

Appendices: Supplementary Material

A Misspecification Issues in Applying Convex Evaluation Models

In the following, 50 MFs whose daily returns are known are considered. Following the equations (2) to (5), the expected return, variance, skewness and kurtosis of the MFs are calculated. The efficiencies of these 50 MFs are calculated under the diversified model, the C evaluation model and the NC evaluation model, respectively.

Table A.1: Statistics of the inefficiencies of the MFs under the MV case

	NC model	C model	Diversified model
# effic. obs.	22	8	1
Avg	0.0071	0.0082	0.0091
St Dev	0.0131	0.0133	0.0134
Min	0	0	0
Max	0.0571	0.0596	0.0603

First, following a commonly used MV case, the statistical results of the inefficiencies under the different models are reported in Table A.1. Columns 2 to 4 display the statistics of the results obtained under the NC model, the C model and the diversified model, respectively. The five rows correspond to the number of efficient MFs, and the average, standard deviation, minimum and maximum values of the inefficiencies, respectively. Of course, a MF with a 0 inefficiency value is considered as efficient. From Table A.1, we observe that both the average of the inefficiencies of the C model and that of the NC model are smaller than the average of the inefficiencies of the diversified model. If we consider the efficient frontier of the diversified model as the closest to the “true” solution of a classical portfolio allocation model, we may say that in this instance both the C and NC models overestimate the efficiencies, on average, and that the NC model overestimates the efficiencies more than the C model does. Moreover, the number of efficient observations in the NC model is much higher than that of the other two models. Therefore, the efficient frontier of the C model seems to be closer to the efficient frontier of the diversified model than that of the NC model.

Let us now compare the results of the different models obtained for the MVS and MVSK cases, including also the higher moments. The corresponding statistics of the inefficiencies for the MVS and MVSK cases are reported in Table A.2. Again, let us assume the efficient

Table A.2: Statistics of the inefficiencies of the MFs under the MVS and MVSK cases

	MVS			MVSK		
	NC model	C model	Diversified	NC model	C model	Diversified
# effic. obs.	41	15	1	42	24	1
Mean	0.0017	0.0038	0.0043	0.0016	0.0032	0.0041
Std. Dev.	0.0051	0.0075	0.0071	0.0051	0.0072	0.0071
Min	0	0	0	0	0	0
Max	0.0224	0.0351	0.0305	0.0224	0.0324	0.0305

frontier of the diversified model to be closer to the solution of a portfolio allocation model. Then, both the C and NC models still overestimate the efficiencies, on average, and the NC model overestimates the efficiencies more than the C model. Moreover, the number of efficient observations in the NC model is very high (41 or 42 observations out of 50), and it is high also with the C model (15 or 24 out of 50). On the other hand, we might wish that the efficient frontiers of both the C and NC models lie below the efficient frontier of the diversified model. In this respect, the NC model behaves better than the C model, since with the C model we find a few “abnormal” observations with an inefficiency value which is higher than the inefficiency value provided by the diversified model. This can be seen by comparing the maximum value of the inefficiencies computed with the different models, displayed in the last row of Table A.2. In more detail, Table A.3 reports the value of the inefficiencies for all the “abnormal” observations, 10 over 50 (20%) in the MVS case, 3 (6%) in the MVSK case.

Table A.3: “Abnormal” inefficiencies among the 50 MFs considered

Obs. No.	MVS			Obs. No.	MVSK		
	NC model	C model	Diversified		NC model	C model	Diversified
1	0.0224	0.0300	0.0270	1	0.0224	0.0279	0.0270
3	0.0218	0.0351	0.0305	3	0.0218	0.0324	0.0305
6	0.0155	0.0231	0.0217	6	0.0155	0.0222	0.0217
7	0	0.0021	0.0015				
8	0	0.0037	0.0017				
9	0	0.0030	0.0021				
10	0	0.0038	0.0037				
11	0	0.0032	0.0021				
12	0	0.0028	0.0010				
15	0	0.0053	0.0037				

B Descriptive Statistics of the Variables

In the empirical analysis, seven variables are adopted to characterize the financial performance of the ethical and non-ethical MFs. The main descriptive statistics of these seven variables are reported in Table B.1.

Table B.1: Descriptive statistics of the variables characterizing the MFs

Statistics	Mean return	Variance of returns	Skewness	Kurtosis	Entry fee	Exit fee	Manag. fee
<i>All Funds # 445</i>							
Mean	0.0050	0.0012	-0.00001	0.00001	1.649	0.131	1.111
Std. Dev.	0.0042	0.0010	0.00006	0.00003	2.110	0.489	0.624
Min	-0.0068	0.0000	-0.00063	0.00000	0.000	0.000	0.000
Median	0.0049	0.0012	-0.00001	0.00000	0.100	0.000	1.250
Max	0.0221	0.0074	0.00021	0.00048	7.500	4.500	3.500
<i>Ethical Funds # 227</i>							
Mean	0.0040	0.0009	-0.00001	0.00000	1.279	0.092	0.935
Std. Dev.	0.0039	0.0007	0.00004	0.00001	1.847	0.342	0.619
Min	-0.0065	0.0000	-0.00034	0.00000	0.000	0.000	0.000
Median	0.0041	0.0010	0.00000	0.00000	0.060	0.000	0.850
Max	0.0195	0.0034	0.00011	0.00007	5.250	4.000	3.500
<i>Non-Ethical Funds # 218</i>							
Mean	0.0061	0.0015	-0.00002	0.00002	2.032	0.205	1.288
Std. Dev.	0.0045	0.0012	0.00009	0.00005	2.294	0.702	0.617
Min	-0.0068	0.0000	-0.00063	0.00000	0.000	0.000	0.000
Median	0.0055	0.0013	-0.00001	0.00001	0.800	0.000	1.500
Max	0.0221	0.0074	0.00021	0.00048	7.500	4.500	3.500

From Table B.1 we notice that, on average, the ethical funds provide a lower mean return than non-ethical funds (0.0040 vs 0.0061) but also a lower variance (0.0009 vs 0.0015); however, the return per unit of risk (measuring the risk with the standard deviation) is slightly in favour of non-ethical funds (0.133 for ethical funds vs 0.159 for non-ethical funds). The fund costs are on average lower for ethical funds, and this holds for all fees (entry, exit and management). As for the skewness and kurtosis, their (absolute) values are quite low for all funds, albeit comparatively higher for non-ethical funds.