

Replication Homework for "The Cross-Section of Expected Stock Returns"

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Table 1: Average Returns, Post-Ranking β s and Average Size for Portfolios Formed on Size and then β : Stocks Sorted on ME(Down) then Pre-ranking β (Across): July 1963 to December 2022

	Low- β	β -2	β -3	β -4	β -5	β -6	β -7	β -8	β -9	High- β
Panel A. Average Monthly Returns (in Percent)										
Small-ME	3.26	2.75	2.21	2.03	2.52	2.43	3.33	1.91	2.05	6.60
ME-2	1.40	1.06	1.28	1.17	1.43	1.34	1.56	1.48	1.75	1.39
ME-3	1.61	1.30	2.06	1.26	1.45	1.32	1.10	1.09	1.34	1.26
ME-4	1.27	1.12	1.04	1.01	1.18	14.83	1.22	1.32	0.91	0.99
ME-5	1.26	1.02	1.35	1.59	1.29	0.97	1.07	1.05	1.03	0.98
ME-6	1.09	1.07	1.05	1.39	1.34	1.16	0.91	1.30	1.09	1.01
ME-7	0.86	1.00	1.36	1.14	1.29	1.22	1.30	1.32	0.86	0.89
ME-8	0.97	0.79	1.31	1.28	0.98	1.08	1.05	0.90	0.79	0.36
ME-9	1.09	0.94	0.90	1.06	1.26	0.77	0.95	0.88	0.64	0.64
Large-ME	0.92	0.67	0.82	0.75	0.57	0.49	0.73	0.40	0.34	0.28

Average Returns, Post-Ranking β s and Average Size for Portfolios Formed on Size and then β : Stocks Sorted on ME(Down) then Pre-ranking β (Across): July 1963 to December 2022 (Continue)

	Low- β	β -2	β -3	β -4	β -5	β -6	β -7	β -8	β -9	High- β
Panel B. Post-Ranking β s										
Low-ME	0.83	1.03	0.98	0.93	0.88	0.65	1.01	0.92	1.01	1.64
ME-2	0.93	0.91	1.01	1.01	0.99	1.05	1.04	1.11	1.09	1.14
ME-3	0.77	0.95	1.15	1.05	1.11	1.09	0.99	1.01	1.09	1.04
ME-4	0.88	0.99	1.01	0.98	1.09	9.33	0.93	1.04	1.02	0.97
ME-5	0.80	0.78	1.09	1.03	1.13	0.98	0.99	1.05	0.92	0.97
ME-6	0.95	0.88	0.95	0.93	1.04	1.02	1.10	1.05	1.01	0.96
ME-7	0.83	0.84	1.05	1.01	1.03	1.08	1.14	1.04	0.89	1.07
ME-8	0.85	0.84	0.99	0.96	1.05	1.03	1.05	0.97	0.93	0.49
ME-9	0.85	0.71	0.94	1.02	0.97	0.90	0.88	0.84	0.70	0.55
High-ME	0.76	0.70	0.80	0.81	0.61	0.51	0.58	0.36	0.35	0.35
Panel C. Average Size										
Low-ME	1.85	2.4	2.45	2.54	2.48	2.45	2.36	2.08	2.44	2.16
ME-2	3.54	3.60	3.84	3.73	3.72	3.70	3.55	3.73	3.63	3.78
ME-3	3.87	4.50	4.25	4.61	4.66	4.50	4.19	4.27	4.29	4.32
ME-4	4.34	4.89	4.89	5.11	4.87	5.01	4.88	4.82	4.87	4.23
ME-5	4.06	4.53	5.50	5.26	5.48	5.31	5.34	5.60	5.31	5.23
ME-6	4.58	4.94	5.25	5.83	5.62	5.86	5.97	5.96	5.58	5.70
ME-7	4.69	5.20	5.89	6.13	6.41	6.31	6.47	6.21	5.64	6.21
ME-8	5.06	5.39	6.40	6.80	6.80	6.69	6.68	6.53	5.83	2.87
ME-9	6.32	5.76	7.12	7.58	7.16	6.62	7.05	6.24	4.92	3.42
High-ME	7.59	6.24	7.33	7.45	5.63	4.62	4.82	3.35	2.87	2.45

Table 2: **Properties of Portfolios Formed on Size or Pre-Ranking β : July 1963 to December 2022**

	1	2	3	4	5	6	7	8	9	10
Panel A. Portfolio Formed on Size										
Return	2.52	1.38	1.4	2.38	1.15	1.12	1.15	1.08	1.03	0.92
beta	0.95	1.08	1.22	1.86	1.08	1.07	1.06	1.04	1.02	0.99
ln(ME)	2.62	4.01	4.67	5.19	5.66	6.12	6.59	7.13	7.81	9.09
ln(BE/ME)	0.33	0.15	-0.02	-0.17	-0.25	-0.30	-0.22	-0.42	-0.53	-0.61
ln(A/ME)	0.79	0.87	1.03	1.06	1.07	0.96	0.80	0.64	0.57	0.39
ln(A/BE)	0.60	0.72	0.81	0.89	0.96	0.93	0.95	0.97	1.00	1.04
E/P dummy	0.23	0.19	0.16	0.14	0.11	0.10	0.08	0.06	0.05	0.03
E(+)/P	0.27	0.08	0.09	0.10	0.10	0.10	0.11	0.12	0.13	0.12
Firms	645	438	354	313	274	247	223	203	192	185
Panel B. Portfolios Formed on Post-Ranking β										
Return	1.88	1.38	1.57	1.23	1.46	2.92	1.33	1.26	1.25	1.45
beta	0.76	0.89	0.94	0.98	1.01	1.05	1.08	1.11	1.15	2.79
ln(ME)	5.1	5.38	5.43	5.66	5.38	5.60	5.73	5.56	5.2	4.95
ln(BE/ME)	-0.09	-0.11	-0.15	-0.08	-0.16	-0.14	-0.23	-0.24	-0.28	-0.30
ln(A/ME)	0.64	0.63	0.79	0.94	0.96	0.88	1.02	1.06	0.97	1.00
ln(A/BE)	0.77	0.88	0.85	0.88	0.86	0.87	0.93	0.92	0.89	0.80
E/P dummy	0.13	0.14	0.14	0.13	0.15	0.14	0.14	0.14	0.16	0.16
E(+)/P	0.14	0.13	0.14	0.11	0.09	0.10	0.10	0.17	0.09	0.09
Firms	350	307	295	275	311	288	282	279	339	348

Table 3: **Average Slopes(t -Statistics) from Month-by-Month Regressions of Stock Returns on β , Size, Book-to-Market Equity, Leverage, and E/P: July 1963 to December 2022**

β	$\ln(\text{ME})$	$\ln(\text{BE}/\text{ME})$	$\ln(\text{A}/\text{ME})$	$\ln(\text{A}/\text{BE})$	E/P dummy	E(+)/P
-0.61 (-1.81)	-0.32 (-9.27)					
-1.07 (-2.08)	-0.33 (-8.78)					
		0.29 (7.93)				
			0.3 (7.83)	-0.39 (-6.06)		
					2.29 (8.14)	1.08 (2.71)
	-0.35 (-18.41)	-0.1 (0.61)				
	-0.36 (-18.56)		-0.09 (0.44)	0 (-0.76)		
	-0.27 (-8.57)				1.52 (1.61)	1.13 (2.71)
	-0.37 (-19.09)	-0.16 (-1.2)			-0.34 (-2.66)	0.52 (2.67)
	-0.37 (-19.08)		-0.14 (-1.23)	0.06 (0.52)	-0.25 (-2.12)	0.44 (2.45)

Table 4: **Properties of Portfolios Formed on Book-to-Market Equity (BE/ME) or Earnings-Price Ratio (P/E): July 1963 to December 2022**

	1	2	3	4	5	6	7	8	9	10
Panel A. Stocks Sorted on Book-to-Market Equity (BE/ME)										
Return	1.56	1.47	1.43	1.37	1.29	1.32	1.68	1.92	1.46	5.36
beta	1.18	1.12	1.13	1.14	1.16	1.17	1.14	1.17	1.15	1.16
ln(ME)	4.70	5.73	5.83	5.72	5.63	5.49	5.34	5.17	4.99	4.32
ln(BE/ME)	-1.21	-1.91	-1.12	-0.79	-0.58	-0.39	-0.22	-0.04	0.16	0.71
ln(A/ME)	-0.67	-0.92	-0.26	0.13	0.41	0.67	0.87	0.99	1.19	1.62
ln(A/BE)	0.29	0.98	0.86	0.92	0.99	1.06	1.10	1.04	1.02	0.91
E/P dummy	0.12	0.26	0.17	0.14	0.12	0.12	0.12	0.13	0.16	0.26
E(+)/P	0.03	0.05	0.06	0.08	0.09	0.10	0.11	0.13	0.15	0.64
Firms	574	317	311	265	247	254	250	256	252	318
Panel B. Stocks Sorted on Earnings-Price Ratio (P/E)										
Return	2.91	1.29	1.38	1.33	1.30	1.31	1.33	1.36	1.93	1.53
beta	1.21	1.19	1.13	1.16	1.14	1.16	1.10	1.13	1.09	1.07
ln(ME)	4.34	4.94	5.52	5.68	5.75	5.68	5.61	5.59	5.68	5.71
ln(BE/ME)	-0.58	-0.83	-0.95	-0.81	-0.69	-0.55	-0.44	-0.31	-0.13	0.26
ln(A/ME)	0.11	0.42	-0.05	0.21	0.42	0.65	0.73	0.71	0.78	1.14
ln(A/BE)	0.81	0.59	0.85	0.97	1.09	1.20	1.14	0.95	0.90	0.87
E/P dummy	0.68	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E(+)/P	0.01	0.02	0.04	0.06	0.08	0.09	0.11	0.14	0.20	0.79
Firms	636	507	270	246	240	234	246	242	225	210

Table 5: **Average Monthly Returns on Portfolios on Size and Book-to-Market Equity; Stocks Sorted by ME(Down) and then BE/ME(Across) July 1963 to December 2022**

	Book-to-Market Portfolios									
	Low	2	3	4	5	6	7	8	9	High
Small-ME	3.08	3.13	2.70	2.80	2.18	2.12	3.30	1.92	2.58	2.71
ME2	1.12	1.28	1.90	1.26	1.37	1.44	1.59	1.46	1.38	1.52
ME3	1.22	1.39	1.39	1.48	1.21	1.24	1.22	1.51	1.28	1.50
ME4	1.13	1.19	0.99	1.08	1.38	1.23	1.14	1.21	1.25	1.69
ME5	0.86	1.14	1.52	1.18	1.12	1.22	1.25	1.27	1.23	1.40
ME6	1.00	1.33	1.29	1.17	1.13	1.17	1.19	1.10	1.22	1.19
ME7	0.95	1.43	1.23	1.24	1.30	1.17	1.20	1.20	1.16	1.36
ME8	0.72	1.25	1.21	1.15	1.14	1.06	0.99	1.29	1.19	1.16
ME9	1.14	1.33	0.99	1.03	1.04	0.96	1.16	1.10	1.08	1.17
Large-ME	0.73	0.98	0.93	1.07	0.88	1.03	0.85	0.79	0.86	0.93

Table 6: **Properties of Portfolios Formed on Book-to-Market Equity (BE/ME) or Earnings-Price Ratio (P/E): July 1963 to December 2022**

	7/63-12/22 (714 Mos.)			7/63-12/76 (162 Mos.)			1/77-12/22 (552 Mos.)		
Variable	Mean	Std	t	Mean	Std	t	Mean	Std	t
NYSE Value-Weighted (VW) and Equal-Weighted (EW) Portfolio Returns									
VW	0.91	4.8	5.02	0.61	4.70	1.59	0.99	4.82	4.82
EW	1.71	12.45	3.63	0.91	5.69	1.97	1.93	13.74	3.29
$R_{i,t} = a + b_{2t}\ln(ME_{it}) + b_{3t}\ln(BE/ME_{it}) + e_{it}$									
a	3.27	0.77	3.40	7.79	0.83	5.78	2.52	0.76	3.01
b_2	-0.35	0.16	-1.83	-0.82	0.18	-2.46	-0.28	0.15	-1.73
b_3	-0.10	0.42	0.06	0.74	0.46	1.58	-0.24	0.41	-0.19
$R_{i,t} = a + b_1t\beta_{it} + b_{2t}\ln(ME_{it}) + b_{3t}\ln(BE/ME_{it}) + e_{it}$									
a	4.59	3.41	1.12	8.91	3.29	1.66	3.87	3.43	1.03
b_1	-1.06	2.68	-0.31	-0.92	2.60	-0.20	-1.08	2.69	-0.33
b_2	-0.39	0.18	-1.81	-0.85	0.20	-2.34	-0.31	0.18	-1.72
b_3	-0.10	0.42	0.04	0.73	0.46	1.56	-0.24	0.41	-0.22