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Abstract

The objective of this paper is to investigate whether the rating of a fund is a determinant of its future performance. This study focuses on the Fundclass ratings for a sample of 1,452 EU funds with a similar style of management for the period 2003–12 (a period marked by economic crisis). By using the methodology of non-stationary panel data, we simultaneously assess the long- and short-term relationship between fund performance and scoring, using a vector error correction model. Our results conclude that there is a positive relationship between these two variables over time. Nevertheless, in the short term, this relationship is only valid for the period 2007–12, especially for funds with a good rating.

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1. Introduction

At the European level, the asset management industry has experienced dramatic growth over the last 15 years. Despite the financial crisis, the volatility of financial markets, and the economic downturn, the investment fund industry has succeeded in maintaining and even increasing its assets under management during the last five years. The keywords in this industry are associated with the performance of fund management and risk diversification offered to an investor (individual, institutional or professional). The notation of the performance and quality of fund management is an essential measurement tool as it provides both institutional and retail customers a synthetic criteria for the selection of a fund.

Various empirical studies analyzing the relationship between ratings (represented by stars) and fund performance attempt to answer two fundamental questions: first, to what extent do investors believe that ratings predict the future quality of a fund (Del Guerico and Tkac, 2008; Sirri and Tufano, 1998); second, do the scores of these assessments funds predict the future performance of the fund (Hereil et al. 2010)?

It is clear from various studies that lower-rated funds tend to indicate poor performance while better-rated funds ("star" funds) do not lead to better future performance than lower-rated funds (Blake and Morey, 2000). Moreover, studies of American funds show that investors are more attracted to better-rated funds. Investors tend to invest in four- to five-star funds in a "systematic" and blind way, while heavily penalizing funds whose rating is downgraded (Del Guerico and Tkac, 2008; Jain and Wu, 2000). Empirical studies on other markets and other rating systems are few and their findings do not confirm previous results due to the specificity of the markets surveyed, whose structure differs from that of the U.S. market (see Füss et al. 2010). The results of empirical studies do not allow unanimous support for the hypothesis of that the note given to a fund has informational content. The conclusions are mostly based on a single rating system (Morningstar), and vary according to the period of the study and the methodology adopted. The literature has not provided a clear answer and the current financial crisis has prompted an examination of rating agency investment funds.

In the current context of questioning the legitimacy of the role of credit rating agencies, how much credibility can be given to rating systems built to evaluate the performance of investment funds? The objective of this paper is to examine the interrelationships between performance and financial rating of European equity funds to verify the hypothesis about the informational content of the rating.

Our study makes three original contributions: the use of a recent database that, to our knowledge, has not previously been exploited; investigation of the impact of the financial crisis on the management of investment funds; and the choice of a methodology for non-stationary panel data that allows us to study the long- and short-term relationship between rating and fund performance, taking into account the heterogeneity funds.

Moreover, the results of this paper have implications for the management of funds in Europe during the economic crisis. We examine whether rating agency investment funds provide quality rating changes in different economic environments, specifically in the booms and busts of financial cycles. Ratings quality may be countercyclical (Bar-Isaac and Shapiro, 2013). Ratings also reinforce (or otherwise) the reputations of rating agency investment funds and help investors to select appropriate funds (see Rablen, 2013). Our conclusions are relevant to the current policy debate regarding the role of ratings.

The rest of the paper is organized as follows. Section 2 describes the data used and the methodology adopted in this study. Section 3 presents the empirical analysis of the study. Section 4 compares the results and concludes the paper.

2. Data

Our source of data for this study is Fundclass[1], a French rating agency for European investment funds that targets professional investors. Each quarter, a scale of 0–5 star (worst–best) is attributed to different types of funds (equity, bond, mixed, etc.) according to various criteria specific to the rating system developed by this agency[2].

The study focused on 1,452 European equity funds. These funds are characterized by the same management style, that is, they all invest in European equities. Their performance can thus be compared to the evolution of the European market index benchmark Eurostoxx 50. We deliberately chose funds with the same style to avoid the bias noted in some empirical studies, where performance is explained by the management style (Goetzmann and Ibbotson, 1994).

[1] The Fundclass notation is built on a methodology based on three principles. The first is to establish consistent subsets of the population of funds, based on the risk profiles of the fund (classification of the mutual fund). The second concerns the performance of the fund relative to each other within the same category. The third is based on performance over the medium term to take into account the regularity of the quality of management. The methodology is based on 12 annual observations covering nearly four years of performance.

[2] The objective of this paper is not to study the formation of the note but to take note as crude selection criteria and trust it to select funds.

Investment fund performance is calculated as a performance over one year resulting from a change in the net asset value of the fund (NAV):

$$perf_{t,i} = \frac{NAV_{t,i} - NAV_{t-1,i}}{NAV_{t-1,i}}$$

The study period selected began in March 2003 and ended in August 2012. This period takes into account both a bullish period of relatively undisturbed European markets and a longer, more turbulent, period notably marked by the effects of the financial crisis in 2007 and the difficult economic circumstances in different European countries since 2008.

During this period of more than nine years, we have a total of 27,117 observations, that is, 27,117 ratings of investment funds on a given date. Table 1 shows these observations based on rating category. We observe that 67% of the scoring corresponds to poor ratings (0–2 stars) and 33% of the notes correspond to a good or excellent rating (3–5 stars) with only 5% of notes outstanding.

Table 1 Description of the sample according to the rating of the fund

Rating (number of star)	**Average annual performance (%)**	**Average of assets under management (€)**	**Number of observed scores**	
			Number	**%**
0	1.36	162,433,220	7,040	26
1	0.8	187,572,343	5,439	20
2	2.17	200,515,813	5,726	21
3	3.48	198,938,651	4,777	18
4	4.57	235 385 141	2,792	10
5	9.31	312,924,916	1,343	5
Total of observations (number and percent)			*27,117*	*100*

In Figure 1, we compare the evolution of the Eurostoxx 50 index to changes in ratings over the study period to underline the proportion of each rating during the period studied. We can observe that the first period (March 2003–May 2007) shows relatively stable growth in European equity markets. The second period (August 2007–August 2012) shows an overall downward trend in markets throughout the period, even if the markets are characterized by

upward and downward reversals during this period. The proportion of 5-star funds is higher at the end of the first period. This observation simply reflects that it is easier to manage funds during stable growth markets. Conversely, the ability to keep an excellent (5–star) rating decreases when markets face changing trends. We observe a minimum of 5-star funds at the end of 2010, after a sharp downturn (the subprime crisis), followed by a period of growth in a relatively short period. It is more difficult to maintain a good portfolio management and rebalance its composition in response to changes in market regimes observed between 2008 and 2012.

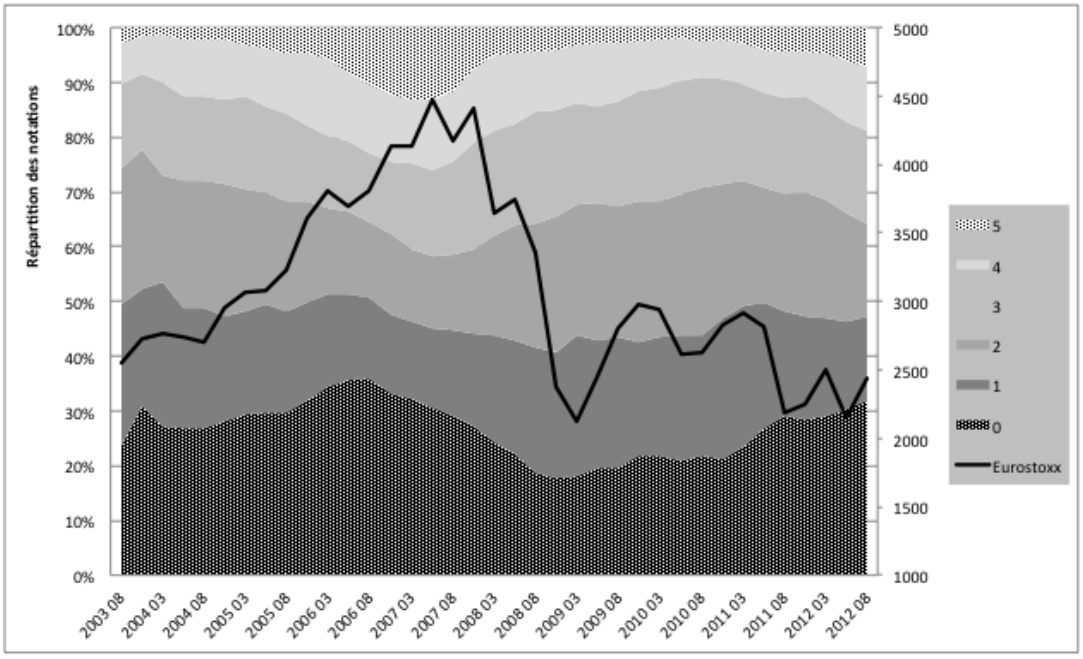

Figure 1 Evolutions of the market index (EUROSTOXX 50) and the distribution of Fundclass ratings

With the exception of three cases, in our database, rating changes correspond to a change in rating level, the gain or loss of one star. Moreover, it is clear that the period 2007–12 was marked by many more declines in the rate than increases (in the database, we find 2,454 declines and 2,165 increases).

All in all, we have an unbalanced panel dataset of 1,452 funds from 2003 to 2012 (27,117 observations).

3. Empirical analysis

Before analyzing the relationship between rating and fund performance, it is necessary to test the order of integration of the series with panel unit root tests. We first apply the unit root tests in order to find the stationarity or non-stationarity of variables. We conduct two panel unit root tests: Levin, Lin and Chu (2002) (LLC) and Im, Pesaran and Shin (2003) (IPS). The IPS test is not as restrictive as the LLC, since it allows for heterogeneous coefficients. The null hypothesis for all tests is that the series contains a unit root. The results (reported in Table 2) show that all the variables are stationary after differencing once. We can suppose that the series in the panel are integrated of order one.

Since all variables are *I*(1), we check the existence of one or more cointegrating relationships among the series considered, using well-known tests by Kao (1999) and Pedroni (2004). The tests verifying null hypothesis of no cointegration consist in testing the presence of a unit root of the residuals. The main advantage of the Pedroni method, unlike Kao's (1999), is to take into account the heterogeneity under the alternative hypothesis for the three group statistics:

$$y_{it} = \propto_i + x'_{it}\beta_1 + u_{it}, \quad (1)$$
$$N = 1, \dots, 1452, T = 1, \dots, 37$$

where y_{it} denotes the endogenous variable (fund performance), $\propto_i$ is a fixed effect dealing with the unobserved heterogeneity between the 1,452 funds considered, x'_{it} is vector of rating and u_{it} is a stationary term.

Table 2 Panel unit root tests results (full sample period)

	IPS		ADF-Fisher	
	Levels	1st differences	Levels	1st differences
Performance	2.791	–6.029***	680.162	1425.82***
Rating	1.738	–16.623***	692.072	2008.83***

Notes: *, ** and *** denote significance at the 10, 5 and 1% levels, respectively. The number of lags is based on the Schwarz Information Criterion, a Bartlett kernel is used for spectral estimation and the Newey-West data-based automatic bandwidth parameter method is used.

Table 3 reports the results of the cointegration tests using the Pedroni and Kao procedures. Pedroni's test shows that seven statistics lead to the rejection of the null hypothesis of no

cointegration and Kao's test concludes that cointegration exists. Finally, we can presume the existence of a long-run equilibrium relationship between performance and rating.

Table 3 Pedroni's and Kao's test results (full sample period)

Statistic	Panel Standardized Values
v-Statistic Panel	29.064***
rho-Statistic Panel	–20.216***
PP-Statistic Panel	–20.755***
ADF-Statistic Panel	–30.663***
rho-Statistic Group	–1.426*
PP-Statistic Group	–22.960***
ADF-Statistic Group	–36.440***
Kao's test	–26.665***

Notes: *,** and *** are significant at the 10%, 5% and 1% level respectively. A constant was included. Panel referred to the within dimension and Group referred to the between dimension.

After acceptance of cointegration, we can estimate a long-term relationship between rating and performance. In this way, we apply the panel dynamic ordinary least squares (DOLS) estimator because it outperforms both the ordinary least squares (OLS) and fully modified OLS estimators (see for more details, Kao and Chiang, 2000; Mark and Sul, 2003). The special feature of the DOLS estimator is that it includes lags and leads of the first difference of the explanatory variables with the set of cointegrating regressors in order to deal with the simultaneity bias resulting from the correlation between the explanatory variables and the error term—the so-called endogeneous feedback (Saikkonen, 1991). The funds' fixed effects are included in the regression in order to take individual heterogeneity into account.

That said, this technique have a major weakness since they assume cross-section independence. We need to consider the cross-sectional dependence among funds. So, we use the technique developed by Bai, Kao and Ng (2009) (BKN), which is robust to cross-sectional dependence. Cross-sectional dependence is modelled by means of a small number of common factors, which are treated as parameters and estimated jointly with β using an iterated procedure. With this approach, the structural errors e_{it} are allowed to be cross-sectionally dependent, non-stationary, and correlated with the explanatory variables (see Bai *et al.* (2009) for more details). We retain the CupFM (continuously-updated and fully-modified) estimator that corrects the bias at every iteration (compared of CupBC (continuously-updated and bias-

corrected) estimator). Correction to endogeneity and serial correlation is made during each iteration. Note also that the estimator is robust to mixed I(1)/I(0) factors, as well as mixed I(1)/I(0) regressors.

In Table 4, the DOLS and BKN estimations show that there is a significant long-term relationship between rating and performance. More specifically, in the long term, the two variables appear to be moving in the same direction for all ratings, with a coefficient of 0.841 and 0.678, and for the [3*–5*] group with a coefficient of 2.098 and 1.945. However, concerning the [0*–2*] group, there is no significant long-term relationship between the two variables. It seems that rating is an explanatory factor in the long-term performance of an investment fund, especially for highly rated funds.

Table 4 Estimation results (2003–2012)

Period	**DOLS**			**CupFM**		
Variables	*Perf* [0*–5*]	*Perf* [0*–2*]	*Perf* [3*–5*]	*Perf* [0*–5*]	*Perf* [0*–2*]	*Perf* [3*–5*]
Rating	0.841**	0.322	2.098***	0.678**	0.298	1.945**

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. *Perf* is the explained variable and represents the performance of funds. The choice of the lags and leads is based on Westerlund method (2005); *dRating(-1),dRating(1)* are lag and lead of the first difference of the explanatory variables x'_{it}. Cross–section Chi-square is respectively 1864.87***, 1753.53*** and 1381.79***. CupFM estimator, with quadratic spectral kernel, refers to Bai et al. (2009). The estimated models include a constant.

Nevertheless, this long-run equilibrium relationship may be faced with shocks affecting the short-term relationship, through temporary effects, including changes in market conditions. In the short term, to investigate the relationship between performance and rating, we estimate vector error correction models (VECM), differentiated by rating level and period (pre-crisis and post-crisis). In our methodology, the VECM allows us to treat both short- and long-term dynamics. The VECM restricts the long-run behavior of the endogenous variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics. The cointegration term is the error correction term ECM_{it-1} since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments. With the cointegrating equation $y_{2,t} = \beta y_{1,t}$, the corresponding VEC model is:

$$\Delta y_{1,t} = \alpha_1 \left(y_{2,t-1} - \beta y_{1,t-1} \right) + \varepsilon_{1,t} \quad (2)$$

$$\Delta y_{2,t} = \alpha_2 \left(y_{2,t-1} - \beta y_{1,t-1} \right) + \varepsilon_{2,t} \quad (3)$$

In this model, the only right-hand side variable is the error correction term. In long-run equilibrium, this term is zero. However, if y_1 and y_2 deviate from the long-run equilibrium, the error correction term will be nonzero and each variable will adjust to partially restore the equilibrium relation. The coefficient $\propto_i$ measures the speed of adjustment.

Table 5 VECM results

	March 2003–May 2007				August 2007–August 2012			
Estimated parameters	*Panel* [0* – 2*]		*Panel* [3* – 5*]		*Panel* [0* – 2*]		*Panel* [3* – 5*]	
	ΔPerf	*ΔRating*	*ΔPerf*	*ΔRating*	*ΔPerf*	*ΔRating*	*ΔPerf*	*ΔRating*
ECM_{it-1}	–1.250***	0.002	–1.329***	0.024***	–1.090***	0.001***	–1.057***	0.002***
$\Delta\, Perf_{t-1}$	0.067***	–0.002	0.006	–0.012***	0.279***	–0.0003	0.204***	–0.0005
$\Delta\, Perf_{t-2}$	0.065***	–0.001	0.048*	–0.002	0.067***	–0.00005	0.085***	–0.0005
$\Delta\, Rating_{t-1}$	–0.423	–0.749***	–0.310	–0.750***	0.302	–0.793***	–3.619***	–0.803***
$\Delta\, Rating_{t-2}$	0.344	–0.321***	–0.525	–0.312***	0.655**	–0.333***	–1.101***	–0.357***
C	2.311***	0.022**	2.183***	–0.049***	1.508***	0.023***	1.191***	–0.026***
R^2	0.61	0.40	0.63	0.40	0.42	0.42	0.41	0.43

Notes: ECM = Error Correction Model. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

The results reported in Table 5 indicate that rating changes influence the short-term performance of two groups of funds between 2007 and 2012 (in the third and fourth columns). These results support the hypothesis of informational content of the note during recession in the financial market. On the other hand, for the period 2003–7, rating changes do not seem to affect fund performance. In addition, the results suggest that ratings seem to be conditioned by their past values. On the other hand, the impact of rating on performance is not only transitory. The lagged ECM term is significant at the 1% level. Finally, we can conclude that the note contains enough information to select a fund and ensure performance.

4. Conclusion

The results of this research support the hypothesis that the note given to a fund has informational content. The conclusions show that notation seems to be an indicator of the future performance of a fund. However, these findings must be qualified according to the study period and the rating level.

We show the existence of a long-term relationship between future performance and notation throughout the period, especially for top-rated funds. Indeed, for lower-rated funds, the

relationship is not significant, probably due to the randomness of performance for poorly rated funds. In the short term, rating did not seem to affect performance over the period 2003–7, which was characterized by stable growth in financial markets, for both lower-rated and top-rated funds. By contrast, in the period 2007–12, a change of notation clearly impacted fund performance, especially for the best funds. The econometric results show that ratings quality may be countercyclical. Our findings are consistent with recent studies on ratings quality in the recent boom (Bar-Isaac and Shapiro, 2013) and on the link between score and performance (Del Guerico and Tkac, 2008; Füss et al. 2010; Hereil et al., 2010).

A striking feature of the years after the crisis of 2008 seems to be the tightening of the relationship between an investment fund's performance and its ratings. It appears that the rating of agency investment fund will be strategic complements to help investors to select appropriate funds, especially the best.

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