel regression analysis on the model

$$\ln(debt_{it}) = \beta_0 + \beta_1 gavfees_i + \beta_2 \ln(nav_{it}) + \beta_3 residuallifetime_{it} + u_{it}.$$ [15]

In this model, $gavfees_i$ is the explanatory variable of interest, while $\ln(nav_{it})$ and $residuallifetime_{it}$ are control variables. Table 1 shows the results applying four estimators: BE, FE, OLS, RE. The BE and the FE estimators are given in the first two columns of table. Since the FE estimator eliminates any time-invariant variables from the model, the effects of fees on GAV are removed. The OLS and the RE estimators are given in the last two columns of the table.

If the individual effects are uncorrelated with the explanatory variables, all estimators are consistent and the RE estimator is the most efficient. If the individual effects are correlated with some covariates, the FE estimator is the only one that is consistent. To choose between the RE and FE estimator, we perform the Hausman test. Under the null hypothesis, the test statistic follows a Chi-squared distribution with 2 degrees of freedom. Considering the value of the test statistic (2.11, p-value = 0.35), we propend for the RE estimator which is consistent and efficient.

As expected, the coefficient on $gavfees_i$ is positive in all models: Management Companies tend to assume more debts when management fees are paid on GAV than they do when these fees are paid on NAV. This effect is very statistically significant[8].

As expected, the FE estimator has the largest within R-squared, while the BE and the OLS estimators maximize the between and the overall R-squared respectively. Wald test statistics (not reported) are calculated for all models to test for the hypothesis that all coefficients in the model except the intercept are

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[8] All our inference is based on robust standard errors and results are double-checked with both bootstrap and jackknife standard errors. For brevity, we omit these results.

equal to zero. All tests lead to rejecting the hypothesis that the conditional mean of the response variable is constant and independent of covariates.

[Table 1]

The second hypothesis we want to test posits that:

- **Hypothesis 2 (H2)** – The level of investments is not related to the base on which the management fee is paid (GAV or NAV).

In this case, figure 2 plots the net investment-to-NAV ratio. As expected, the distinction between GAV-fee-based funds and NAV-fee-based funds seems to play no role for Management Company investment choices: in the central panel, REITs appear to be randomly distributed between the top and the bottom group. In the right hand side panel, the overall level of investments and the within-fund ranges of variation are similar across the 22 funds. The bottom panel shows the trend in the level of investments: investments decrease in the period 2007-2008. This downward trend can be explained in terms of asset disposals: as REITs approach their maturity, asset disposals increase and the investment-to-NAV ratio decreases. An alternative story is that investments decrease as a consequence of the financial crisis.

[Figure 2]

The regression model to test H2 is

$$inv_{it} = \beta_0 + \beta_1 gavfees_i + \beta_2 \ln(nav_{it}) + \beta_3 residuallifetime_{it} + u_{it}. \qquad [16]$$

Table 2 presents the results. According to the Hausman test (0.51, p-value 0.77), we favor the RE estimator. Coherently to H2, the coefficient on $gavfees_i$ is now not statistically different from zero (in all models). We conclude that the base of management fees is not related to investment decisions.

[Table 2]

-5- Conclusions

REITs represent one of the most important instruments to convoy investor savings toward the real estate industry for several reasons.

- While direct real estate investments require a high fixed amount of capital to be undertaken and are usually a prerogative of specialized investors, listed REITs allow properties to be parceled out and, hence, to loosen the bond suffered by potential retail and small institutional investors.
- Furthermore, listed REITs allow investors to diversify their portfolio and to select a product which combines the typical features of a financial instrument with the characteristics of real estate investments (e.g., stable dividend yields and protection against inflation).

REITs are managed by Management Companies. Management Companies should make financing and investment decisions to maximize shareholder wealth. However, if the fund fee structure does not align the Management Company and shareholder interests, the former may be tempted to make suboptimal choices to maximize their own wealth. This agency conflict is a cost for investors who could be enticed to move toward other financial instruments. Thus, in order to make these instruments even more attractive for investors, the fee structure should be designed to direct management effort toward shareholder value maximization and,

therefore, to reduce agency costs. This paper has focused on this aspect, developing a theoretical model and then testing it.

The main prediction of the theoretical model can be summarized as follows.

- Performance fees on the fund market value align the Management Company and shareholder interests.
- Management fees on GAV lead Management Companies to assume too much debt.
- Management fees (either on NAV or GAV) lead Management Companies to choose a suboptimal level of investment.

We tested this model on the Italian REITs. Our findings show that the fund is more indebted when management fees are paid on GAV rather than on NAV. Furthermore, the level of investments does not seem to be related to the base (GAV or NAV) of management fees. With regards to these two aspects, the theoretical model is therefore supported by the data. Thus, expressing fees on market values (and not on NAV or GAV) appears to be a pursuable solution to align the Management Company and investor interests[9]. Since our model is based on fairly general assumptions, its predictions can also be applied to other contexts and countries. For this reason, further empirical studies are needed to test this model on other markets. In particular, even if the Italian market of REITs can be considered an ideal setting for the empirical analysis of the interrelation between fund fee structure and management decisions, empirical analyses on other countries would make it possible to test the other theoretical observations that we have not been able to test with Italian data. Research is currently underway to provide this empirical test.

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[9] The misalignment of interests between Management Companies and investors is likely to be stronger during the fund life rather than at its listing or maturity date (when the difference between the fund MV and NAV is null by construction). Even if listed REITs should be more liquid than direct real estate investments, only shareholders who hold their quotes for the whole life of the fund do not suffer of agency costs. Hence, REIT greater liquidity is often more theoretical than real.

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Table 1 – The table presents the results of the regression analysis. $\ln(debt_{it})$ is the natural logarithm of the total debt of the fund i at time t. $gavfees_i$ is a dummy variable equal to 1 if management fees are paid on GAV and 0 otherwise (i.e., paid on NAV). $\ln(nav_{it})$ is the natural logarithm of the NAV of the fund i at time t. $residuallifetime_{it}$ is the residual time to maturity expressed in years of the fund i at time t. The total number of observations is 154. Robust standard errors are reported in parentheses. ***, **, * indicate statistical significance at 1%, 5%, 10%.

Variables	Dependent Variable: $\ln(debt_{it})$			
	Between	Fixed Effects	OLS	Random Effects
Constant	0.430	10.187**	4.363	8.759***
	(11.240)	(3.876)	(6.412)	(2.899)
$gavfees_i$	1.557***	-	1.539***	1.452***
	(0.336)		(0.293)	(0.321)
$\ln(nav_{it})$	0.871	0.439*	0.685*	0.473***
	(0.579)	(0.227)	(0.331)	(0.167)
$residuallifetime_{it}$	0.012	-0.113	-0.044	-0.096
	(0.070)	(0.105)	(0.067)	(0.080)
within R-squared	0.005	0.049	0.020	0.048
between R-squared	0.662	0.306	0.653	0.626
overall R-squared	0.564	0.279	0.576	0.564

Table 2 – The table presents the results of the regression analysis. inv_{it} is the value of net investments (in millions) of the fund i, defined as the difference between asset investments and disposals realized at time t. $gavfees_i$ is a dummy variable equal to 1 if management fees are paid on GAV and 0 otherwise (i.e., paid on NAV). $\ln(nav_{it})$ is the natural logarithm of the NAV of the fund i at time t. $residuallifetime_{it}$ is the residual time to maturity expressed in years of the fund i at time t. The total number of observations is 154. Robust standard errors are reported in parentheses. ***, **, * indicate statistical significance at 1%, 5%, 10%.

Variables	Dependent Variable: inv_{it}			
	Between	Fixed Effects	OLS	Random Effects
Constant	302.738*	265.516	261.769*	248.047
	(162.334)	(293.851)	(147.212)	(156.991)
$gavfees_i$	0.990	-	1.589	2.282
	(9.332)		(9.058)	(9.118)
$\ln(nav_{it})$	-16.428*	-15.233	-14.558*	-13.951*
	(8.357)	(15.554)	(7.799)	(8.358)
$residuallifetime_{it}$	2.035	4.605	2.822*	3.137**
	(2.285)	(2.881)	(1.551)	(1.533)
within R-squared	0.013	0.021	0.019	0.020
between R-squared	0.238	0.216	0.233	0.228
overall R-squared	0.080	0.080	0.083	0.082

Figure 1 – This figure plots the debt-to-GAV ratio. The figure is divided in three panels. In the central panel, the time series observations of each fund are discretized and assigned to distinct color categories: light colors indicate low values, dark colors indicate high values. The black horizontal line divides funds in GAV-fee-based funds (on the top) and NAV-fee-based funds (on the bottom). On the right hand side panel are boxplots of the time series value of each REIT and on the bottom panel are mean values across all the time series for each time point.
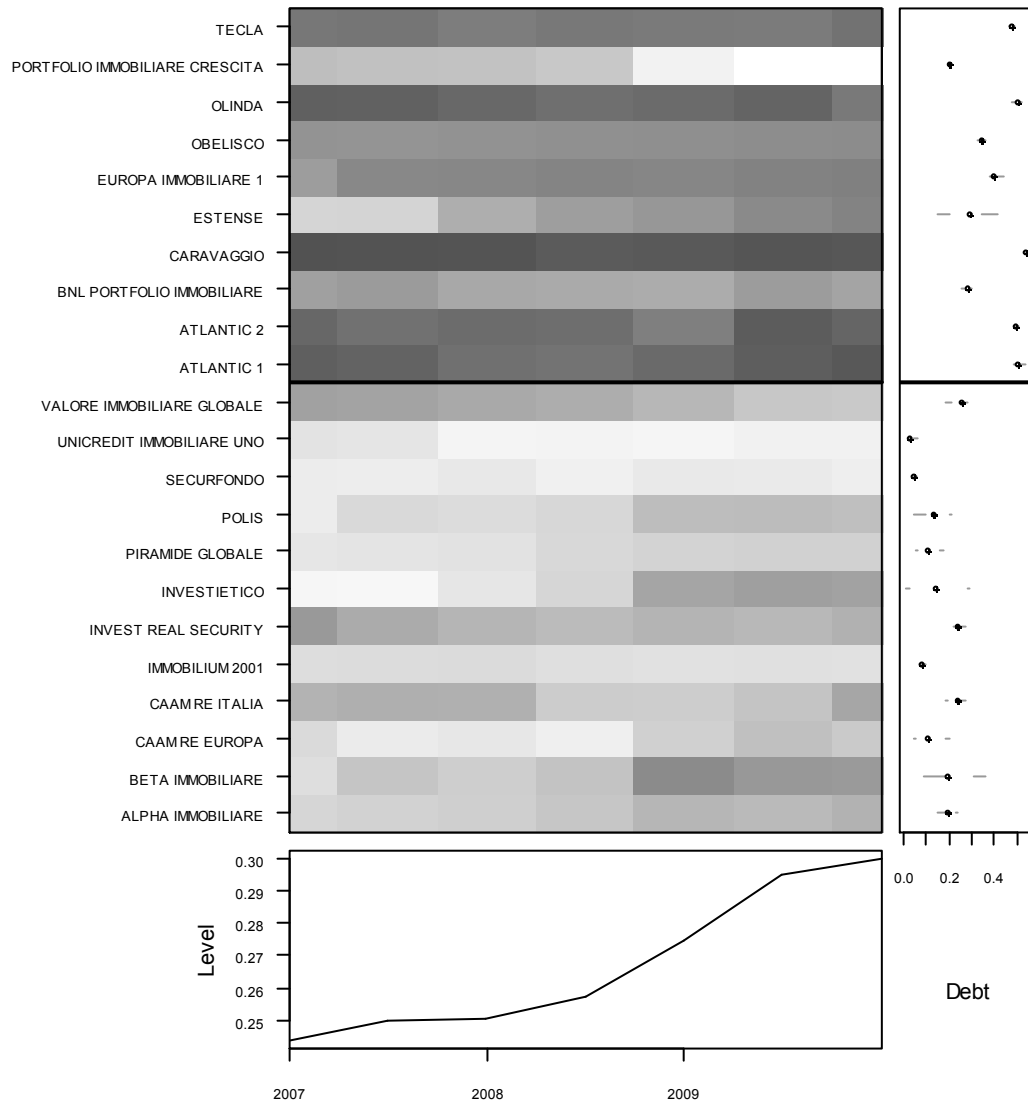
Figure 2 – This figure plots the net investment-to-NAV ratio. The figure is divided in three panels. In the central panel, the time series observations of each fund are discretized and assigned to distinct color categories: light colors indicate low values, dark colors indicate high values. The black horizontal line divides funds in GAV-fee-based funds (on the top) and NAV-fee-based funds (on the bottom). On the right hand side panel are boxplots of the time series value of each REIT and on the bottom panel are mean values across all the time series for each time point.