Economic Stock Market Analysis

MySQL, Graph, and Chart Playground

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16 October, 2023

Contents

1 Basic Materials Sector

1.1 1, 3, 5 Year DEA Portfolio Performance Analysis

Only 100% efficient stocks identified through DEA analysis are included for the constructed portfolio.

Table 1: BASIC MATERIALS Sector Portfolio Detail

DMU	Efficiency Score	Stock Prices ($)				Holding Period Returns (%)		
		Entry	1 YR	3 YR	5 YR	1 YR	3 YR	5 YR
AMWD	1	81	75.25	55.68	93.85	-7.10	-31.26	15.86
CLF	1	1.67	8.41	7.69	14.56	403.59	360.48	771.86
CLW	1	46.29	65.55	24.37	37.75	41.61	-47.35	-18.45
CMP	1	75.81	78.35	41.69	61.72	3.35	-45.01	-18.59
FNV	1	45.81	59.76	70.17	125.33	30.45	53.18	173.59
GORO	1	1.69	4.35	4	2.91	157.40	136.69	72.19
RYAM	1	9.66	15.46	10.65	6.52	60.04	10.25	-32.51
SCCO	1	26.34	31.94	30.77	65.12	21.26	16.82	147.23
TREX	1	9.6075	16.1	29.68	83.72	67.58	208.93	771.40
UFPI	1	22.8033	34.06	25.96	55.55	49.36	13.84	143.61

Table 2: BASIC MATERIALS Sector Portfolio Summary

	Porfolio Value ($)				Holding Period Returns (%)		
	Entry	1 YR	3 YR	5 YR	1 YR	3 YR	5 YR
Basic Materials	320.68	389.23	300.66	547.03	21.38	-6.24	70.58

1.2   Graphs and Charts

Portfolio Price Performance
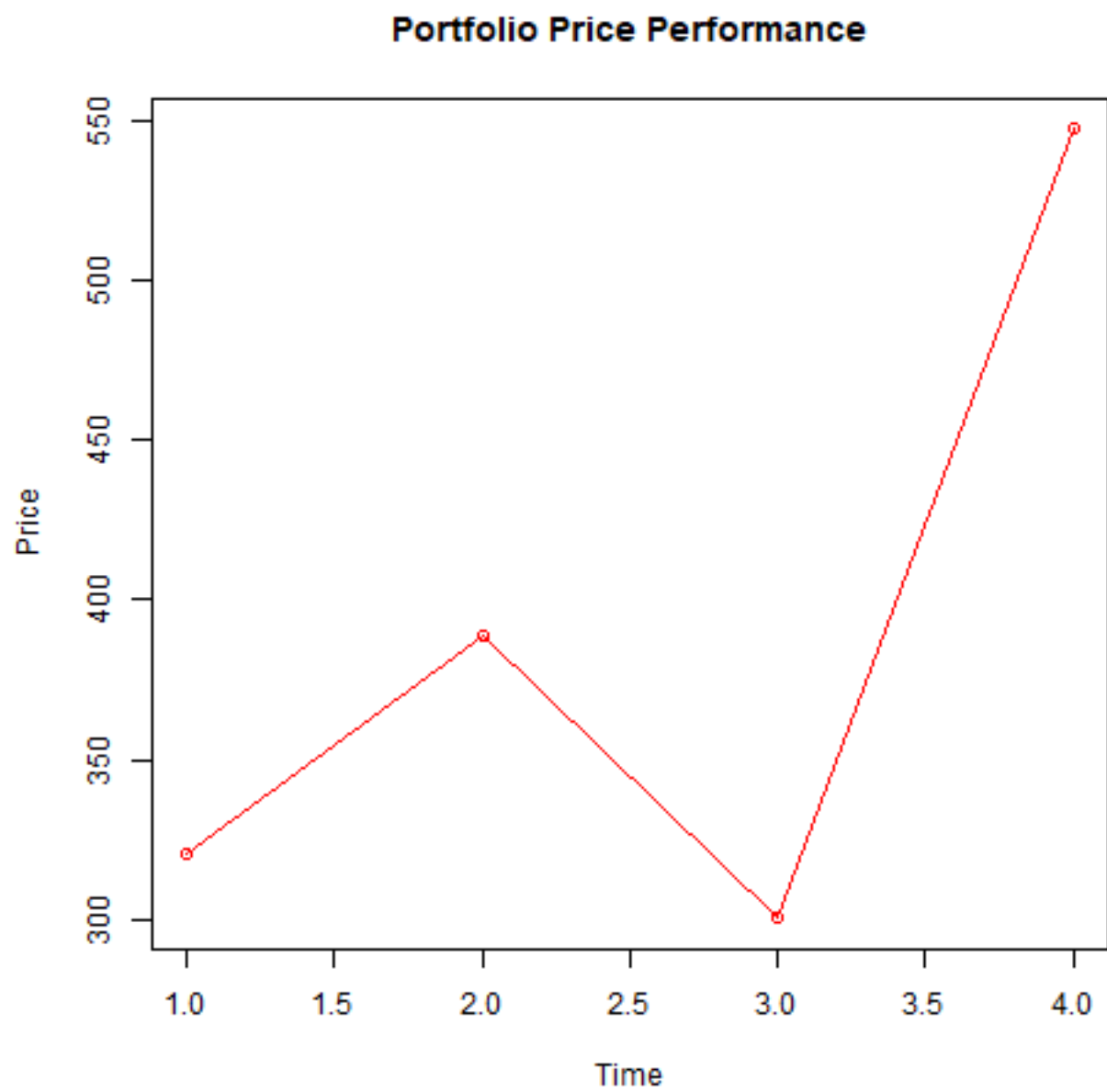
Portfolio Returns Performance
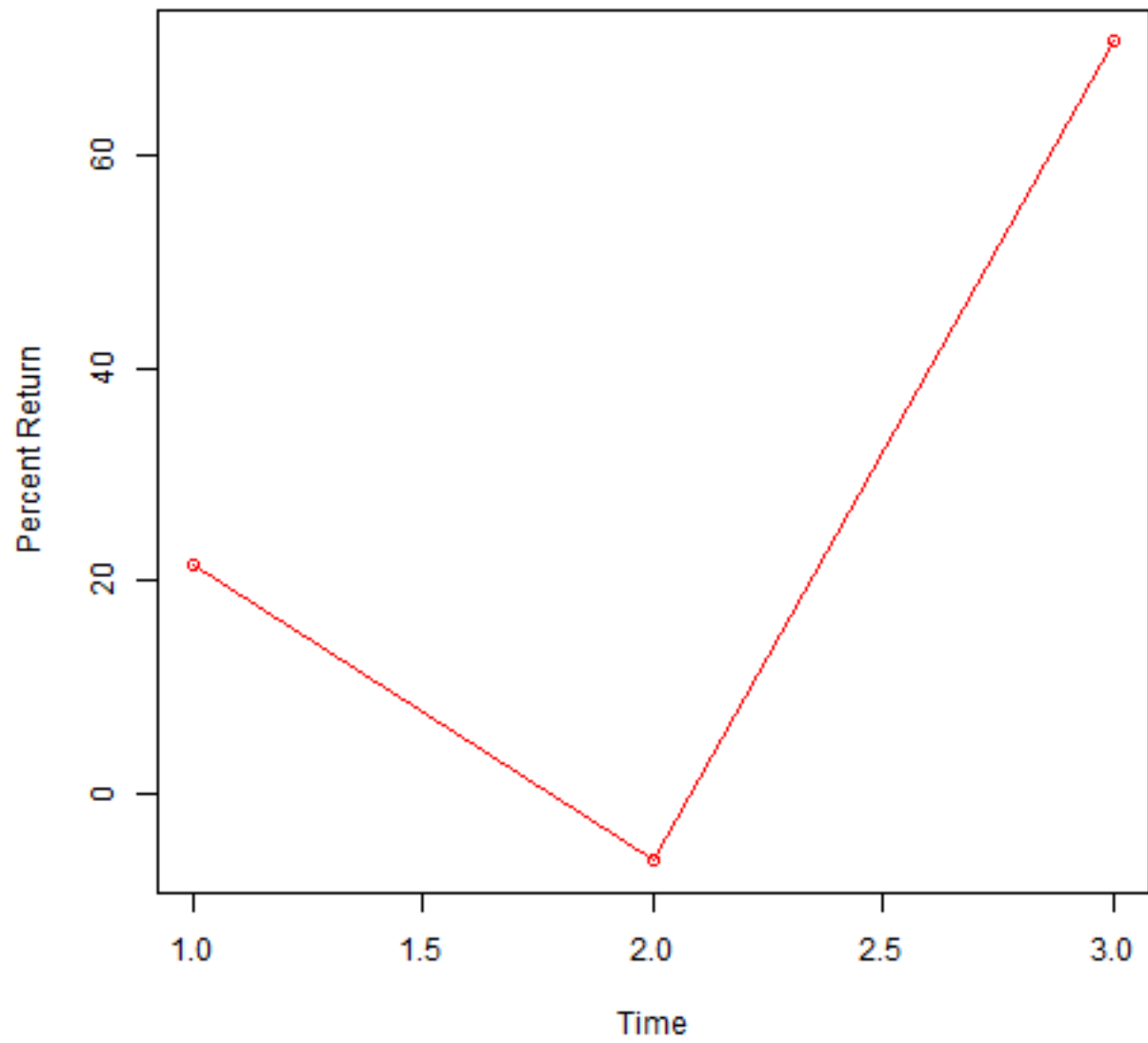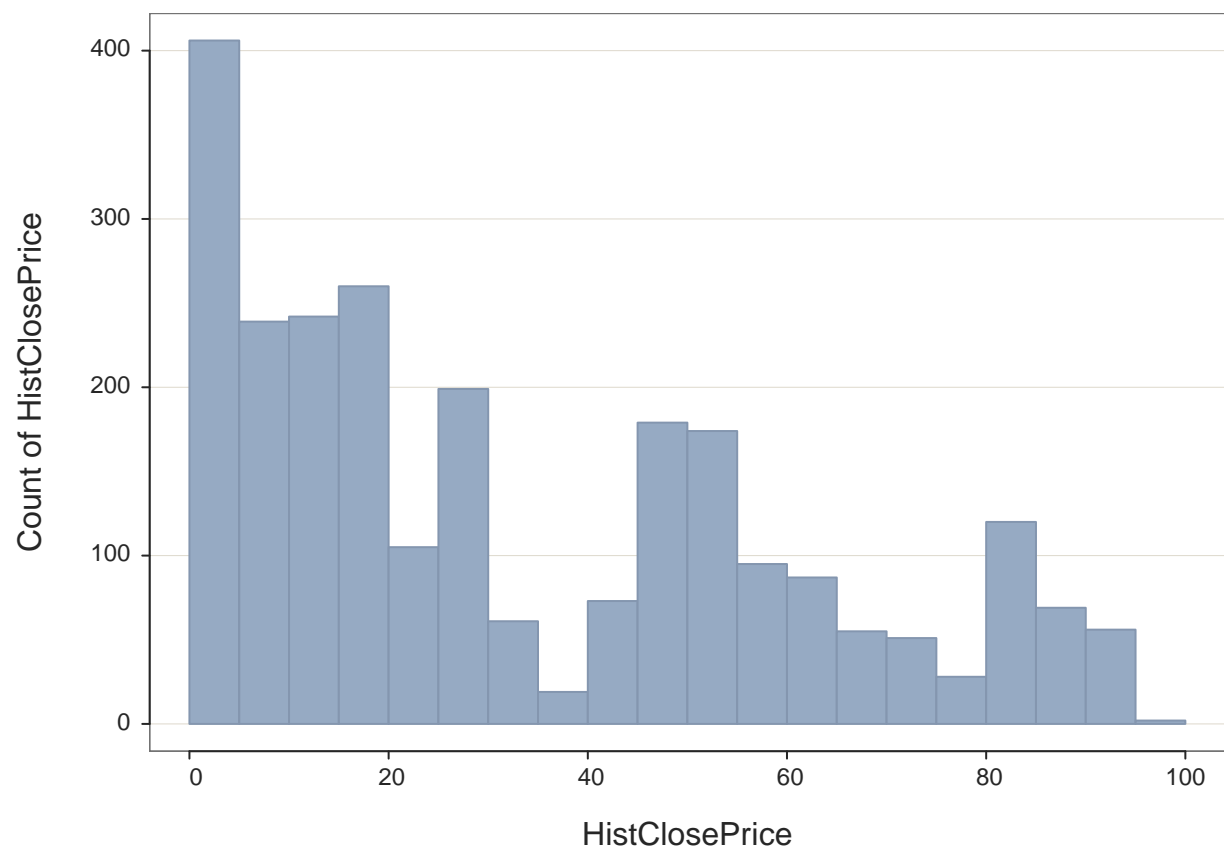
1.3 Data Source Examination

Table 3: Data Source Extract Example - INPUTS (x)

DMU	Beta	Sigma	Debt To Equity	Price to Book
AEM	0.0543359	2.67528	0.569342141004762	1.36872677746063
AG	0.0473967	3.79421	0.308252882885927	0.767994499402444
AMWD	0.107233	2.15894	0.350562695801725	3.56511307767945
AUMN	0.0117949	5.07376	0.177113936551043	1.36333424269721
BHP	0.278935	1.25141	0.702969196239342	1.71319278038538
BVN	0.0501368	3.26931	0.221864462064451	0.338533491572147
—	—	—	—	—
RYAM	0.0264323	5.81686	-30.279078829933	-23.7821720672151
SCCO	0.178033	1.62761	0.994514048517442	3.977350510175
STKL	0.0947497	2.57667	0.633333683414552	1.17631120898539
TREX	0.145635	2.27533	0.296156590442379	10.3449278230854
UFPI	0.196904	1.69544	0.217870080899636	1.8226657013238
VALE	0.0633729	3.13453	1.07200910822784	0.310133832802406

Table 4: Data Source Extract Example - OUTPUTS (y)

DMU	Net Margin	EPS	Return on Assets	Return on Equity	Rate of Return
AEM	0.0123816882169724	0.11	0.0036783387549041	0.0203966448436335	-2.66667
AG	-0.494085051311496	-0.84	-0.137297707990376	-0.724042307988533	-37.3563
AMWD	0.0430048518107975	2.25	0.0889913362613561	0.0745721461767691	100.05
AUMN	-3.14496344938669	-0.48	-1.49302982177519	-4.52345205771681	-62.0951
BHP	0.0427905726319562	0.718	0.0153315138866591	0.082063904165849	-45.8141
BVN	-0.33325138885387	-1.25	-0.0697597038692763	-0.463745944553847	-55.7394
—	—	—	—	—	—
RYAM	0.0586976196748616	1.31	0.0428855152245635	-1.91280040788256	-56.5661
SCCO	0.145940268336669	0.93	0.0584760029222119	0.318390639901331	-8.15753
STKL	-0.0196230310164574	-0.31	-0.0184308929686032	-0.0479197824083615	-42.0339
TREX	0.109114254861571	1.53	0.226879498863197	0.193602701116197	-10.4309
UFPI	0.0275490280633901	3.99	0.0718041959809656	0.0408218677113522	30.5516
VALE	-0.473622554570659	-2.35	-0.137063237354789	-1.09438090945258	-58.5642

1.4 Multiplier Model Analysis

1.4.1 Input/Output Weight Analysis

Table 5: Multiplier Model Results for Perfectly Efficient Stocks

DMU	Inputs (x)				Outputs (y)				
	Beta v_1	Sigma v_2	DtoE v_3	PtoB v_4	NetMgn u_1	EPS u_2	ROA u_3	ROE u_4	TTM u_5
AMWD	0.0000	0.3192	0.0124	0.0860	0.00000	0.00000	0.00000	0.00000	0.01000
CLF	0.0000	0.1859	0.0000	0.0946	0.00000	0.00000	0.00000	1.64593	0.00000
CLW	3.5340	0.2883	0.0000	0.0735	0.00000	0.32827	0.00000	0.21271	0.00000
CMP	0.0000	0.4692	0.0000	0.1109	0.00000	0.22288	0.00000	0.00000	0.00355
FNV	12.0983	0.0000	0.0000	0.2651	14.35369	0.00000	0.00000	3.53017	0.00130
GORO	9.9198	0.0000	0.0000	0.7507	5.39095	0.00000	15.00194	9.69883	0.00000
RYAM	0.0000	1.7354	0.0000	0.3824	0.00000	0.76336	0.00000	0.00000	0.00000
SCCO	2.2748	0.2651	0.0000	0.0411	0.00000	0.00000	0.00000	3.32388	0.00715
TREX	0.0000	0.4298	0.0749	0.0000	0.00000	0.04277	4.11922	0.00000	0.00000
UFPI	0.0000	0.4575	0.0036	0.1226	0.00000	0.17090	0.00000	0.00000	0.01041

1.4.2 Output Weight Analysis

Table 6: MM Output Weights for Perfectly Efficient Stocks

DMU	Score	Outputs (y)				
	θ^{CRS}	NetMgn u_1	EPS u_2	ROA u_3	ROE u_4	TTM u_5
AMWD	1.0000	0.00000	0.00000	0.00000	0.00000	0.01000
CLF	1.0000	0.00000	0.00000	0.00000	1.64593	0.00000
CLW	1.0000	0.00000	0.32827	0.00000	0.21271	0.00000
CMP	1.0000	0.00000	0.22288	0.00000	0.00000	0.00355
FNV	1.0000	14.35369	0.00000	0.00000	3.53017	0.00130
GORO	1.0000	5.39095	0.00000	15.00194	9.69883	0.00000
RYAM	1.0000	0.00000	0.76336	0.00000	0.00000	0.00000
SCCO	1.0000	0.00000	0.00000	0.00000	3.32388	0.00715
TREX	1.0000	0.00000	0.04277	4.11922	0.00000	0.00000
UFPI	1.0000	0.00000	0.17090	0.00000	0.00000	0.01041

1.4.3 Input Weight Analysis

Table 7: MM Input Weights for Perfectly Efficient Stocks

DMU	Score	Inputs (x)			
	θ^{CRS}	Beta v_1	Sigma v_2	DtoE v_3	PtoB v_4
AMWD	1.0000	0.0000	0.3192	0.0124	0.0860
CLF	1.0000	0.0000	0.1859	0.0000	0.0946
CLW	1.0000	3.5340	0.2883	0.0000	0.0735
CMP	1.0000	0.0000	0.4692	0.0000	0.1109
FNV	1.0000	12.0983	0.0000	0.0000	0.2651

GORO	1.0000	9.9198	0.0000	0.0000	0.7507
RYAM	1.0000	0.0000	1.7354	0.0000	0.3824
SCCO	1.0000	2.2748	0.2651	0.0000	0.0411
TREX	1.0000	0.0000	0.4298	0.0749	0.0000
UFPI	1.0000	0.0000	0.4575	0.0036	0.1226

2 Appendix

2.1 Constant Returns to Scale Mathematical Model

$$\min \theta$$

$$\text{s.t.: } \sum_{j=1}^{N^D} x_{i,j}\lambda_j - \theta x_{i,k} \leq 0 \; \forall \; i$$

$$\sum_{j=1}^{N^D} y_{r,j}\lambda_j \geq y_{r,k} \; \forall \; r$$

$$\lambda_j \geq 0 \; \forall \; j$$

2.2 Multiplier Mathematical Model

$$\max \sum_{r=1}^{N^Y} u_r y_{r,k}$$

$$\text{s.t.: } \sum_{i=1}^{N^X} v_i x_{i,k} = 1$$

$$\sum_{r=1}^{N^Y} u_r y_{r,j} - \sum_{i=1}^{N^X} v_i x_{i,j} \leq 0 \; \forall \; j$$

$$u_r, \; v_i \geq 0 \; \forall \; r, i$$

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