Internet Appendix to "A Theory of Firm Characteristics and Stock Returns: The Role of Investment-Specific Shocks"

Table 1: Correlation between characteristic decile assignments

Sort	Q	IK	EP	BMKT	IVOL
Q					
IK	40.6				
EP	-46.7	-20.7			
BMKT	21.0	21.0	-14.4		
IVOL	22.5	25.1	-17.2	33.4	

Table 1 reports correlations between portfolio decile assignments across the characteristics Q, IK, EV, BMKT, and IVOL. The sample period is 1965-2008 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949).

Table 2: Portfolio characteristics and leverage

	Book leverage									
	Lo	2	3	4	5	6	7	8	9	Hi
Q	17.7	22.8	23.2	22.7	21.5	19.8	17.5	13.9	9.1	3.4
IK	15.5	20.3	20.0	19.4	19.0	17.5	16.6	15.1	14.3	12.9
EP	13.0	17.5	20.1	20.8	21.9	22.8	22.8	23.2	21.4	15.8
BMKT	15.5	18.8	19.3	18.9	18.4	17.9	17.7	17.2	16.7	15.0
IVOL	27.7	19.5	18.9	18.3	18.1	17.2	15.7	14.2	13.1	11.1

Table 2 shows book leverage for decile portfolios of firms sorted on investment rate (IK), Tobin's Q (Q), market beta (BMKT), idiosyncratic volatility (IVOL) and earnings to price (EP).

Table 3: Portfolios sorted on return-to-assets (ROA)

	Data										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	1.56	3.10	4.44	4.49	5.59	5.70	5.41	6.22	4.56	6.21	4.66
	(0.28)	(0.91)	(1.52)	(1.71)	(2.60)	(2.86)	(2.61)	(3.15)	(2.23)	(2.45)	(0.88)
$\sigma(\%)$	42.17	30.22	23.95	19.96	17.36	18.18	18.17	17.26	17.16	18.93	32.94
β^{mkt}	1.69	1.43	1.15	0.93	0.86	0.93	0.95	0.89	0.88	0.94	-0.75
	(8.74)	(7.41)	(9.38)	(8.55)	(12.92)	(14.88)	(19.48)	(12.26)	(16.35)	(14.33)	(-3.56)
$\alpha(\%)$	-6.89	-4.07	-1.29	-0.14	1.30	1.04	0.66	1.79	0.16	1.51	8.40
	(-1.47)	(-1.73)	(-1.00)	(-0.09)	(1.22)	(1.02)	(0.85)	(1.86)	(0.20)	(1.32)	(1.65)
$R^2(\%)$	52.06	73.15	74.28	69.84	79.06	85.15	88.51	85.50	85.02	80.15	16.75
β^{imc}	1.43	1.01	0.31	0.30	0.12	0.31	0.23	0.24	0.19	0.33	-1.10
IK (vw)	0.14	0.11	0.10	0.09	0.10	0.10	0.10	0.12	0.14	0.17	
$Q(md)$	3.76	1.15	0.85	0.87	0.89	0.88	1.04	1.39	2.20	4.85	
	Model										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	3.79	5.12	6.69	6.98	7.09	7.13	7.07	7.03	6.97	7.11	3.32
	(1.80)	(2.73)	(3.27)	(3.58)	(3.74)	(3.83)	(3.84)	(3.83)	(3.86)	(4.19)	(2.13)
$\sigma(\%)$	18.79	16.00	14.66	14.01	13.65	13.46	13.37	13.40	13.31	12.72	7.70
β^{mkt}	1.25	1.07	0.98	0.94	0.91	0.90	0.89	0.89	0.88	0.83	-0.42
	(31.44)	(47.93)	(56.28)	(59.10)	(56.51)	(54.62)	(51.39)	(47.16)	(44.00)	(34.89)	(-7.90)
$\alpha(\%)$	-4.21	-1.77	0.37	0.94	1.22	1.34	1.34	1.30	1.32	1.81	6.02
	(-5.79)	(-2.26)	(1.47)	(3.75)	(4.74)	(5.06)	(4.92)	(4.48)	(4.17)	(4.65)	(6.80)
$R^2(\%)$	94.40	96.46	96.86	96.78	96.64	96.53	96.37	96.17	95.80	93.71	60.24
β^{imc}	1.05	0.83	0.73	0.68	0.64	0.63	0.62	0.61	0.60	0.55	-0.49
$IK(ew)$	0.10	0.09	0.09	0.09	0.08	0.09	0.09	0.09	0.10	0.11	
$Q(md)$	3.31	2.98	2.79	2.75	2.84	2.96	3.18	3.44	3.89	4.93	

Table 3 shows characteristics for the 10 portfolios of firms sorted on profitability. The top panel shows results from actual data, the bottom panel shows results from data simulated by the model. We report average returns in excess of the risk-free rate, as well CAPM alphas and univariate post-formation betas with respect to the market portfolio (β_t^{mkt}) and the investment minus consumption portfolio (β_t^{imc}). Estimation is done at annual frequencies in both the model and the data. The sample period is 1965-2008 and excludes firms producing investment goods, financial firms (SIC6000-6799) and utilities (SIC4900-4949).

Table 4: Portfolio characteristics: decile portfolios, sorted by industry

	10 BMKT portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	6.64	5.06	5.85	5.81	4.99	6.62	5.25	4.90	5.24	3.56	-3.09
	(2.41)	(3.17)	(3.03)	(2.85)	(2.67)	(3.01)	(2.09)	(2.04)	(1.86)	(1.13)	(-1.08)
$\sigma(\%)$	20.29	16.85	16.62	17.31	15.98	18.17	18.07	18.65	21.87	24.59	17.82
β_{MKT}	0.83	0.76	0.85	0.89	0.77	0.92	0.95	0.98	1.13	1.25	0.42
	(6.64)	(7.73)	(13.20)	(15.77)	(9.89)	(10.67)	(29.60)	(28.23)	(18.27)	(16.62)	(3.06)
$\alpha(\%)$	2.50	1.28	1.61	1.33	1.12	2.02	0.48	-0.01	-0.41	-2.68	-5.19
	(1.13)	(0.97)	(1.94)	(1.44)	(0.93)	(1.52)	(0.51)	(-0.01)	(-0.34)	(-1.54)	(-2.06)
$R^2(\%)$	53.99	65.41	84.12	86.75	76.04	83.22	90.30	89.76	86.68	83.53	18.02
β_{IMC}	0.21	0.07	0.19	0.19	0.02	0.29	0.38	0.34	0.64	0.71	0.51
	(0.86)	(0.50)	(1.83)	(1.81)	(0.17)	(2.96)	(3.11)	(2.40)	(5.74)	(5.30)	(2.66)
	10 EP portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	4.11	3.70	2.96	5.43	5.38	6.67	7.16	7.69	8.43	9.04	4.92
	(1.65)	(1.55)	(1.32)	(2.42)	(2.74)	(2.82)	(3.28)	(4.33)	(3.52)	(3.92)	(2.65)
$\sigma(\%)$	22.19	18.43	16.52	18.07	15.26	17.56	16.28	16.06	20.38	20.34	15.73
β_{MKT}	1.17	0.96	0.83	0.95	0.75	0.88	0.82	0.79	0.93	0.93	-0.24
	(29.18)	(20.88)	(10.54)	(18.34)	(9.90)	(12.86)	(14.18)	(9.26)	(7.66)	(7.97)	(-1.95)
$\alpha(\%)$	-1.73	-1.09	-1.20	0.67	1.61	2.26	3.06	3.73	3.77	4.39	6.12
	(-1.60)	(-1.34)	(-1.10)	(1.11)	(1.65)	(2.28)	(3.61)	(4.35)	(2.21)	(2.57)	(3.01)
$R^2(\%)$	89.77	87.40	82.09	90.07	78.77	81.75	81.96	78.63	67.80	67.70	7.44
β_{IMC}	0.55	0.37	0.14	0.19	0.06	0.09	0.07	0.10	0.03	0.14	-0.41
	(4.25)	(3.15)	(1.41)	(1.60)	(0.73)	(0.74)	(0.64)	(0.79)	(0.15)	(0.78)	(-3.03)
	10 Q portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	10.21	6.94	7.23	4.88	6.27	5.27	4.55	3.74	4.93	2.78	-7.43
	(5.03)	(3.36)	(3.59)	(2.49)	(2.60)	(2.11)	(2.09)	(1.84)	(2.25)	(1.00)	(-3.23)
$\sigma(\%)$	20.41	17.39	18.12	15.87	16.67	17.59	17.93	18.09	18.57	24.49	17.87
β_{MKT}	0.99	0.85	0.93	0.80	0.82	0.90	0.90	0.93	0.89	1.21	0.22
	(10.80)	(9.90)	(15.48)	(17.35)	(15.79)	(15.59)	(15.03)	(13.75)	(11.17)	(12.55)	(1.54)
$\alpha(\%)$	5.27	2.68	2.58	0.87	2.15	0.74	0.06	-0.94	0.50	-3.26	-8.53
	(4.48)	(2.46)	(2.75)	(1.00)	(1.77)	(0.68)	(0.07)	(-1.33)	(0.34)	(-2.18)	(-3.91)
$R^2(\%)$	75.75	77.94	85.33	82.91	79.20	85.74	81.37	86.68	73.99	78.76	4.94
β_{IMC}	0.27	0.24	0.23	0.24	0.25	0.23	0.12	0.37	0.19	0.67	0.40
	(1.72)	(1.91)	(2.15)	(2.05)	(2.04)	(2.18)	(0.95)	(3.22)	(1.65)	(5.61)	(3.14)

Table 4 shows characteristics for decile portfolios using industry breakpoints. We use the 17 industry classification of Fama and French (1997).

Table 5: Portfolio characteristics: decile portfolios, sorted by industry, continued

	10 IK portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R)-r_f(\%)$	7.67	8.25	7.48	6.66	5.11	5.99	5.05	3.63	3.04	2.81	-4.86
	(2.85)	(3.49)	(2.91)	(2.74)	(2.01)	(2.26)	(1.85)	(1.30)	(1.18)	(0.74)	(-1.95)
$\sigma(\%)$	19.76	16.78	18.48	17.38	16.68	17.45	18.70	20.03	17.68	26.40	17.49
β_{MKT}	0.92	0.81	0.92	0.86	0.82	0.90	0.96	0.97	0.90	1.30	0.39
	(8.65)	(11.59)	(11.24)	(10.57)	(10.57)	(17.02)	(16.14)	(12.30)	(11.93)	(11.65)	(2.52)
$\alpha(\%)$	3.09	4.20	2.88	2.34	1.01	1.47	0.24	-1.22	-1.44	-3.70	-6.79
	(2.00)	(3.30)	(2.54)	(2.57)	(0.99)	(1.60)	(0.20)	(-1.02)	(-1.26)	(-1.78)	(-2.72)
$R^2(\%)$	69.60	75.54	80.33	79.82	78.13	86.62	85.48	75.98	83.26	78.80	15.76
β_{IMC}	0.26	0.25	0.35	0.19	0.13	0.48	0.37	0.21	0.45	0.91	0.66
	(1.39)	(1.43)	(1.81)	(1.20)	(0.85)	(4.35)	(2.76)	(1.03)	(3.02)	(4.35)	(4.09)

	10 IVOL portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R)-r_f(\%)$	4.93	5.12	6.62	5.63	6.12	4.57	5.99	7.27	0.88	2.74	-2.19
	(2.31)	(2.10)	(2.76)	(2.47)	(2.58)	(1.69)	(1.98)	(2.42)	(0.30)	(0.76)	(-0.93)
$\sigma(\%)$	16.18	18.19	17.83	18.95	20.14	20.30	25.07	23.37	24.73	29.18	21.15
β_{MKT}	0.86	0.94	0.94	0.99	1.06	1.03	1.25	1.19	1.17	1.35	0.50
	(18.98)	(12.54)	(19.69)	(14.00)	(20.49)	(16.02)	(13.15)	(19.61)	(10.23)	(11.35)	(3.33)
$\alpha(\%)$	0.64	0.42	1.91	0.67	0.82	-0.60	-0.24	1.32	-4.98	-4.03	-4.67
	(0.77)	(0.38)	(2.91)	(0.78)	(1.03)	(-0.38)	(-0.16)	(0.64)	(-2.57)	(-1.46)	(-1.47)
$R^2(\%)$	91.05	86.51	90.44	88.90	90.00	84.14	80.20	83.88	72.62	69.85	17.90
β_{IMC}	0.21	0.11	0.24	0.22	0.37	0.33	0.42	0.61	0.57	0.68	0.47
	(2.05)	(0.88)	(2.40)	(1.72)	(2.85)	(2.24)	(3.25)	(5.10)	(4.36)	(3.41)	(3.16)

Table 5 shows characteristics for decile portfolios using industry breakpoints. We use the 17 industry classification of Fama and French (1997).

Table 6: Excess return comovement, within industry sort

	Cross-sections						Eigenvalues
	IK	EP	IVOL	BMKT	Q	ALL	$\lambda_1/\sum \lambda_i$
IK							31.3
(p-value)							(0.00)
-EP	79.1						41.1
(p-value)							(0.00)
IVOL	4.3	4.7					40.5
(p-value)							(0.00)
BMKT	68.0	74.6	3.7				30.5
(p-value)							(0.00)
Q	84.1	79.9	18.3	66.3			30.8
(p-value)							(0.00)
ALL (IK, EP, IVOL, BMKT, Q)	89.8	67.4	31.6	63.7	76.5		32.3
(p-value)	(0.00)	(0.00)	(0.14)	(0.00)	(0.00)		(0.00)
IMC	57.5	75.2	4.8	63.8	69.6	43.8	
-HML	63.5	68.3	27.4	63.0	73.9	63.7	
Δz^I	11.4	9.3	6.3	35.1	17.7	4.5	

Table 6 shows return comovement across the 5 decile portfolio sorts (Q, IK, EP, BMKT and IVOL). We extract the first principal component from standardized return residuals from a market model regression. We normalize the sign of the first principal component so that it loads positively on portfolio 10 with the exception of the EP sort, where it loads negatively on portfolio 10. In addition, we extract the first principal component from a pooled cross-section of 20 portfolios that includes portfolios 1, 2, 9 and 10 from each sort. We show the correlation matrix of these principal components, along with their correlations with IMC, HML and the real proxy for the IST shock Δz^I. We compute p-values based on 10,000 random permutations, where we randomly permute the order of each cross-section separately.

Table 7: Portfolio characteristics: decile portfolios, exclude small firms

	10 BMKT portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	4.44	5.98	6.41	6.60	5.05	6.23	5.43	4.88	4.52	2.97	-1.47
	(2.19)	(2.91)	(3.39)	(3.79)	(2.56)	(3.07)	(2.21)	(1.83)	(1.35)	(0.75)	(-0.38)
$\sigma(\%)$	16.27	16.39	16.46	15.08	17.17	18.72	19.54	21.00	25.66	31.04	26.99
β_{MKT}	0.68	0.71	0.82	0.73	0.86	0.92	1.01	1.08	1.28	1.47	0.80
	(6.51)	(6.45)	(8.31)	(11.13)	(12.46)	(9.54)	(21.74)	(17.23)	(15.54)	(11.68)	(4.21)
$\alpha(\%)$	1.05	2.44	2.32	2.95	0.75	1.61	0.37	-0.51	-1.90	-4.41	-5.46
	(0.71)	(1.76)	(2.38)	(2.66)	(0.75)	(1.32)	(0.35)	(-0.50)	(-1.23)	(-1.88)	(-1.73)
$R^2(\%)$	56.26	60.53	80.13	75.62	81.18	78.92	87.04	85.70	81.25	73.18	28.27
β_{IMC}	0.03	-0.08	0.12	0.05	0.12	0.16	0.48	0.51	0.80	1.16	1.13
	(0.18)	(-0.76)	(1.20)	(0.49)	(0.91)	(1.13)	(4.13)	(3.53)	(5.28)	(8.23)	(7.44)
	10 EP portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	2.31	3.49	4.06	5.29	4.92	6.69	8.08	9.28	7.92	10.55	8.24
	(0.89)	(1.49)	(1.95)	(2.46)	(2.64)	(3.14)	(3.83)	(3.88)	(3.28)	(5.08)	(3.63)
$\sigma(\%)$	23.50	19.93	15.55	17.33	16.92	17.16	17.49	19.06	19.50	18.87	19.05
β_{MKT}	1.16	0.97	0.76	0.89	0.83	0.85	0.87	0.88	0.96	0.83	-0.33
	(12.63)	(12.71)	(16.86)	(16.56)	(8.40)	(9.70)	(11.02)	(7.14)	(12.10)	(7.33)	(-1.84)
$\alpha(\%)$	-3.48	-1.38	0.25	0.83	0.74	2.44	3.70	4.89	3.12	6.38	9.86
	(-2.80)	(-1.10)	(0.32)	(0.93)	(0.78)	(2.19)	(4.29)	(3.47)	(2.25)	(3.77)	(4.46)
$R^2(\%)$	78.67	77.14	77.75	85.87	78.99	79.72	81.03	68.70	78.81	63.14	9.45
β_{IMC}	0.79	0.32	0.11	0.24	0.13	0.21	0.15	0.02	0.23	0.08	-0.71
	(5.28)	(2.54)	(1.04)	(2.65)	(1.20)	(1.79)	(1.04)	(0.11)	(1.40)	(0.51)	(-8.37)
	10 Q portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	9.99	8.76	6.54	5.57	4.26	4.32	5.95	5.01	4.61	1.02	-8.97
	(4.87)	(4.81)	(3.40)	(2.67)	(1.76)	(2.14)	(2.19)	(1.87)	(1.78)	(0.39)	(-3.30)
$\sigma(\%)$	18.84	18.43	16.37	17.10	18.80	16.98	18.41	20.87	20.08	25.39	21.30
β_{MKT}	0.88	0.87	0.77	0.83	0.94	0.87	0.94	1.05	0.98	1.16	0.28
	(7.49)	(8.13)	(8.73)	(10.30)	(16.76)	(21.04)	(22.46)	(12.84)	(16.58)	(8.67)	(1.36)
$\alpha(\%)$	5.57	4.38	2.68	1.40	-0.42	-0.03	1.22	-0.24	-0.31	-4.79	-10.37
	(3.67)	(3.42)	(2.82)	(1.33)	(-0.46)	(-0.03)	(1.02)	(-0.19)	(-0.24)	(-2.25)	(-3.56)
$R^2(\%)$	71.24	73.04	72.26	77.04	80.55	85.04	85.27	82.03	77.90	67.93	5.56
β_{IMC}	0.11	0.16	0.09	0.21	0.28	0.21	0.28	0.41	0.31	0.71	0.60
	(0.75)	(1.04)	(0.79)	(1.61)	(2.35)	(1.73)	(2.85)	(3.44)	(2.20)	(5.32)	(4.41)

Table 7 shows characteristics for decile portfolios, excluding the bottom 20% of firms in terms of market capitalization every year.

Table 8: Portfolio characteristics: decile portfolios, exclude small firms, continued

	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
					10 IK portfolios						
$E(R) - r_f(\%)$	5.94	7.74	6.68	7.56	6.84	5.47	4.98	4.40	2.88	3.08	-2.86
	(2.82)	(3.99)	(3.90)	(3.76)	(3.22)	(2.33)	(2.06)	(1.86)	(1.07)	(0.82)	(-1.00)
$\sigma(\%)$	18.70	15.95	15.30	17.08	16.22	18.75	18.63	20.32	23.91	33.23	23.96
β_{MKT}	0.89	0.75	0.76	0.88	0.83	0.96	0.96	1.03	1.20	1.56	0.66
	(9.73)	(11.40)	(11.53)	(14.25)	(14.28)	(13.30)	(27.17)	(14.92)	(13.13)	(9.50)	(3.25)
$\alpha(\%)$	1.47	3.97	2.89	3.14	2.67	0.67	0.16	-0.76	-3.14	-4.71	-6.18
	(1.02)	(3.30)	(4.33)	(4.28)	(2.53)	(0.70)	(0.17)	(-0.75)	(-2.41)	(-1.76)	(-2.25)
$R^2(\%)$	74.00	72.35	79.28	86.78	85.88	84.67	86.88	83.46	82.38	71.15	24.82
β_{IMC}	0.13	0.05	0.15	0.17	0.19	0.33	0.34	0.37	0.71	1.13	1.00
	(0.86)	(0.50)	(1.05)	(1.67)	(2.02)	(2.84)	(3.16)	(3.29)	(4.85)	(6.95)	(8.60)
β_{IMC}	0.62	0.39	0.34	0.22	0.46	0.31	0.33	0.17	0.06	0.37	-0.25
	(3.43)	(1.84)	(1.97)	(1.20)	(3.35)	(2.16)	(2.08)	(1.18)	(0.37)	(2.32)	(-1.47)
					10 IVOL portfolios						
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	5.34	5.36	5.34	7.93	5.49	7.07	4.22	3.08	3.32	-2.03	-7.38
	(2.58)	(2.31)	(2.86)	(3.19)	(2.15)	(2.34)	(1.31)	(0.84)	(0.80)	(-0.40)	(-1.39)
$\sigma(\%)$	15.32	17.23	16.93	20.33	22.03	27.70	25.88	29.87	36.23	37.00	31.43
β_{MKT}	0.76	0.91	0.88	1.05	1.12	1.38	1.23	1.44	1.63	1.63	0.87
	(11.97)	(31.95)	(18.70)	(20.49)	(15.58)	(13.25)	(12.37)	(11.20)	(9.11)	(10.30)	(4.36)
$\alpha(\%)$	1.52	0.80	0.92	2.66	-0.14	0.16	-1.96	-4.11	-4.83	-10.19	-11.71
	(1.37)	(1.01)	(1.23)	(3.92)	(-0.13)	(0.09)	(-0.87)	(-1.62)	(-1.44)	(-2.38)	(-2.26)
$R^2(\%)$	80.63	90.59	88.31	87.02	84.51	80.72	73.88	75.07	65.57	62.97	24.66
β_{IMC}	0.08	0.22	0.24	0.51	0.44	0.84	0.83	0.96	1.35	1.32	1.24
	(0.89)	(1.87)	(2.45)	(4.08)	(2.60)	(5.94)	(6.12)	(5.65)	(9.03)	(8.50)	(7.89)

Table 8 shows characteristics for decile portfolios, excluding the bottom 20% of firms in terms of market capitalization every year.

Table 9: Excess return comovement, excluding small firms

	Cross-sections						Eigenvalues
	IK	EP	IVOL	BMKT	Q	ALL	$\lambda_1 / \sum \lambda_i$
IK							35.5
(p-value)							(0.00)
-EP	85.4						41.7
(p-value)							(0.00)
IVOL	48.6	30.5					48.9
(p-value)							(0.00)
BMKT	80.3	74.5	57.4				43.8
(p-value)							(0.00)
Q	76.2	77.8	40.0	65.8			30.8
(p-value)							(0.00)
ALL (IK, EP, IVOL, BMKT, Q)	92.1	84.6	53.6	88.1	76.9		39.0
(p-value)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)		(0.00)
IMC	61.5	59.5	55.8	68.3	69.6	64.8	
-HML	74.4	70.7	30.5	71.1	73.9	83.2	
Δz^I	27.2	28.0	15.0	42.3	17.7	29.6	

Table 9 shows return comovement across the 5 decile portfolio sorts (Q, IK, EP, BMKT and IVOL). We extract the first principal component from standardized return residuals from a market model regression. We normalize the sign of the first principal component so that it loads positively on portfolio 10 with the exception of the EP sort, where it loads negatively on portfolio 10. In addition, we extract the first principal component from a pooled cross-section of 20 portfolios that includes portfolios 1, 2, 9 and 10 from each sort. We show the correlation matrix of these principal components, along with their correlations with IMC, HML and the real proxy for the IST shock Δz^I. We compute p-values based on 10,000 random permutations, where we randomly permute the order of each cross-section separately.

Table 10: Portfolio characteristics: decile portfolios, exclude services firms

	10 BMKT portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	6.53	7.47	5.82	5.84	4.94	6.39	5.42	4.38	3.79	3.47	-3.06
	(2.35)	(3.58)	(2.50)	(3.23)	(2.36)	(3.12)	(2.20)	(1.57)	(1.14)	(0.81)	(-0.65)
$\sigma(\%)$	20.37	16.10	17.97	16.02	17.75	17.32	19.68	21.41	25.57	32.61	26.81
β_{MKT}	0.81	0.67	0.84	0.80	0.88	0.84	1.00	1.11	1.24	1.50	0.69
	(4.89)	(6.49)	(7.69)	(15.47)	(12.38)	(9.67)	(16.80)	(17.97)	(12.14)	(11.25)	(3.49)
$\alpha(\%)$	2.47	4.13	1.63	1.83	0.52	2.20	0.41	-1.16	-2.42	-4.02	-6.49
	(0.92)	(2.93)	(1.05)	(1.62)	(0.56)	(2.01)	(0.39)	(-1.00)	(-1.51)	(-1.50)	(-1.76)
$R^2(\%)$	51.47	55.55	70.49	81.27	80.25	75.77	84.32	86.85	76.61	68.49	21.31
β_{IMC}	0.26	0.01	0.14	0.21	0.15	0.19	0.41	0.63	0.88	1.26	1.00
	(1.25)	(0.11)	(1.35)	(2.17)	(0.95)	(1.52)	(2.70)	(5.17)	(5.61)	(8.22)	(4.80)

	10 EP portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	3.41	2.26	3.18	5.16	5.78	6.35	8.11	6.71	8.93	10.46	7.05
	(1.03)	(0.85)	(1.89)	(2.26)	(2.91)	(2.75)	(3.98)	(2.95)	(3.42)	(4.39)	(2.16)
$\sigma(\%)$	27.18	21.26	16.56	18.22	16.83	17.88	17.95	18.23	19.23	19.68	24.16
β_{MKT}	1.24	1.06	0.82	0.92	0.84	0.90	0.90	0.91	0.90	0.78	-0.46
	(8.83)	(12.01)	(11.89)	(9.99)	(12.08)	(13.27)	(10.83)	(9.91)	(9.64)	(5.20)	(-2.09)
$\alpha(\%)$	-2.77	-3.03	-0.91	0.54	1.58	1.87	3.61	2.15	4.40	6.58	9.35
	(-1.33)	(-2.80)	(-1.03)	(0.49)	(1.68)	(1.48)	(3.89)	(1.88)	(3.14)	(3.06)	(3.07)
$R^2(\%)$	67.05	80.51	79.01	83.23	80.75	81.31	81.18	81.07	71.76	50.39	11.76
β_{IMC}	0.96	0.62	0.32	0.22	0.17	0.25	0.28	0.18	0.20	0.00	-0.96
	(3.88)	(4.23)	(2.52)	(1.69)	(1.38)	(2.17)	(2.18)	(1.67)	(1.22)	(0.03)	(-6.62)

	10 Q portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R) - r_f(\%)$	10.49	9.59	7.22	6.47	4.11	6.28	5.25	4.83	4.68	0.66	-9.83
	(4.55)	(4.71)	(3.98)	(2.89)	(1.89)	(2.48)	(2.13)	(1.75)	(1.76)	(0.25)	(-4.01)
$\sigma(\%)$	19.57	20.85	16.22	18.65	17.69	19.76	17.09	21.36	20.22	24.98	19.17
β_{MKT}	0.90	1.03	0.76	0.90	0.90	1.01	0.86	1.07	0.96	1.15	0.24
	(8.57)	(10.19)	(8.73)	(11.01)	(17.18)	(15.60)	(19.65)	(15.02)	(14.22)	(8.95)	(1.44)
$\alpha(\%)$	5.96	4.44	3.42	1.95	-0.41	1.23	0.95	-0.50	-0.13	-5.09	-11.05
	(3.59)	(3.12)	(3.34)	(1.62)	(-0.51)	(0.94)	(0.93)	(-0.42)	(-0.09)	(-2.38)	(-4.19)
$R^2(\%)$	69.23	79.19	71.06	76.06	84.48	84.70	81.82	80.76	73.44	68.58	5.29
β_{IMC}	0.29	0.35	0.20	0.38	0.33	0.26	0.25	0.46	0.32	0.75	0.47
	(2.01)	(2.60)	(1.52)	(2.24)	(3.13)	(1.81)	(2.35)	(3.63)	(1.99)	(5.66)	(4.22)

Table 10 shows characteristics for decile portfolios, excluding investment firms and services (Fama and French (1997) classifications 14-17).

Table 11: Portfolio characteristics: decile portfolios, exclude services firms, continued

	10 IK portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R)-r_f(\%)$	7.26	7.10	7.68	7.71	6.15	4.78	6.25	4.48	2.66	2.46	-4.80
	(3.09)	(3.15)	(4.31)	(3.97)	(2.97)	(2.11)	(2.28)	(1.99)	(1.05)	(0.61)	(-1.59)
$\sigma(\%)$	21.35	18.00	15.94	16.98	16.75	16.88	20.44	20.36	22.74	34.34	21.74
β_{MKT}	1.01	0.87	0.79	0.85	0.86	0.87	0.98	1.04	1.11	1.61	0.60
	(12.24)	(10.19)	(11.69)	(11.66)	(13.52)	(16.12)	(12.61)	(14.11)	(15.03)	(8.69)	(3.70)
$\alpha(\%)$	2.20	2.75	3.75	3.47	1.83	0.43	1.33	-0.72	-2.90	-5.60	-7.79
	(1.31)	(1.94)	(4.79)	(4.88)	(2.29)	(0.56)	(0.82)	(-0.69)	(-3.10)	(-1.92)	(-2.58)
$R^2(\%)$	72.80	76.03	78.83	80.56	86.32	86.06	75.04	84.68	77.35	71.29	24.60
β_{IMC}	0.52	0.28	0.20	0.14	0.22	0.32	0.25	0.48	0.74	1.31	0.79
	(4.88)	(1.87)	(1.52)	(0.95)	(2.03)	(2.81)	(1.67)	(4.41)	(6.06)	(8.50)	(6.64)
	10 IVOL portfolios										
	Lo	2	3	4	5	6	7	8	9	Hi	Hi-Lo
$E(R)-r_f(\%)$	5.64	5.38	8.10	6.07	5.67	5.81	1.87	3.01	0.69	-0.78	-6.42
	(2.71)	(2.57)	(3.46)	(2.14)	(1.80)	(1.76)	(0.48)	(0.67)	(0.13)	(-0.13)	(-1.03)
$\sigma(\%)$	15.67	17.15	19.22	22.52	27.84	27.06	30.82	37.09	40.98	44.23	38.92
β_{MKT}	0.81	0.91	0.98	1.16	1.34	1.30	1.43	1.70	1.68	1.76	0.94
	(16.94)	(32.51)	(21.45)	(17.08)	(11.89)	(10.19)	(10.46)	(8.65)	(9.02)	(7.37)	(3.47)
$\alpha(\%)$	1.57	0.83	3.18	0.27	-1.01	-0.70	-5.29	-5.48	-7.72	-9.57	-11.14
	(1.84)	(1.04)	(3.89)	(0.21)	(-0.50)	(-0.32)	(-1.76)	(-1.59)	(-1.71)	(-1.80)	(-1.84)
$R^2(\%)$	87.46	91.43	84.89	86.00	74.63	74.90	70.02	67.81	54.64	51.21	19.06
β_{IMC}	0.14	0.31	0.51	0.53	0.95	0.94	1.12	1.33	1.65	1.64	1.50
	(1.42)	(3.40)	(3.99)	(3.02)	(6.84)	(6.59)	(6.29)	(8.18)	(7.93)	(8.48)	(7.46)

Table 11 shows characteristics for decile portfolios, excluding investment firms and services (Fama and French (1997) classifications 14-17).

Table 12: Excess return comovement, excluding services

	Cross-sections						Eigenvalues
	IK	EP	IVOL	BMKT	Q	ALL	$\lambda_1 / \sum \lambda_i$
IK							33.7
(p-value)							(0.00)
-EP	65.0						31.3
(p-value)							(0.00)
IVOL	52.8	46.9					54.2
(p-value)							(0.00)
BMKT	61.1	59.9	57.3				36.4
(p-value)							(0.00)
Q	77.2	56.7	46.3	56.1			30.8
(p-value)							(0.00)
ALL (IK, EP, IVOL, BMKT, Q)	76.0	72.9	80.7	81.8	71.3		29.0
(p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		(0.00)
IMC	52.9	59.3	61.2	59.8	69.6	71.9	
-HML	60.3	55.1	33.3	66.7	73.9	69.9	
Δz^I	17.9	31.8	20.6	41.2	17.7	29.4	

Table 12 shows return comovement across the 5 decile portfolio sorts (Q, IK, EP, BMKT and IVOL). We extract the first principal component from standardized return residuals from a market model regression. We normalize the sign of the first principal component so that it loads positively on portfolio 10 with the exception of the EP sort, where it loads negatively on portfolio 10. In addition, we extract the first principal component from a pooled cross-section of 20 portfolios that includes portfolios 1, 2, 9 and 10 from each sort. We show the correlation matrix of these principal components, along with their correlations with IMC, HML and the real proxy for the IST shock Δz^I. We compute p-values based on 10,000 random permutations, where we randomly permute the order of each cross-section separately.

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