

Performance drivers of German institutional property funds

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Abstract

The goal of this paper is to improve the understanding of what drives the performance of non-listed real estate funds, adding to the limited literature on this topic. We performed a panel regression analysis on the basis of an extensive sample from Investment Property Databank (IPD) covering returns and selected characteristics of German Spezialfonds over a period of five years from 2006 until 2010. The analysis was performed for the whole sample as well as separately for three distinctively different subperiods: the boom of 2006-2007, the downturn of 2008-2009 and the recovery of 2010. The analysis uncovered significant differences in the drivers across the cyclical phases. During the boom phase, leverage and global portfolio allocation positively affected returns, while allocation to Germany had a negative effect. In contrast, fund volume, management costs and allocation to offices led to under performance. Finally, in the recovery of 2010, leverage, allocation to Germany and diversification across property types improved performance, while higher liquidity and focus on retail had a negative impact. In addition to providing extensive and unique insights into the determinants of performance of the German Spezialfonds, the results should be of interest to fund managers looking for advice on the optimal positioning of their funds in response to changing economic environments.

Keywords Performance drivers, Real estate funds, Spezialfonds, Panel regression

1. Introduction

Unlike listed property funds, there has been limited research on the performance drivers of non-listed vehicles despite the growing size and importance of the sector. This paper looks into the drivers of German Immobilien-Spezialfonds (further referred to as Spezialfonds), a German specific vehicle for institutional investors. Unlike non-listed public open real estate investment funds (Immobilien-Publikumsfonds), Spezialfonds are solely accessible for institutional investors and can be set up as single investor or as pool funds. The industry has been growing strongly over recent years - by mid 2012 the total volume of assets managed by Spezialfonds reached roughly €35bn compared to just over €20bn in early 2007.

In this paper, we analyse the effects of endogenous factors on the performance of Spezialfonds during the 5 year period 2006-2010. While the influence of the market environment is treated as exogenous and given, we focus on parameters that can be controlled by the manager such as size, leverage, fee level, or portfolio allocation. In particular, we address the question of possible differences in the impact of these factors in different phases of the property cycle. In the face of the recent turbulent years, this topic has become particularly relevant for both fund managers and

investors. Utilizing a unique dataset provided by Investment Property Database (IPD), we apply a panel regression to identify the characteristics of the funds that influenced their performance in three distinctly different market environments: the boom of 2006-2007, the downturn of 2008-2009, and the recovery of 2010.

The paper is organized as follows: a review of the existing research on this and related topics is provided at the beginning followed by a description of the data material and methodology. The actual panel regression analysis is presented in section 0. A summary of the key findings concludes the paper.

2. Literature review

While the literature on the performance drivers of listed real estate funds is relatively extensive – see Brounen et al. (2007) for a summary – few researchers have addressed the issue of unlisted real estate vehicle performance, with even fewer sources addressing specifically Immobilien-Spezialfonds. In fact, to our best knowledge, the only quantitative analysis is by Zemp (2007). Zemp uses a dataset compiled from individual fund reports published in Bundesanzeiger. The data are extensive and consists of roughly 20,000 entries from 2000 until 2005. The analysis encompasses the effects of various factors, such as the number of funds managed by the manager, vintage, size, diversification by geography and property type, liquidity, fees, cost and revenue structures and others. In most cases, funds are clustered according to their characteristics and average performance is compared across the clusters. The conclusion from the analysis is that the key factors differentiating the outperformers from other funds were investments outside of Germany as well as higher leverage.

Fuerst and Matysiak (2009) apply a panel regression based on INREV data between 2001 and 2007 to explain the annual total return of non-listed real estate funds. Based on this analysis, they conclude that property market factors (country and sector allocations) as well as gearing are important in explaining total returns. Furthermore, fund style and fund size were also identified as performance drivers. In particular, they find evidence that it is a combination of these factors that impacts the annual total return of a non-listed fund. In another analysis based on the same dataset, Fuerst and Matysiak (2011) point out that geographical and property sector allocations are considered to be of vital importance for real estate investments as are gearing and distribution yields. Furthermore, the size of the fund, investment style and the status of the overall economy are considered to be important for fund performance along with the performance of other similar asset classes.

Bäumer and Pfeffer (2010) use sample mean variance analysis and multiple regression analysis to assess the impact of fee structures on fund performance. The underlying data were obtained from INREV and represented the year 2009. They analyse a number of different fee types, coming to the conclusion that, for example, hurdle rates negatively affect returns while transaction fees show a positive impact. Along with the fee structures, other performance drivers were also analysed. The study indicates that fund size negatively impacted performance. However, Bäumer and Pfeffer (2010) attribute this to the fact that the majority of analysed funds were

established in 2008. Hence, it is likely that these funds were still in their investment period and therefore tended to be smaller and less affected by the downturn. Furthermore, the level of leverage appeared to have a negative influence on capital values during 2009. Finally, management costs showed a negative impact on fund performance but it was not statistically significant.

Several studies address the attribution of real estate fund performance to alpha or beta. This is mostly in the context of performance persistence and real estate fund managers' ability to outperform consistently over a longer period of time. Among others, Lee (2003), Devaney et al. (2007), Bond and Mitchell (2009), and Farrelly and Baum (2009) find limited evidence that managers can persistently generate alpha and tend to the conclusion that beta is the main performance driver. Fuerst and Marcato (2009) demonstrate that the alpha component is even lower once property risk factors corresponding with the overall investment style, such as income level, property size, tenant concentration or lease length, are taken into account.

A more direct comparison of the impact of portfolio allocations on performance is possible on the basis of the INREV index. The study published by INREV (2012) compares multi-country and single-country non-listed real estate funds' returns. According to it, multi-country funds outperformed single-country funds focused only on Germany and Italy but funds investing in countries such as France, the Netherlands and United Kingdom outperformed multi-country funds. Furthermore, INREV presents a comparison between multi-sector and single-sector funds. Only the single-sector funds focused on the office sector underperformed the multi-sector funds, while the industrial and residential sectors performed better than multi-sector funds.

3. Data and methodology

IPD collects data from Spezialfonds in order to produce the SFIX index. This organization kindly provided us with a set of anonymous information on Spezialfonds from the years 2006 to 2010. The sample represented a total of 357 observation points and included information on historic performance as well as selected characteristics: fund volume, leverage, liquidity, management costs, geographical allocation, and sector allocation. Fund level total returns were calculated for all funds according to the standardized formula as defined by IPD (IPD, 2010). The definitions of the other variables in the sample are as follows:

- **Fund volume** corresponds with the net asset value of the fund in Euros.
- **Leverage** corresponds with the debt obtained by the fund as a percentage of fund volume.
- **Liquidity** is the cash held within the fund expressed as a percentage of fund volume.
- **Total management costs** refer to all types of fees (fixed and variable) expressed as a percentage of fund volume.
- **Geographical allocation** is defined as a set of dummy variables. Funds can be qualified as "Germany focused", "European" or "Globally focused". The few data points that could not be assigned to one of these categories were removed

from the sample. Since the majority of the funds in the sample were investing in Europe, this category has been assumed to be the 'base case' and not included implicitly in the regression equations.

- **Sector allocation** is also defined as a set of dummy variables. Allocation can be qualified as "Retail oriented", "Office oriented", "Diversified" and "Other". In this case, the category "Other" has been excluded from the regression equations.

In the process of preparation of the data material, outliers have been removed. Data points lying significantly outside of the normal range (more than 2σ) have been removed as it was likely in these cases that the numbers resulted from input errors or unusual situations. This resulted in a reduction of the sample size by 4.5%, to 341 observation points. Table 1 summarizes the key descriptive statistics of each variable.

Table 1. Summary statistics

		2006-2010	2006-2007	2008-2009	2010
Total Return	Mean	0.0468	0.0393	0.0247	0.0583
	Std. Deviation	0.0410	0.0366	0.0472	0.0392
	Median	0.0502	0.0453	0.0187	0.0598
Fund volume	Mean	204569482	210291048	217669214	196715393
	Std. Deviation	185700060	181165650	162896304	195036462
	Median	144050618	153424335	153009961	139774614
Liquidity	Mean	0.0984	0.0868	0.0953	0.1084
	Std. Deviation	0.0809	0.0694	0.0779	0.0890
	Median	0.0754	0.0722	0.0723	0.0774
Leverage	Mean	0.4669	0.4776	0.4341	0.4665
	Std. Deviation	0.2537	0.2423	0.2335	0.2678
	Median	0.5131	0.5248	0.4827	0.5061
Management Costs	Mean	0.0065	0.0064	0.0058	0.0067
	Std. Deviation	0.0027	0.0023	0.0022	0.0030
	Median	0.0062	0.0062	0.0056	0.0064

In order to analyse the performance drivers of Spezialfonds, an (unbalanced) panel data analysis has been performed on the data obtained from IPD. This method is preferable to a regression based on pooled data or individual year-by-year regressions as it allows utilizing both cross sectional and time series properties of the sample. Furthermore, it gives the opportunity to control for the impact of omitted variables through the option of using fixed or random effects (Hsiao, 2007). With fixed effects, it is assumed that there is a varying impact of an unobservable variable in each time period of the cross-section category, and this impact is estimated as a vector of constants. In contrast, random effects assume that such variation is attributable to random realizations of the same variable. Given that our central hypothesis is that performance drivers differ in various phases of the market cycle but remain the same for all funds, we apply fixed period effects and no cross-section effects. This approach could be confirmed by testing for redundant fixed effects, which have been rejected

with the likelihood test. Furthermore, in order to counter possible heteroskedasticity, heteroskedasticity-robust standard errors are used. Because the cross-section dimension is significantly larger than the time dimension, we apply a White period coefficient covariance matrix estimator according to Arellano (1987).

The subsequent panel data analysis was performed for the full sample and for three subsamples representing different phases of the property cycle: the period between 2006 and 2007 represented a growing market, the period between 2008 and 2009 was associated with a severe downturn, and the year 2010 included observations points of a recovery period.

4. Panel regression analysis

4.1 Performance drivers for the whole sample

In the first step, we performed the panel analysis for the whole available sample. The analyses showed that leverage and management costs were particularly important performance drivers during this time frame, while none of the other variables was statistically significant (see Table 3 for regression statistics). Leverage appeared to have a positive impact on the performance, which is in line with the study of Fuerst and Matysiak (2009) and also complies with the general expectations that positive leverage effects boost performance. The significant negative impact of management costs on performance is in line with the results of Bäumer and Pfeffer (2010). This implies that funds with relatively higher overall management costs underperformed during the period between 2006 and 2010. While the most straightforward explanation seems to be that higher fees diminish the returns delivered to investors, one could argue on how much this has to do with the structure rather than the pure level of the management costs. This issue is discussed in more detail in the following chapter.

Table2. Panel regression coefficients 2006-2010

	Coefficient	Prob.
Const.	0.0442	0.0000
VOLUME	0.0000	0.1149
LEVERAGE	0.0398	0.0006
LIQUIDITY	-0.0227	0.4050
MNGMNTCOST	-2.3411	0.0074
SEC_DIVERSIFIED	0.0115	0.1754
SEC_OFFICE	-0.0029	0.6793
SEC_RETAIL	0.0084	0.3376
GEO_GERMANY	0.0066	0.2608
GEO_GLOBAL	0.0087	0.2689

4.2 *The independent variable impact by sub-period*

In the second step, we conduct a separate analysis for each of the defined three subperiods: the boom phase of 2006-2007, the downturn phase of 2008-2009 and the recovery phase of 2010. The first two subsamples are analysed as panel regressions, and the last one including only one year is a linear regression. The purpose of this analysis is to identify potential differences in performance drivers in each of the market phases.

Variables identified as significant differ strongly in each of the models. This indicates that performance drivers can be indeed dependant on the mode of the market and economy. Leverage was the only highly significant variable in 2006-2007 and helped to boost fund returns during this period. Also geographical allocation seemed to have some impact, although the significance levels of the respective coefficients were much lower at around 10%. Globally oriented funds tended to outperform and Germany oriented funds tended to underperform in 2006 and 2007, but these two factors proved to be insignificant in the two following years, while management costs and sector focus turned out to be relevant. In particular, office oriented funds underperformed in 2008 and 2009. The strongest determinant of performance in 2010 was once again portfolio allocation. In particular, funds investing in Germany delivered clearly stronger returns while retail funds underperformed, and there was also some weak indication that diversification across property types could improve returns. Finally, the impact of leverage (positive) and liquidity (negative) was significant at a level of around 10% in that year.

Table 3. Results of regression analysis

	2006-2007		2008-2009		2010	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Const.	0.045306	0.0002	0.069762	0.0001	-0.006681	0.8824
VOLUME	-1.09E-12	0.9417	-2.69E-11	0.1150	1.14E-11	0.8132
LEVERAGE	0.051176	0.0007*	0.007397	0.6445	0.06304	0.1051*
LIQUIDITY	-0.008091	0.8144	0.0066	0.8512	-0.155422	0.0927*
MNGMNTCOST	-1.305649	0.3103	-3.773619	0.0101*	-2.682989	0.5251
SEC_DIVERSIFIED	0.01073	0.3426	-0.005272	0.5943	0.036773	0.1028*
SEC_OFFICE	-0.001712	0.8481	-0.018143	0.0487*	0.013178	0.5088
SEC_RETAIL	0.016989	0.1304	-0.001249	0.9022	-0.063405	0.0038*
GEO_GERMANY	-0.010757	0.1073*	0.010784	0.1432	0.049661	0.0119*
GEO_GLOBAL	0.015234	0.1004*	0.004108	0.7199	0.008487	0.6860

* Coefficients with significance level below or only slightly above 10%

5. Discussion of the results

In the following, we discuss the results obtained for each of the variables corresponding with a potential performance driver in more detail.

Fund volume

In line with the study of Bäumer and Pfeffer (2010), it appears that fund volume could have had a negative impact on returns of Spezialfonds during the crisis, but the respective coefficient is only weakly significant. This result is somewhat surprising as it indirectly contradicts the principle of diversification. One would expect that higher fund volume implies more properties in the fund, which should protect from adverse market developments. However, this might also be an indirect result of different fund vintages. Larger funds might have been launched earlier and have acquired properties at high prices during the boom phase. In contrast, small funds might have been launched after the market crash in 2007-2008 and followed a recovery strategy, aimed at purchasing properties at the bottom of the market and not suffer from strong devaluations.

Leverage

The fact that leverage positively impacted performance during the boom of 2006 and 2007 is in line with the findings of Zemp (2007) and Fuerst and Matysiak (2009, 2011). This is unsurprising in a bullish economy when property returns are expected to exceed financing costs. Also, once the economic recovery resumed in 2010, leverage seemed to have a weakly significant positive impact on performance. During 2010, real estate values returned to growth while interest rate levels were comparatively low, making it easier for the funds to generate positive leverage effects. However, based on the panel data analysis, leverage proved to be insignificant during the crisis years 2008 and 2009. This result is counterintuitive as one would expect that the positive effect of financing is reversed in a market downturn and funds with higher leverage should underperform. We find it difficult to find a convincing explanation for this.

Liquidity

Liquidity had an insignificant impact on Spezialfonds performance during the years 2006 to 2009. In contrast to the public open ended funds, Spezialfonds are not required to hold cash in order to satisfy unexpected redemptions. This is also visible in the average liquidity level in the sample, which was mostly below 10%. Hence, the irrelevance of this variable in years 2006 to 2009 is not surprising. In 2010, however, the impact of liquidity turned negative at a significance of 9%, which can be explained by the market environment. During this year, the average level of liquidity in the funds increased to over 10% and at the same time, interest rates dropped to a very low level. As it seems, this combined effect began to hurt fund performance more strongly.

Management costs

The results of the panel regression for the subsample 2008-2009 show a significant negative impact of management costs on Spezialfonds performance and one could intuitively conclude that these costs diminish the return delivered to investors. However, it is somewhat puzzling that this effect is only observable in the downturn, while the respective coefficients for the subsamples 2006-2007 and 2010 are statistically not significant. A possible explanation indicated also by Bäumer and Pfeffer (2010) is that the total effect of management costs is in fact a composite of the effects resulting from different types of fees. On the one hand, the limited relevance of variable performance fees in the Spezialfonds industry compared with the more widespread fixed fees should generally lead to lower returns of funds with higher fee levels. On the other hand, Bäumer and Pfeffer show that transaction fees tend to have a positive impact on total returns. Given that transaction activity was higher in the booms years, the positive impact of transaction related fees could have balanced the negative impact of higher fixed management fees during these periods. Nevertheless, if this was the case, it would imply that fund managers who charge higher fees for their services would not be able to provide outperformance in exchange for the higher price.

Geographical allocation

Based on the panel regression analysis, it can be concluded that during good economic times it is of advantage to diversify a Spezialfonds' portfolio globally. This is in line with the results of Zemp (2007). The positive impact of the 'global focus' can be explained by the fact that higher returns could be earned in more volatile markets than in stable markets such as Germany during a boom phase. For this same reason, the dummy variable 'Germany focus' had a negative coefficient in 2006 and 2007. However, in both cases, the significance of the variables was relatively low, at or just above 10%. It appears that there is no evidence that any particular geographical focus helped to improve performance during the crisis, but focusing on Germany had a statistically significant positive impact on performance during the economic recovery in 2010. One could attribute this to the conservative, and hence less volatile, German market which received much interest during the crises. It is therefore somewhat surprising that this effect is observable only in 2010 but was only weakly significant in 2008-2009. This could be the result of smoothed valuations which affected fund returns with a lag.

Sector allocation

During the pre-crisis period 2006-2007, sector allocation did not seem to have a significant impact on the performance of Spezialfonds. However, 'office oriented' funds delivered significantly lower returns in 2008-2009. Financial industries are a major group of tenants in office buildings and one that was particularly badly hurt by the financial crises, which can explain this result. In contrast, retail funds performed

significantly weaker during the recovery in 2010. This result shows a different picture than the evidence provided by the property indices produced by IPD (IPD, 2006-2010). According to these indices, retail was among the best performing sectors, especially in Europe. However, while interpreting these results one should note that the relative performance by property type varied strongly from country to country. Hence, the results of the regression analysis in this paper may be a function of specific combinations of sector and geographic allocations of Spezialfonds in the sample. Nevertheless, it seems clear that various property types can perform differently in different economic environments.

6. Summary and conclusions

This paper aims to increase the understanding of what drives the performance of non-listed real estate funds. Literature on this topic is limited, especially in the specific case of German Spezialfonds. We performed a panel regression analysis on the basis of an extensive sample from IPD, covering selected characteristics of German Spezialfonds over a period of five years from 2006 until 2010. The analysis looks into the impact of six potential factors (funds size, leverage, liquidity, management costs, geographical focus and sector focus) on fund returns during three distinctively different market phases (boom of 2006-2007, downturn of 2008-2009 and recovery of 2010). While the results were mostly in line with studies mentioned in the literature review, the detailed analysis uncovered significant differences in the drivers across the cyclical phases, some of which turned out to be less than intuitive.

Similar to the findings of Bäumer and Pfeffer (2010), we found that fund volume had a weakly significant negative impact on the performance of Spezialfonds during the crisis but was clearly insignificant in other subperiods. While it is difficult to explain by rational factors, we suspect that it might have been due to a vintage effect. Also the negative impact of management costs was significant only during the crisis of 2008-2009. The insignificance of this variable in other periods is once again somewhat puzzling and could be the result of adverse impact of different fee types as indicated by Bäumer and Pfeffer (2010). Another interesting result was with respect to leverage. In line with studies by Fuerst and Matysiak (2009, 2011), leverage boosted performance in good economic times and during the post-crisis recovery. However, more highly leveraged funds were not showing signs of underperformance in a down market. This is certainly one of the most puzzling results of this analysis and a satisfactory explanation is still outstanding. More easily explained was the fact that the level of liquidity within a fund turned out to be largely irrelevant, which is unsurprising given the generally low level of cash holdings in Spezialfonds.

Practitioners often consider portfolio allocation by geography and sector as one of the critical factors of success. The panel analysis in this paper confirms this. The results provide evidence that it was advantageous to be invested globally and not just in Germany during 2006 and 2007. Allocation to the strongest growing markets boosted fund returns during the real estate boom. However, this has changed after 2008. Exposure to the stable German market shielded portfolios from high losses when

the global crises struck. With respect to sector allocations, office focused funds showed underperformance during the crisis. This could be due to higher sensitivity of office tenants compared to other property types. On the other hand, retail focused funds underperformed in 2010. The latter effect was difficult to explain with fundamental market data and could have been driven by specific allocations of the funds in the sample. In any case, the results demonstrate that strategic allocations can impact fund performance differently depending on the position in the property cycle. This creates the case for a dynamic anti-cyclical fund strategy.

The analysis delivered a series of interesting insights into factors that could affect the performance of Spezialfonds. While it was highly interesting to identify the sources of outperformance and underperformance, it was equally interesting that some of the factors intuitively suspected to be relevant turned out to be insignificant. The additional value of this paper compared with the existing literature is a separate analysis of three distinctly different phases of the cycle. This should make the results of the paper particularly interesting to fund managers looking for advice on the optimal positioning of their funds in response to changing economic environment.

While providing extensive insights into the determinants of performance of the German Spezialfonds, the analysis also indicated interesting fields for further research. A more detailed look into some of the more puzzling results seems to be most pressing. In particular, it would be very interesting to attempt to explain the insignificant impact of leverage on performance in the downturn. Further, one could decompose the impact of management costs potentially building on the study of Bäumer and Pfeffer (2010). It would also be worthwhile to clarify some of the not quite intuitive results regarding the impact of the fund volume on performance. Finally, it would also be interesting and of high practical relevance to repeat the analysis of the recovery period from 2010 onwards with a larger sample as data becomes available.

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