June 17, 2022 - cascad#237

Execution Report

Title: **Low Volatility Asset Valuation in Brazilian Stock Market: Lower Risk with Higher Returns**

Authors: **Luciano Boudjoukian França, Mario Candido de Avelar Fernandes Filho, & Pedro Paulo Portella Teles**

Full reference: Boudjoukian França, Luciano, de Avelar Fernandes Filho, Mario Candido, & Portella Teles, Pedro Paulo, "Low Volatility Asset Valuation in Brazilian Stock Market: Lower Risk with Higher Returns" Working paper, June 2022.

The structure and contents of this execution report provided by **cascad** for the certification are similar to those recommended by the AEA Data Editor.

1. DATA DESCRIPTION

This study relies on data from the Brazil Index 100 (IBrX 100), a market index whose aim is to be a weighted performance indicator of the 100 stocks with the greatest representativeness and tradability in the Brazilian stock exchange.

For a thorough description of the data, please refer to Section 2 of the paper.

2. CODE DESCRIPTION

For the purpose of this certification, we aimed to check the results displayed in Figure 1 and in Tables 1-7.

The replication package contains 4 R scripts numbered from 0 to 3, as well as a “raw_data” subfolder. The R scripts must be run in order: they install and load all dependencies, clean the data, create two folders (“brazil” and “portfolio”) in the process, and generate all the tables and figures.

3. REPLICATION STEPS

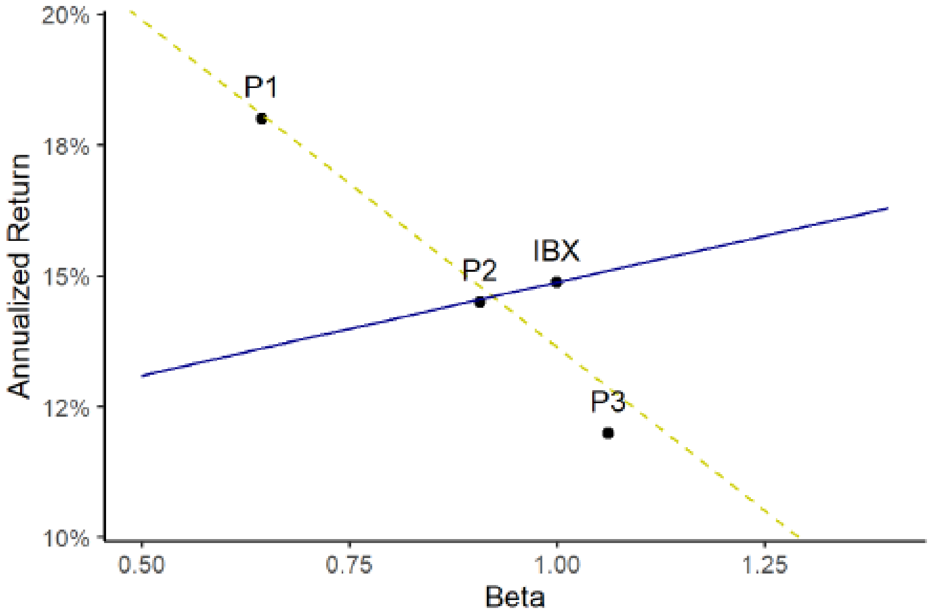
The replication material was downloaded from the cascad website and run as per readme, using R 4.0.4, on a computer with 64GB RAM, intel® Core™ i9-9900K CPU @3.60-5.00GHz, Nvidia Geforce RTX 2060, and Windows 10 OS. We encountered no issues during the replication.

4. FINDINGS

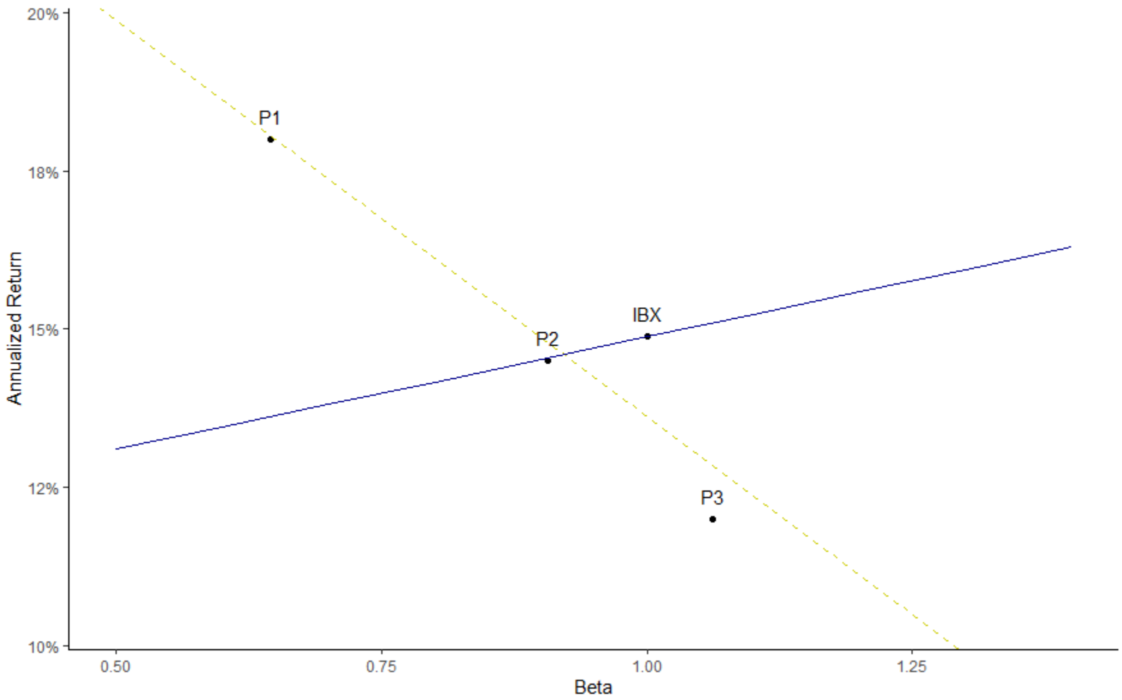
We reproduced all Tables and Figure 1 with perfect accuracy.

4.1. FIGURE 1: PORTFOLIOS RANKED BY VOLATILITY

Original:



Reproduced:



4.2. TABLE 1: RESULTS OF VOLATILITY PORTFOLIOS

Original:

Panel A

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	18.01	14.5	11.99	6.02	14.88
Standard Deviation (%)	18.69	25.27	32.22	20.09	26.26
Sharpe Ratio	0.32	0.11	0.02		0.12
z(SR)	1.54	-0.17	-0.59		
Annualized Rp-Rf (%)	6.01	2.86	0.61	5.4	3.2
Beta	0.64	0.91	1.06	-0.42	
Alpha (%)	3.39	0.04	-1.18	4.57	
t(alpha)	1.82	0.02	-0.32	0.2	

Panel B

	P1	P2	P3	P1-P3	IBX
Average positive returns (%)	0.83	1.09	1.42	-0.59	1.16
Average negative returns (%)	-0.82	-1.11	-1.47	0.65	-1.17
Biggest loss - day (%)	-11.48	-17.12	-20.13		-14.89

Reproduced:

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	18.01	14.50	11.99	6.02	14.88
Standard Deviation (%)	18.69	25.27	32.22	20.09	26.26
Sharpe Ratio	0.32	0.11	0.02	NA	0.12
z(SR)	1.54	-0.17	-0.59	NA	NA
Annualized Rp-Rf (%)	6.01	2.86	0.61	5.40	3.20
Beta	0.64	0.91	1.06	-0.42	NA
Alpha (%)	3.39	0.04	-1.18	4.57	NA
t(alpha)	1.82	0.02	-0.32	0.20	NA

	P1	P2	P3	P1-P3	IBX
Average positive returns (%)	0.83	1.09	1.42	-0.59	1.16
Average negative returns (%)	-0.82	-1.11	-1.47	0.65	-1.17
Biggest loss - day (%)	-11.48	-17.12	-20.13	NA	-14.89

4.3. TABLE 2: TIME PERIOD DIVISION

Original:

Panel A: 2003 - 2008

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	27.55	18.84	16.04	11.51	24.96
Standard Deviation (%)	21	28.24	32.5	18.81	30.19
Sharpe Ratio	0.45	0.07	-0.01		0.24
z(SR)	0.88	-1.19	-1.05		
Annualized Rp-Rf (%)	9.49	2.01	-0.4	9.89	7.27
Beta	0.63	0.88	0.92	-0.29	
Alpha (%)	4.03	-4.1	-5.57	9.6	
t(alpha)	1.1	-1.04	-0.82	0.4	

Panel B: 2009

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	54.2	88.21	170.4	-116.2	75.16
Standard Deviation (%)	17.03	27.75	31.91	21.19	30.53
Sharpe Ratio	2.35	2.56	4.56		1.93
z(SR)	0.73	1.48	2.49		
Annualized Rp-Rf (%)	40.01	70.91	145.57	-105.56	59.05
Beta	0.48	0.88	0.91	-0.43	
Alpha (%)	11.17	13.55	62.63	-51.46	
t(alpha)	1.2	1.71	3.02	-1.64	

Panel C: 2010 - 2021

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	11.01	7.84	2.27	8.74	6.35
Standard Deviation (%)	17.56	23.4	32.07	20.59	23.61
Sharpe Ratio	0.11	-0.04	-0.19		-0.1
z(SR)	1.46	0.59	-0.37		
Annualized Rp-Rf (%)	1.93	-0.97	-6.1	8.03	-2.34
Beta	0.68	0.93	1.2	-0.52	
Alpha (%)	3.22	1.39	-1.61	4.83	
t(alpha)	1.51	0.61	-0.37	0.43	

Reproduced:

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	27.55	18.84	16.04	11.51	24.96
Standard Deviation (%)	21.00	28.24	32.50	18.81	30.19
Sharpe Ratio	0.45	0.07	-0.01	NA	0.24
z(SR)	0.88	-1.19	-1.05	NA	NA
Annualized Rp-Rf (%)	9.49	2.01	-0.40	9.89	7.27
Beta	0.63	0.88	0.92	-0.29	NA
Alpha (%)	4.03	-4.10	-5.57	9.60	NA
t(alpha)	1.10	-1.04	-0.82	0.40	NA

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	54.20	88.21	170.40	-116.20	75.16
Standard Deviation (%)	17.03	27.75	31.91	21.19	30.53
Sharpe Ratio	2.35	2.56	4.56	NA	1.93
z(SR)	0.73	1.48	2.49	NA	NA
Annualized Rp-Rf (%)	40.01	70.91	145.57	-105.56	59.05
Beta	0.48	0.88	0.91	-0.43	NA
Alpha (%)	11.17	13.55	62.63	-51.46	NA
t(alpha)	1.20	1.71	3.02	-1.64	NA

	P1	P2	P3	P1-P3	IBX
Annualized Return (%)	11.01	7.84	2.27	8.74	6.35
Standard Deviation (%)	17.56	23.40	32.07	20.59	23.61
Sharpe Ratio	0.11	-0.04	-0.19	NA	-0.10
z(SR)	1.46	0.59	-0.37	NA	NA
Annualized Rp-Rf (%)	1.93	-0.97	-6.10	8.03	-2.34
Beta	0.68	0.93	1.20	-0.52	NA
Alpha (%)	3.22	1.39	-1.61	4.83	NA
t(alpha)	1.51	0.61	-0.37	0.43	NA

4.4. TABLE 3 – MULTIFACTOR REGRESSION MODELS

Original:

Panel A: Alpha

	Low.Vol.	Mid.Vol.	High.Vol.
CAPM	3.39	0.04	-1.18
F&F	3.21	-0.41	-2.7
Cahart	2.87	-0.26	-1.92
5 Factors	2.29	-0.74	-1.38

Panel B: t-value

	Low.Vol.	Mid.Vol.	High.Vol.
CAPM	1.82	0.02	-0.32
F&F	1.76	-0.23	-1.05
Cahart	1.58	-0.14	-0.74
5 Factors	1.27	-0.41	-0.54

Reproduced:

	Low.Vol.	Mid.Vol.	High.Vol.
CAPM	3.39	0.04	-1.18
F&F	3.21	-0.41	-2.70
Cahart	2.87	-0.26	-1.92
5 Factors	2.29	-0.74	-1.38

	Low.Vol.	Mid.Vol.	High.Vol.
CAPM	1.82	0.02	-0.32
F&F	1.76	-0.23	-1.05
Cahart	1.58	-0.14	-0.74
5 Factors	1.27	-0.41	-0.54

4.5. TABLE 4: PORTFOLIOS RANKED BY OTHER FACTORS

Original:

Panel A: Size

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	4.76	14.7	16.49	12.58	10.31	16.15	-11.39	14.88
Standard Deviation (%)	32.39	28.91	28.54	25.07	26.57	29.17	26.04	26.26
Sharpe Ratio	-0.18	0.11	0.16	0.05	-0.03	0.15		0.12
z(SR)	-1.52	-0.02	0.36	-0.63	-1.42	0.63		
Annualized Rp-Rf (%)	-5.89	3.04	4.65	1.14	-0.9	4.35	-10.24	3.2
Beta	0.85	0.87	0.89	0.81	0.9	1.07	-0.22	
Alpha (%)	-6.23	1.48	2.82	-1.05	-3.28	1.45	-7.68	
t(alpha)	-1.19	0.36	0.73	-0.34	-1.2	0.79	-0.92	

Panel B: Value

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	12.89	16.86	12.04	8.16	17.31	16.94	-4.05	14.88
Standard Deviation (%)	33.17	30.76	27.76	25.63	24.2	24.89	25.27	26.26
Sharpe Ratio	0.04	0.16	0.02	-0.11	0.22	0.2		0.12
z(SR)	-0.27	0.44	-0.7	-1.93	0.67	0.52		
Annualized Rp-Rf (%)	1.42	4.98	0.65	-2.84	5.38	5.05	-3.63	3.2
Beta	0.95	0.96	0.9	0.84	0.78	0.78	0.17	
Alpha (%)	0.62	3.31	-1.41	-5	3.09	2.94	-2.32	
t(alpha)	0.12	0.8	-0.42	-1.7	1.01	0.88	-0.12	

Panel C: Momentum

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	24.86	18.94	20.65	10.27	9.28	-2.34	27.2	14.88
Standard Deviation (%)	26.84	25.32	24.75	28.44	29.71	35.73	30.31	26.26
Sharpe Ratio	0.45	0.27	0.34	-0.03	-0.06	-0.34		0.12
z(SR)	2	1.06	1.67	-1.15	-1.17	-2.49		
Annualized Rp-Rf (%)	12.17	6.85	8.39	-0.94	-1.83	-12.28	24.45	3.2
Beta	0.79	0.81	0.82	0.93	0.92	0.97	-0.18	
Alpha (%)	10.41	4.58	5.9	-2.98	-3.46	-12.26	22.67	
t(alpha)	2.51	1.42	2.01	-0.89	-0.88	-2.25	2.11	

Panel D: Proftability

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	21.35	17.53	17.07	8.97	12.29	6.71	14.64	14.88
Standard Deviation (%)	25.38	24.99	25	30.54	30.87	34.47	27.03	26.26
Sharpe Ratio	0.36	0.22	0.21	-0.07	0.03	-0.12		0.12
z(SR)	1.41	0.59	0.5	-1.21	-0.47	-1.2		
Annualized Rp-Rf (%)	9.02	5.58	5.17	-2.11	0.88	-4.14	13.16	3.2
Beta	0.75	0.74	0.75	0.96	0.95	0.97	-0.22	
Alpha (%)	7.13	3.78	3.25	-3.68	-0.59	-4.56	11.69	
t(alpha)	1.87	1.02	0.9	-0.93	-0.14	-0.87	1.02	

Reproduced:

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	4.76	14.70	16.49	12.58	10.31	16.15	-11.39	14.88
Standard Deviation (%)	32.39	28.91	28.54	25.07	26.57	29.17	26.04	26.26
Sharpe Ratio	-0.18	0.11	0.16	0.05	-0.03	0.15	NA	0.12
z(SR)	-1.52	-0.02	0.36	-0.63	-1.42	0.63	NA	NA
Annualized Rp-Rf (%)	-5.89	3.04	4.65	1.14	-0.90	4.35	-10.24	3.20
Beta	0.85	0.87	0.89	0.81	0.90	1.07	-0.22	NA
Alpha (%)	-6.23	1.48	2.82	-1.05	-3.28	1.45	-7.68	NA
t(alpha)	-1.19	0.36	0.73	-0.34	-1.20	0.79	-0.92	NA

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	12.89	16.86	12.04	8.16	17.31	16.94	-4.05	14.88
Standard Deviation (%)	33.17	30.76	27.76	25.63	24.20	24.89	25.27	26.26
Sharpe Ratio	0.04	0.16	0.02	-0.11	0.22	0.20	NA	0.12
z(SR)	-0.27	0.44	-0.70	-1.93	0.67	0.52	NA	NA
Annualized Rp-Rf (%)	1.42	4.98	0.65	-2.84	5.38	5.05	-3.63	3.20
Beta	0.95	0.96	0.90	0.84	0.78	0.78	0.17	NA
Alpha (%)	0.62	3.31	-1.41	-5.00	3.09	2.94	-2.32	NA
t(alpha)	0.12	0.80	-0.42	-1.70	1.01	0.88	-0.12	NA

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	24.86	18.94	20.65	10.27	9.28	-2.34	27.20	14.88
Standard Deviation (%)	26.84	25.32	24.75	28.44	29.71	35.73	30.31	26.26
Sharpe Ratio	0.45	0.27	0.34	-0.03	-0.06	-0.34	NA	0.12
z(SR)	2.00	1.06	1.67	-1.15	-1.17	-2.49	NA	NA
Annualized Rp-Rf (%)	12.17	6.85	8.39	-0.94	-1.83	-12.28	24.45	3.20
Beta	0.79	0.81	0.82	0.93	0.92	0.97	-0.18	NA
Alpha (%)	10.41	4.58	5.90	-2.98	-3.46	-12.26	22.67	NA
t(alpha)	2.51	1.42	2.01	-0.89	-0.88	-2.25	2.11	NA

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	21.35	17.53	17.07	8.97	12.29	6.71	14.64	14.88
Standard Deviation (%)	25.38	24.99	25.00	30.54	30.87	34.47	27.03	26.26
Sharpe Ratio	0.36	0.22	0.21	-0.07	0.03	-0.12	NA	0.12
z(SR)	1.41	0.59	0.50	-1.21	-0.47	-1.20	NA	NA
Annualized Rp-Rf (%)	9.02	5.58	5.17	-2.11	0.88	-4.14	13.16	3.20
Beta	0.75	0.74	0.75	0.96	0.95	0.97	-0.22	NA
Alpha (%)	7.13	3.78	3.25	-3.68	-0.59	-4.56	11.69	NA
t(alpha)	1.87	1.02	0.90	-0.93	-0.14	-0.87	1.02	NA

4.6. TABLE 5: DOUBLE SORTED PORTFOLIOS

Original:

Panel A: Size

	30% Small			30% Big			
	D1	D2	D3	D3	D4	D5	IBX
Annualized Return (%)	16.2	9.27	9.55	15.71	12.48	9.99	14.88
Standard Deviation (%)	21.91	29.8	38.01	21.15	26.8	32.29	26.26
Sharpe Ratio	0.2	-0.06	-0.04	0.19	0.04	-0.04	0.12
z(SR)	0.36	-1.1	-0.6	0.33	-0.95	-1.28	
Annualized Rp-Rf (%)	4.39	-1.84	-1.59	3.95	1.04	-1.2	3.2
Beta	0.66	0.9	1.06	0.71	0.96	1.12	
Alpha (%)	2.4	-3.27	-1.31	1.44	-1.66	-3.31	
t(alpha)	0.76	-0.79	-0.22	0.61	-0.77	-1.08	

Panel B: Value

	30% Value			30% Growth			
	D1	D2	D3	D1	D2	D3	IBX
Annualized Return (%)	17.92	16.92	5.6	14.85	15.02	13.1	14.88
Standard Deviation (%)	23.33	31.34	38.02	19.82	25.55	30.7	26.26
Sharpe Ratio	0.25	0.16	-0.14	0.16	0.13	0.05	0.12
z(SR)	0.81	0.48	-1.2	0.04	0.04	-0.33	
Annualized Rp-Rf (%)	5.94	5.03	-5.14	3.17	3.33	1.6	3.2
Beta	0.73	1.01	1.08	0.63	0.84	0.96	
Alpha (%)	3.73	3.22	-5	0.94	1.03	-0.02	
t(alpha)	1.19	0.82	-0.87	0.37	0.34	-0.01	

Panel C: Momentum

	30% Winners			30% Losers			
	D1	D2	D3	D1	D2	D3	IBX
Annualized Return (%)	22.19	18.77	22.36	7.7	3.84	2.91	14.88
Standard Deviation (%)	20.67	25.85	31.08	24.71	30.69	39.09	26.26
Sharpe Ratio	0.47	0.26	0.32	-0.13	-0.22	-0.19	0.12
z(SR)	2.2	1	1.46	-1.92	-2.35	-1.51	
Annualized Rp-Rf (%)	9.78	6.7	9.93	-3.25	-6.72	-7.56	3.2
Beta	0.65	0.83	0.95	0.78	0.96	1.09	
Alpha (%)	7.47	4.47	8.35	-5.25	-8.22	-7.11	
t(alpha)	2.64	1.36	1.89	-1.68	-2.12	-1.19	

Panel D: Proftability

	30% Profitable			30% Unprofitable			
	D1	D2	D3	D1	D2	D3	IBX
Annualized Return (%)	17.77	17.55	19.57	12.29	10.4	3.31	14.88
Standard Deviation (%)	19.25	25.46	31.43	24.34	32.3	40.44	26.26
Sharpe Ratio	0.3	0.22	0.24	0.04	-0.03	-0.18	0.12
z(SR)	0.9	0.62	0.85	-0.69	-0.8	-1.38	
Annualized Rp-Rf (%)	5.8	5.61	7.42	0.87	-0.82	-7.19	3.2
Beta	0.57	0.78	0.92	0.77	0.99	1.13	
Alpha (%)	3.78	3.66	6.27	-1.21	-2.12	-6.48	
t(alpha)	1.34	1.02	1.3	-0.38	-0.49	-1.05	

Reproduced:

	D1	D2	D3	D8	D9	D10	IBX
Annualized Return (%)	16.20	9.27	9.55	15.71	12.48	9.99	14.88
Standard Deviation (%)	21.91	29.80	38.01	21.15	26.80	32.29	26.26
Sharpe Ratio	0.20	-0.06	-0.04	0.19	0.04	-0.04	0.12
z(SR)	0.36	-1.10	-0.60	0.33	-0.95	-1.28	NA
Annualized Rp-Rf (%)	4.39	-1.84	-1.59	3.95	1.04	-1.20	3.20
Beta	0.66	0.90	1.06	0.71	0.96	1.12	NA
Alpha (%)	2.40	-3.27	-1.31	1.44	-1.66	-3.31	NA
t(alpha)	0.76	-0.79	-0.22	0.61	-0.77	-1.08	NA

	D1	D2	D3	D8	D9	D10	D1-D10	IBX
Annualized Return (%)	21.35	17.53	17.07	8.97	12.29	6.71	14.64	14.88
Standard Deviation (%)	25.38	24.99	25.00	30.54	30.87	34.47	27.03	26.26
Sharpe Ratio	0.36	0.22	0.21	-0.07	0.03	-0.12	NA	0.12
z(SR)	1.41	0.59	0.50	-1.21	-0.47	-1.20	NA	NA
Annualized Rp-Rf (%)	9.02	5.58	5.17	-2.11	0.88	-4.14	13.16	3.20
Beta	0.75	0.74	0.75	0.96	0.95	0.97	-0.22	NA
Alpha (%)	7.13	3.78	3.25	-3.68	-0.59	-4.56	11.69	NA
t(alpha)	1.87	1.02	0.90	-0.93	-0.14	-0.87	1.02	NA

	D1	D2	D3	D8	D9	D10	IBX
Annualized Return (%)	22.19	18.77	22.36	7.70	3.84	2.91	14.88
Standard Deviation (%)	20.67	25.85	31.08	24.71	30.69	39.09	26.26
Sharpe Ratio	0.47	0.26	0.32	-0.13	-0.22	-0.19	0.12
z(SR)	2.20	1.00	1.46	-1.92	-2.35	-1.51	NA
Annualized Rp-Rf (%)	9.78	6.70	9.93	-3.25	-6.72	-7.56	3.20
Beta	0.65	0.83	0.95	0.78	0.96	1.09	NA
Alpha (%)	7.47	4.47	8.35	-5.25	-8.22	-7.11	NA
t(alpha)	2.64	1.36	1.89	-1.68	-2.12	-1.19	NA

	D1	D2	D3	D8	D9	D10	IBX
Annualized Return (%)	17.77	17.55	19.57	12.29	10.40	3.31	14.88
Standard Deviation (%)	19.25	25.46	31.43	24.34	32.30	40.44	26.26
Sharpe Ratio	0.30	0.22	0.24	0.04	-0.03	-0.18	0.12
z(SR)	0.90	0.62	0.85	-0.69	-0.80	-1.38	NA
Annualized Rp-Rf (%)	5.80	5.61	7.42	0.87	-0.82	-7.19	3.20
Beta	0.57	0.78	0.92	0.77	0.99	1.13	NA
Alpha (%)	3.78	3.66	6.27	-1.21	-2.12	-6.48	NA
t(alpha)	1.34	1.02	1.30	-0.38	-0.49	-1.05	NA

4.7. TABLE 6: SR Z-SCORE

Original:

Panel A: Size

	Dn
D1	**2.05**
D2	-1.32
D3	-1.07
D4	0.5
D5	0.16
D6	0.07
D7	-0.6
D8	0.86
D9	0.67
D10	-1.43

Panel B: Value

	Dn
D1	1
D2	0.01
D3	-0.73
D4	1.7
D5	-1.47
D6	-1.39
D7	1.06
D8	1.7
D9	-0.69
D10	-0.98

Panel C: Momentum

	Dn
D1	-0.06
D2	-0.07
D3	0.09
D4	0.88
D5	-1.13
D6	-0.12
D7	0.93
D8	-1.03
D9	-1.39
D10	**2.03**

Panel D: Quality

	Dn
D1	-0.49
D2	-0.01
D3	0.4
D4	1.29
D5	-0.59
D6	-0.76
D7	0.1
D8	0.56
D9	-0.36
D10	-0.29

Reproduced:

	Dn
D1	2.05
D2	-1.32
D3	-1.07
D4	0.50
D5	0.16
D6	0.07
D7	-0.60
D8	0.86
D9	0.67
D10	-1.43

	Dn
D1	1.00
D2	0.01
D3	-0.73
D4	1.70
D5	-1.47
D6	-1.39
D7	1.06
D8	1.70
D9	-0.69
D10	-0.98

	Dn
D1	-0.06
D2	-0.07
D3	0.09
D4	0.88
D5	-1.13
D6	-0.12
D7	0.93
D8	-1.03
D9	-1.39
D10	2.03

	Dn
D1	-0.49
D2	-0.01
D3	0.40
D4	1.29
D5	-0.59
D6	-0.76
D7	0.10
D8	0.56
D9	-0.36
D10	-0.29

4.8. TABLE 7: STRATEGY METRICS

Original:

	Panel A		
	Pure Beta	Beta Blume	Simple LS
Annualized Return (%)	14.95	13.7	10.11
Standard Deviation (%)	11.49	13.46	19.94
Sharpe Ratio	0.34	0.2	-0.03
z(SR)	0.61	0.23	-0.26
Annualized Rp-Rf (%)	3.87	2.74	-0.51
Beta	-0.02	-0.13	-0.36
Alpha (%)	4.65	4.31	3.29
t(alpha)	1.66	1.36	0.78
Max. Drawdown	30.08	48.07	77.99

Reproduced:

	Pure Beta	Beta Blume	Simple LS
Annualized Return (%)	14.95	13.70	10.11
Standard Deviation (%)	11.49	13.46	19.94
Sharpe Ratio	0.34	0.20	-0.03
z(SR)	0.61	0.23	-0.26
Annualized Rp-Rf (%)	3.87	2.74	-0.51
Beta	-0.02	-0.13	-0.36
Alpha (%)	4.65	4.31	3.29
t(alpha)	1.66	1.36	0.78
Max. Drawdown	30.08	48.07	77.99