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Research article

Using net-zero alignment measures for sustainable portfolio choice

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Appendix

Table A1. Net-zero metrics for the Energy sector holdings in 2022.

Company	Ticker	NZAS	ITR	SR	SR-NZAS	SR-ITR
BAKER HUGHES	BKR	1.006	0.398	0.649	1.303	0.391
BP P.L.C.	BP	0.574	0.394	0.99	1.558	0.6
CANADIAN NATURAL RESOURCES	CNQ	0.192	0.922	1.039	1.238	0.081
CONOCOPHILLIPS	COP	0.839	0.419	1.433	2.635	0.833
CHEVRON	CVX	0.415	0.596	1.521	2.152	0.614
DEVON ENERGY	DVN	0.436	0.41	0.974	1.398	0.574
ENI S.P.A.	E	0.421	0.346	0.423	0.601	0.276
EOG RESOURCES	EOG	0.726	0.431	1.175	2.029	0.668
EQUINOR ASA	EQNR	0.594	0.384	1.072	1.708	0.66
DIAMONDBACK ENERGY	FANG	0.592	0.67	0.804	1.28	0.265
HALLIBURTON	HAL	0.562	0.761	1.255	1.962	0.3
MARATHON PETROLEUM	MPC	0.386	0.897	1.843	2.555	0.19
ONEOK	OKE	0.437	0.78	0.617	0.886	0.136
OCCIDENTAL PETROLEUM	OXY	0.328	0.375	1.577	2.095	0.986
PHILLIPS 66	PSX	0.98	1.000	1.116	2.211	0.000
REPSOL S.A.	REPYY	0.551	0.568	1.087	1.686	0.469

Continued on next page

Company	Ticker	NZAS	ITR	SR	SR-NZAS	SR-ITR
SHELL	SHEL	0.679	0.367	0.968	1.626	0.613
SCHLUMBERGER	SLB	0.816	0.482	1.337	2.428	0.692
TARGA RESOURCES	TRGP	0.202	0.727	1.048	1.259	0.286
TC ENERGY	TRP	0.062	0.944	−0.261	−0.277	−0.015
TOTALENERGIES	TTE	0.508	0.423	0.951	1.434	0.549
VALERO ENERGY	VLO	0.418	0.785	1.418	2.01	0.305
THE WILLIAMS COMPANIES	WMB	0.079	0.919	1.074	1.159	0.087
EXXON MOBIL	XOM	0.36	0.489	1.875	2.549	0.958

The lowest ITR, and the highest NZAS, SR-NZAS, and SR-ITR are in bold font.

Table A2. Net-zero metrics for the Energy sector holdings in 2023.

Company	Ticker	NZAS	ITR	SR	SR-NZAS	SR-ITR
BAKER HUGHES	BKR	1.212	0.397	0.869	1.923	0.524
BP P.L.C.	BP	0.348	0.411	0.431	0.581	0.254
CANADIAN NATURAL RESOURCES	CNQ	0.189	0.922	1.064	1.266	0.083
CONOCOPHILLIPS	COP	0.172	0.417	0.36	0.422	0.21
CHEVRON	CVX	0.222	0.6	−0.392	−0.479	−0.157
DEVON ENERGY	DVN	0.221	0.395	−0.394	−0.481	−0.238
ENI S.P.A.	E	0.224	0.327	1.138	1.392	0.766
EOG RESOURCES	EOG	0.239	0.432	0.212	0.263	0.121
EQUINOR ASA	EQNR	0.367	0.388	0.438	0.598	0.268
DIAMONDBACK ENERGY	FANG	0.172	0.639	0.91	1.067	0.328
HALLIBURTON	HAL	0.368	0.766	0.115	0.157	0.027
MARATHON PETROLEUM	MPC	0.23	0.896	1.207	1.484	0.126
ONEOK	OKE	0.142	0.695	0.757	0.864	0.231
OCCIDENTAL PETROLEUM	OXY	0.108	0.355	0.099	0.11	0.064
PHILLIPS 66	PSX	0.269	1.000	1.263	1.603	0.000
REPSOL S.A.	REPYY	0.269	0.579	0.147	0.187	0.062
SHELL	SHEL	0.27	0.366	1.039	1.319	0.659
SCHLUMBERGER	SLB	0.656	0.715	0.256	0.424	0.073
TARGA RESOURCES	TRGP	0.073	0.618	1.052	1.129	0.402
TC ENERGY	TRP	0.064	0.944	0.408	0.434	0.023
TOTALENERGIES	TTE	0.352	0.374	0.747	1.01	0.468
VALERO ENERGY	VLO	0.246	0.774	0.511	0.636	0.115
THE WILLIAMS COMPANIES	WMB	0.053	0.916	0.814	0.858	0.069
EXXON MOBIL	XOM	0.203	0.483	0.003	0.004	0.002

The lowest ITR, and the highest NZAS, SR-NZAS, and SR-ITR are in bold font.

Table A3. Net-zero metrics for the Energy sector holdings in 2024.

Company	Ticker	NZAS	ITR	SR	SR-NZAS	SR-ITR
BAKER HUGHES	BKR	1.004	0.41	0.917	1.838	0.542
BP P.L.C.	BP	0.169	0.34	−0.572	−0.668	−0.378
CANADIAN NATURAL RESOURCES	CNQ	0.294	0.886	−0.01	−0.013	−0.001
CONOCOPHILLIPS	COP	0.311	0.419	−0.62	−0.812	−0.36
CHEVRON	CVX	0.169	0.668	0.087	0.102	0.029
DEVON ENERGY	DVN	0.143	0.426	−1.176	−1.344	−0.675
ENI S.P.A.	E	0.269	0.327	−0.773	−0.981	−0.521
EOG RESOURCES	EOG	0.304	0.443	0.203	0.264	0.113
EQUINOR ASA	EQNR	0.196	0.379	−0.547	−0.655	−0.34
DIAMONDBACK ENERGY	FANG	0.337	0.813	0.384	0.514	0.072
HALLIBURTON	HAL	0.347	0.762	−0.853	−1.149	−0.203
MARATHON PETROLEUM	MPC	0.139	0.922	−0.182	−0.207	−0.014
ONEOK	OKE	0.267	0.658	2.004	2.539	0.686
OCCIDENTAL PETROLEUM	OXY	0.121	0.337	−0.805	−0.902	−0.534
PHILLIPS 66	PSX	0.253	1.000	−0.460	−0.577	0.000
REPSOL S.A.	REPYY	0.24	0.458	−0.655	−0.812	−0.355
SHELL	SHEL	0.252	0.366	−0.058	−0.072	−0.037
SCHLUMBERGER	SLB	0.708	0.485	−0.971	−1.659	−0.5
TARGA RESOURCES	TRGP	0.105	0.618	3.233	3.571	1.235
TC ENERGY	TRP	0.04	0.925	1.215	1.264	0.091
TOTALENERGIES	TTE	0.212	0.403	−0.798	−0.967	−0.476
VALERO ENERGY	VLO	0.146	0.874	−0.062	−0.071	−0.008
THE WILLIAMS COMPANIES	WMB	0.07	0.927	2.495	2.669	0.182
EXXON MOBIL	XOM	0.163	0.443	0.444	0.516	0.247

The lowest ITR, and the highest NZAS, SR-NZAS, and SR-ITR are in bold font.

Table A4. Performance and weights of the Energy NZAS-tilted PearMVP in 2023[1)].

NZCP	PNZAS	SR	SR-NZAS	Portfolio weights					
				BKR	CNQ	E	WMB	MPC	PSX
0.00E+00	0.225	1.42	1.74	0.00	0.02	0.38	0.08	0.18	0.34
5.00E−05	0.252	1.41	1.77	0.02	0.1	0.26	0	0.19	0.43
2.00E−04	0.336	1.36	1.82	0.01	0.15	0.00	0.00	0.20	0.64
3.00E−04	0.25	1.33	1.66	0.02	0.09	0.00	0.00	0.17	0.73
4.00E−04	0.238	1.3	1.61	0.00	0.03	0.00	0.00	0.15	0.83
5.00E−04	0.370	1.29	1.76	0.15	0.00	0.00	0.00	0.02	0.83
6.00E−04	0.569	1.25	1.97	0.42	0.00	0.00	0.00	0.00	0.58
8.00E−04	0.958	0.92	1.80	0.94	0.00	0.00	0.00	0.00	0.06
1.00E−03	1.004	0.87	1.74	1.00	0.00	0.00	0.00	0.00	0.00

[1)] Maximums SR-NZAS are in bold font.

Table A5. Performance and weights of the Energy NZAS-tilted PartMVP in 2023[1), 2)].

NZCP	PNZAS	SR	SR-NZAS	Portfolio weights					
				BKR	CNQ	E	FANG	MPC	PSX
0.00E+00	0.230	0.34	0.41	0.01	0.00	0.00	0.04	0.03	0.04
5.00E−05	0.493	1.26	1.88	0.33	0.21	0.05	0.07	0.19	0.16
2.00E−04	0.425	1.32	1.88	0.25	0.21	0.00	0.00	0.20	0.34
4.00E−04	0.439	1.32	1.90	0.27	0.07	0.00	0.00	0.14	0.53
6.00E−04	0.61	1.23	1.99	0.48	0.00	0.00	0.00	0.00	0.52
8.00E−04	0.98	0.90	1.77	0.96	0.00	0.00	0.00	0.00	0.04
1.00E−02	1.00	0.87	1.74	1.00	0.00	0.00	0.00	0.00	0.00

[1)] Only the holdings with weights dependent on NZCP are listed.

[2)] Maximum SR and SR-NZAS are in bold font.

Table A6. Performance and weights of the Energy ITR-tilted PearMVP in 2023[1)].

NZCP	PITR	SR	SR-ITR	Portfolio weights					
				CNQ	E	MPC	PSX	SHEL	WMB
0.00E+00	0.723	1.42	0.39	0.02	0.38	0.18	0.34	0.00	0.08
5.00E−05	0.692	1.42	0.44	0.00	0.43	0.24	0.33	0.00	0.00
1.00E−04	0.688	1.42	0.44	0.00	0.43	0.27	0.30	0.00	0.00
2.00E−04	0.679	1.41	0.45	0.00	0.44	0.33	0.23	0.00	0.00
4.00E−04	0.681	1.39	0.44	0.00	0.42	0.47	0.11	0.00	0.00
8.00E−04	0.334	1.16	0.77	0.00	0.81	0.00	0.00	0.19	0.00
1.00E−03	0.331	1.15	0.77	0.00	0.90	0.00	0.00	0.10	0.00
1.20E−03	0.327	1.14	0.77	0.00	1.00	0.00	0.00	0.00	0.00

[1)] Maximum SR-ITR is in bold font.

Table A7. Performance and weights of the Energy ITR-tilted PartMVP in 2023[1), 2)].

NZCP	PITR	SR	SR-ITR	Portfolio weights							
				BKR	CNQ	E	MPC	OXY	PSX	SHEL	TRGP
0.00E+00	0.609	0.34	0.13	0.03	0.00	0.00	0.04	0.05	0.04	0.01	0.02
5.00E−05	0.633	1.35	0.49	0.14	0.12	0.27	0.25	0.00	0.08	0.06	0.09
1.00E−04	0.661	1.37	0.47	0.08	0.14	0.37	0.32	0.00	0.08	0.00	0.00
2.00E−04	0.733	1.38	0.37	0.00	0.13	0.32	0.47	0.00	0.09	0.00	0.00
3.00E−04	0.725	1.36	0.37	0.00	0.04	0.34	0.57	0.00	0.05	0.00	0.00
4.00E−04	0.61	1.36	0.53	0.00	0.00	0.52	0.48	0.00	0.00	0.00	0.00
8.00E−04	0.41	1.24	0.73	0.00	0.00	0.86	0.14	0.00	0.00	0.00	0.00
1.00E−03	0.329	1.13	0.76	0.00	0.00	0.92	0.00	0.02	0.00	0.06	0.00
6.00E−03	0.328	1.06	0.71	0.00	0.00	0.90	0.00	0.10	0.00	0.00	0.00
1.00E−02	0.327	1.14	0.77	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00

[1)] Only the holdings with weights dependent on NZCP are listed.

[2)] Maximum SR and SR-ITR are in bold font.



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