Performance Attribution Of The Italian Real Estate Funds' portfolios: The Role Of Income Return And Capital Growth

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Agenda

Introduction

Literature review

Empirical analysis:

- *Population*
- *Methodology*
- *Results*

Conclusions

Introduction

- Real estate literature studied the differences between the performance of the underlying assets and the vehicle, considering the income return and capital growth

- The Italian property funds market has shown an enormous growth over the past few years; little is known about the key elements of the property funds performance

- The paper considers the performance attribution of the Italian public real estate funds at a portfolio level

- The paper evaluates if the role of income return and capital growth is influenced by some characteristics of the fund (i.e. asset diversification, concentration, leverage, etc.)

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Literature review

- Following the literature (i.a. Geltner and Ling, 2000; Lee, 1997; Hoesli et al, 1997; Lizieri and Ward, 2000; Marcato and Key, 2007) and international standards (GIPS and IPD), the overall performance of the real estate funds can be attributed to the income return and capital growth
- The income return and capital growth show a different sensitivity to some macro-economic variables (Le Moigne and Viveiros, 2008)
- The performance could vary significantly among each investment (Young, 1994)
- The income return is more stable and less variable respect to the capital growth (Adair et al., 2006)

Literature review

Income return

- The performance is significantly different on the basis of the sector and the geographical area considered.
- In the residential sector the geographical features are not easily identified because of the market heterogeneity, instead other sectors (like offices) show more clear patterns (Jackson and White, 2005).
- Some empirical evidences show a significant increase in the cost related to manage diversified real estate portfolio that could neutralize the benefits related to the diversification (Capozza and Seguin, 1999).

Literature review

Income return

- About the ratio between the renting income and costs, normally bigger investments are characterized by better performance due to the rationalization of the operative expenses (Hartzell et al., 2006).

- The size has to be studied looking also at the number of tenants per building; the lower is the number of tenants the highest is the income return such as the economic impact of imminent vacancies (Kurzrock et al., 2009).

Literature review

Capital growth

- When the number of big real properties increase (more concentrated portfolio) the risk exposure grows more than the expected return (Ziering and McIntosh, 1999)

- The property markets are highly integrated and so the international diversification does not affect the variability of the capital growth performance (Pagliari et al. 1997)

- The trend of real estate asset prices is significantly heterogeneous in many domestic markets; the opportunities related to geographic diversification inside a country could be higher (McGreal et al., 2006).

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Population

- The Italian real estate funds for the period 2003-2008 (Scenari Immobiliari annual reports) (41 funds)
  - the overall return, the income return and the capital growth
  - the frequency of data is coherent with the problems for identifying a correct measure of the properties value; the yearly time reduce the bias related to the appraisal estimates used for measuring the capital growth (Wheaton and Torto, 1989)

Population

Real Estate Fund	Availability of data	Real Estate Fund	Availability of data
Armilla	2005-2008	Immobilium 2001	2003-2008
Atlantic 1	2005-2008	Invest Real Security	2003-2008
Atlantic 2 Berenice*	2005-2008	Investietico	2003-2008
Baglioni	2007-2008	Mediolanum Real Estate	2006-2008
BNL Portfolio Immobiliare	2003-2008	Michelangelo	2003-2008
CAAM RE Europa	2007-2008	Nextra Sviluppo Immobiliare	2003-2008
CAAM RE Italia	2007-2008	Obelisco	2006-2008
Caravaggio	2004-2008	Olinda Fondo Shops	2004-2008
Clarice Light Industrial	2004-2008	Patrimonio Uno	2006-2008
Clesio	2007-2008	Piramide Globale	2003-2008
CLOE Fondo Uffici	2004-2008	POLIS	2003-2008
Cosimo I	2008	Portfolio Immobiliare Crescita	2003-2008
Dolomit	2005-2008	RAS Antares	2005-2008
Donatello	2008	Securfondo	2003-2008
Estense Grande Distribuzione	2003-2008	Socrate	2008
FIP	2005-2008	Spazio Industriale	2006-2008
FIPRS	2008	TECLA Fondo Uffici	2004-2008
Fondo Alpha	2003-2008	TIKAL RE Fund	2004-2008
Fondo Beta	2005-2008	Unicredito Immobiliare Uno	2003-2008
Fondo Delta	2007-2008	Valore Immobiliare Globale	2003-2008
Immobiliare Dinamico	2006-2008	* Before 2007 the fund was named Berenice Fondo Uffici	

Source: Scenari immobiliari (the funds available in the report)

Population

- The number of the funds is variable over time
- In order to make an analysis of the determinants of the income return and the capital growth, the population is restricted to those funds for which annual reports are publically available (27 funds)
- The data attains the size of the rented units (square meters) and the rentals flows for square meter paid by each tenant
- The sample considered includes for each year at least 128 buildings and 235 tenants, and the number has grown

Population

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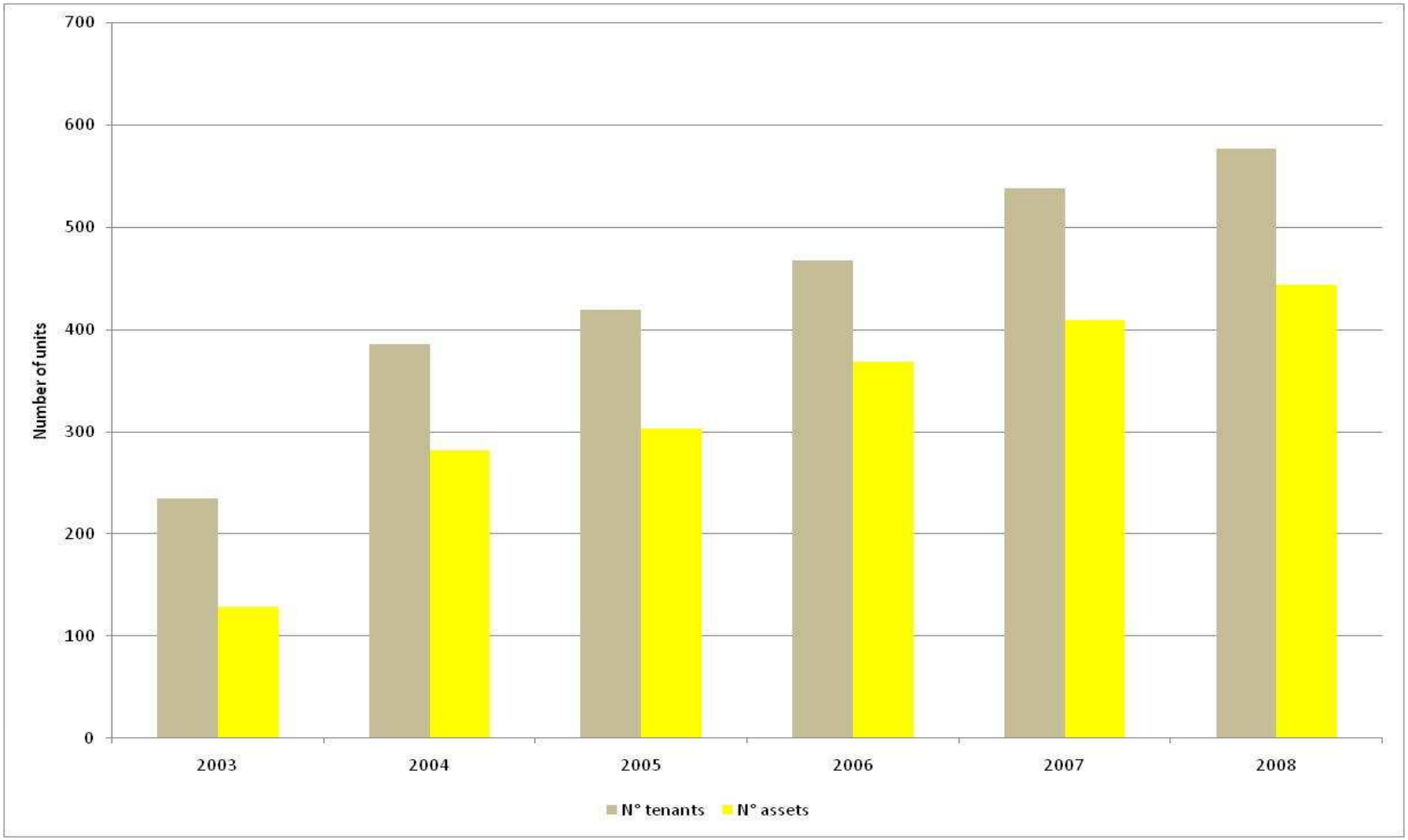
Source: Scenari immobiliari (27 funds with annual report available)

Population

§ The number of tenants and assets has grown over time



Methodology

§ The measures of overall performance, income return and capital growth are standardized respect to the market value of the real estate portfolio (Pagliari and Webb, 1995).

$$Income\ \text{Re}turn_{it} = \frac{\sum_{i=1}^{n} (\text{Re}nt_{it} - Costs_{it})}{\sum_{i=1}^{n} MV_{it-1}}$$

$$Capital\ Growth_{it} = \frac{\sum_{i=1}^{n} (MV_{it} - MV_{it-1})}{\sum_{i=1}^{n} MV_{it-1}}$$

$$Overall\ \text{Re}turn_{t} = Income\ \text{Re}turn_{t} + Capital\ Growth_{t} = \frac{\sum_{i=1}^{n} (\text{Re}nt_{it} - Costs_{it}) + \sum_{i=1}^{n} (MV_{it} - MV_{it-1})}{\sum_{i=1}^{n} MV_{it-1}}$$

MV_{it} = the market value of real estate unit i at time t.
$Rent_{it}$ = payments in the year t by the tenants of the n buildings
$Costs_{it}$ = maintenance costs for the n buildings included in the portfolio.

Methodology

- The first analysis (41 funds) proposed looks at the relationship between the income return and the capital growth, comparing the mean value of each return component (correlation)

- The measures of returns (27 funds) are regressed respect to some explaining variable identified in literature in order to test the different degree of predictability and to identify the main differences in the explaining variables

Methodology

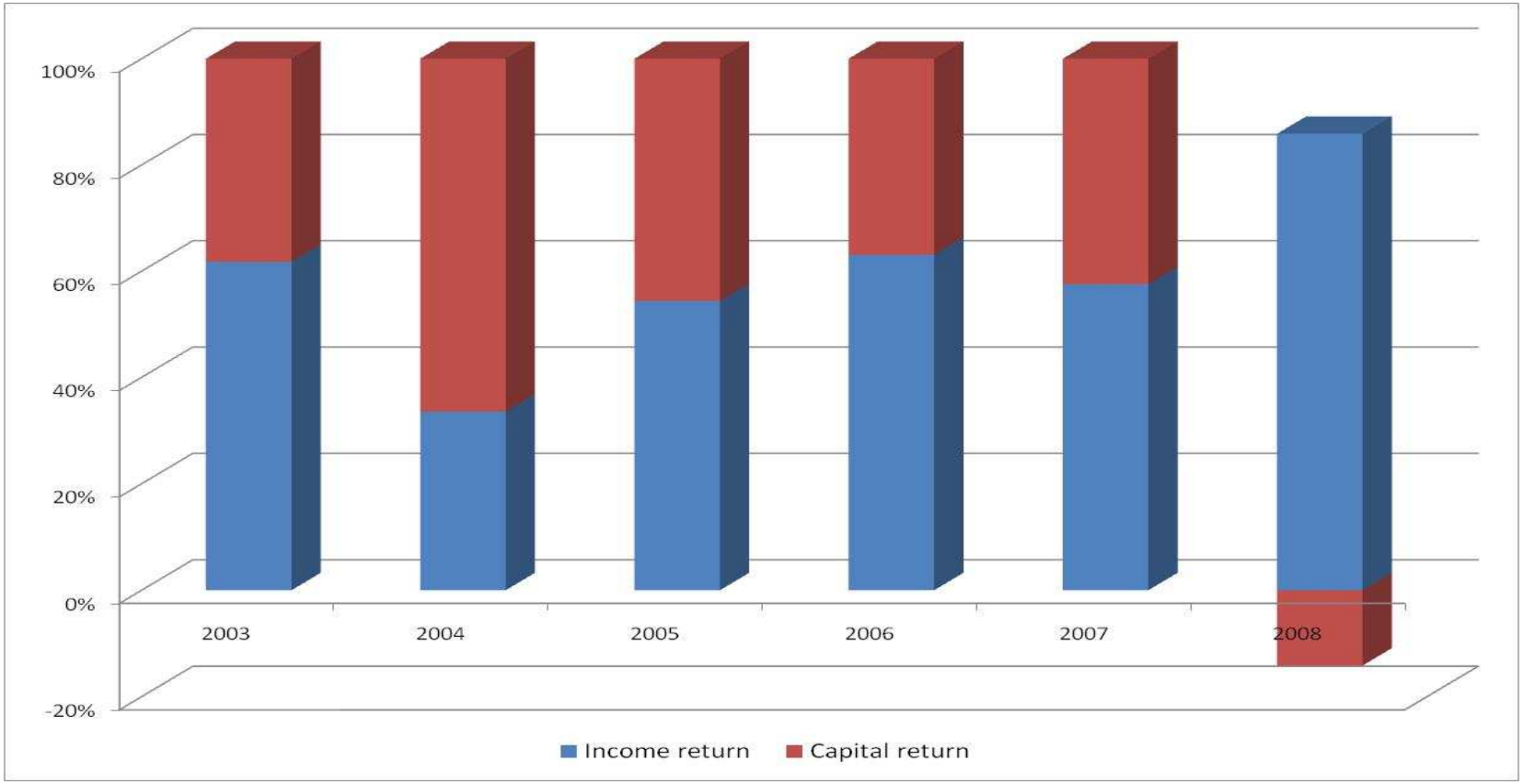
$$Income\ return_{it} = \alpha_{it} + \beta_{it} HHGEO_{it} + \chi_{it} HHSECT_{it} + \delta_{it} AUM_{it} + \phi_{it} Leverage_{it} + \varphi_{it} Interest\ \text{cov}\ erage_{it} + \\ + \eta_{it} HH\ Tenant_{it} + \varepsilon_{it}$$

$$Capital\ \ growth_{it} = \alpha_{it} + \beta_{it} HHGEO_{it} + \chi_{it} HHSECT_{it} + \delta_{it} AUM_{it} + \phi_{it} Leverage_{it} + \varphi_{it} Interest\ \ \text{cov}\ erage_{it} + \\ + \gamma_{it} HH\ \ Assets_{it} + \varepsilon_{it}$$

$$Overall\ \ \text{Re}\ turn_{it} = \alpha_{it} + \beta_{it} HHGEO_{it} + \chi_{it} HHSECT_{it} + \delta_{it} AUM_{it} + \phi_{it} Leverage_{it} + \varphi_{it} Interest\ \ \text{cov}\ erage_{it} + \\ + \gamma_{it} HH\ \ Assets_{it} + \eta_{it} HH\ \ Tenant_{it} + \varepsilon_{it}$$

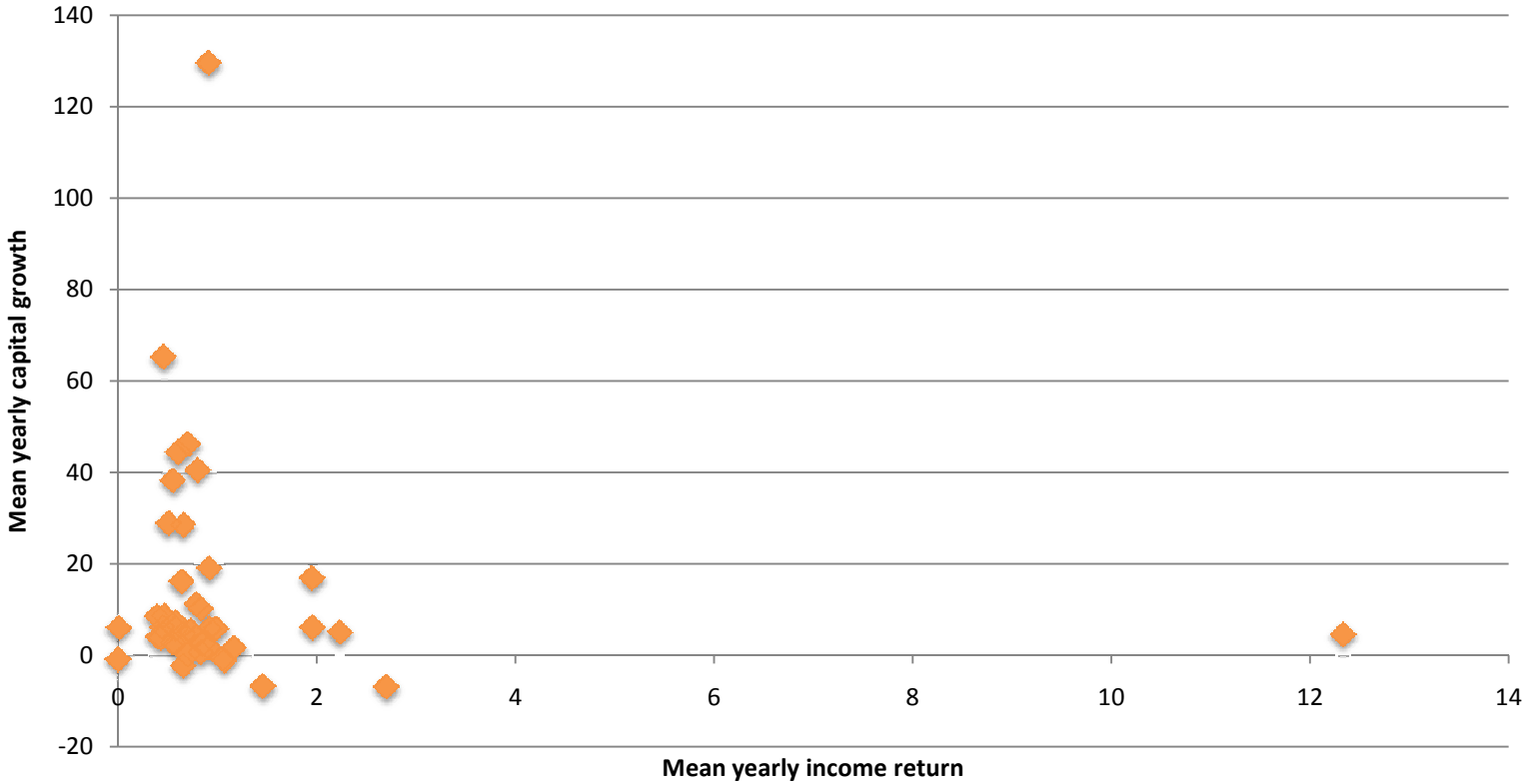
- $HHGEO_{it}$ – $HHSECT_{it}$ = Herfindahl – Hirsh indexes for geographical area and for the sector (Bradley et al., 1998)
- AUM_{it} = overall value of the asset under management (fund i at the time t)
- $Leverage_{it}$ = total liabilities / total assets (fund i at the time t)
- Interest $coverage_{it}$ = interests / NOI (fund i at the time t)
- HH $Assets_{it}$ = HH index based on the value of each asset respect to the overall value of the portfolio (fund i at the time t) (Capozza and Lee, 1995)
- HH $Tenants_{t}$ = HH index based on the value of rent related to each tenant respect to the overall value of the renting income

Results



§ The income return represents (except for the 2004) the main source of the performance. The capital return is around 35% and in the last year is negative.

Results



- The funds that are outperforming for the income return show a capital growth lower than the mean value (and vice versa)
- The funds with a more balanced return present a low level of mean yearly income return and capital growth.

Results

·	2003	2004	2005	2006	2007	2008
Mean income return	0.5335	0.4961	0.6890	0.7594	1.0944	2.0717
Mean capital growth	7.7479	29.1060	26.8870	16.7621	19.0090	-4.1550
Variance income return	0.0661	0.1061	0.0543	0.4371	7.1167	9.6661
Variance capital growth	24.7439	2002.0542	6133.7148	532.8164	1130.3852	603.0236
T-test H0 = mean difference significant	0.0011%	0.6856%	11.5818%	0.0281%	0.2472%	13.0145%
F-test H0 = same variance	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
Correlation	-0.2004	-0.5737	-0.3978	-0.1503	-0.1254	-0.1885
Correlation significance	0.1038	0.2918	0.2026	0.0763	0.0636	0.0954
Number of funds	14	20	23	31	36	40

- The two tailed F-test demonstrates a significant difference between the variance, while the t-test fails to identify a significant difference in the mean value.
- The correlation is always negative but never significant

Results

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	Income Return	Capital growth	Overall return
Constant	1.0708	-6.8414	-3.0211
HHGEO	-4.5528**	1.7704	2.5706
HHSECT	4.2731**	1.5911	1.4951
AUM	0.0528***	0.0526***	0.8792***
Leverage	-11.7733***	-0.7923	-15.4910
Interest Coverage	-0.0720	-0.6459	-0.4267
HH Assets	-	-0.1531	-5.7382
HH tenant	0.0001*	-	0.0001
Observations	112	114	111
N° groups	27	27	27
R^2 within	0.4758	0.0142	0.0141
R^2 between	0.9362	0.7848	0.8667
R^2 overall	0.8879	0.2557	0.5548
Sigma u	2.2704	0.000	2.3367
Sigma e	2.5792	20.48961	14.1537
Rho	0.4365	0.0000	0.0265
Notes: * significant at 90%	** significant at 95%	*** significant at 99%	

- The analysis proposed is a panel regression model and on the basis of a Hausman test the random effect assumption is selected

Results

- The model based on the income return allows to achieve the best result, with the highest statistical fitness (R^2) and the biggest fraction of variance explained (Rho)

- The model constructed on the capital growth fits worse:
  - macroeconomic or market variable could allow to increase the fitness
  - the variables could be different for the rented properties and for the development projects
  - the lower significance is coherent with evidences in literature that demonstrates the real estate market performance measurement could be biased from the specific characteristic of the appraisal values used to compute the capital growth (i.a. Gilberto, 1988)
  - the lack of fitness could be partially explained by the number of observation and groups

Results

- The geographical (HHGEO) and sectoral (HHSECT) concentration affects significantly only the income return:
  - the geographical diversification gives margins of profit maximization
  - the sectoral diversification is penalized because of the predominance of the office sector

- The main explaining variable is the amount of asset under management (AUM)
  - in all the measures (income return, capital growth or overall return), the higher is the size of the fund the higher is the performance (rental opportunities, appreciation trend for the biggest buildings, economies of scale, etc.)

Results

- The higher leverage affects negatively the income return because it introduces an extra constraint to the financial planning of the fund (financial risk)

- Considering the tenant concentration (HH Tenant), some main tenants allows to rationalize and reduce the cost of managing and monitoring the relationship with tenants:
  - if the default do no occur (tenant A), this strategy allows to maximize the results

- Looking at the asset concentration (HH Assets), the choice to diversify allows to obtain more stable return but with a reduction of the performance (Ziering and McIntosh, 2000); the relationship is not statistically significant.

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- The dynamics of income return and capital growth for Italian real estate funds are not strictly related
- The main determinants of their performance are different and some variables identified in literature could impact differently on each component
- The only common feature that explains both the income return and the capital growth is the amount of the assets under management

Conclusions

- Models constructed on the income return identify a higher statistical significance respect to those constructed on the capital growth and the overall performance.

- Due to the higher relevance of income return for Italian real estate funds, the model proposed could be interesting for Italian funds manager (asset allocation and diversification strategy, size of the funds, financial leverage)

- In the next steps, we will consider:
  - the multicollinearity
  - the macroeconomic variables
  - the rented investments versus trading investments
  - the performance attribution at a fund level