

Online Appendix

The Ungeheuer and Weber (2021) Comove and Stock Returns Effect Disappears with Control for Idiosyncratic Volatility

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Table IA1 reports the average *Comove* of the *Comove* portfolios.

Table IA2 reports the summary statistics of the US sample. Except for $Return_t$, These statistics are very similar to those reported in Panel A of Table IA. IX of UW's Internet Appendix. UW report a mean $Return_t$ of 0.0054, which is about 19 basis points lower than ours. The discrepancy is mainly driven by our differences in excluding microcap stocks. When excluding the microcap stocks, UW compare a stock's market capitalization at the end of month $t - 1$ with the NYSE breakpoint at the end of month t . (We confirmed this with the authors in private conversations.) We compare a stock's market capitalization at the end of month $t - 1$ with the NYSE breakpoint at the end of month t . Hence, they exclude more firms in the months with higher market returns and fewer firms in the months with lower market returns. Out of the 19 basis points difference in mean $Return_t$, the difference in handling the microcap stocks explains about 15 basis points. The remaining can be attributed to the sample period difference. Our sample includes the last five years that have relatively high returns.

Tables IA3 to IA6 report the results based on the value-weighted portfolios. These tables correspond to Tables 2, 4, 5, and 6, respectively. In Tables 2, 4, 5, and 6, the portfolios are equal-weighted.

Table IA7 reports the characteristics (i.e., moderate beta, extreme beta, and idiosyncratic volatility) of the *Comove* portfolios for each individual economy.

Table IA8 reports the characteristics (i.e., moderate beta, extreme beta, and idiosyncratic volatility) of the *Comove* portfolios. Unlike Table 3, the extreme market return days are the days with the 10% highest absolute market returns, and the remaining days are the moderate return days. Extreme beta is estimated

using the extreme market return days, and moderate beta is estimated using the moderate market return days. Instead, in Table 3, the extreme market return days are the days with the 20% highest absolute market returns.

Table I9 reports the alphas of the high-minus-low *Comove* long-short portfolio. We report the alphas from a model with the local market factor plus the *IVOL* factor.

Table IA1. Average *Comove* of the *Comove* portfolio

This table presents the mean of *Comove* for each *Comove* portfolio. *Comove* is measured as the frequency of equally signed stock and market returns over the last 52 weeks. The market returns are measured based on the local market index. Each month, for each market, stocks are sorted into quintiles based on *beta*. Then, within each *beta* quintile, stocks are further sorted into quintiles based on *Comove*. *Beta* is measured using the last year's daily stock and value-weighted market returns. The average *Comove* of the five *Comove* portfolios is averaged across the five *beta* quintiles. We report the average *Comove* of the five *Comove* portfolios and the difference in *Comove* between the high-*Comove* and the low-*Comove* portfolios. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Economy	Low Comove	2	3	4	High Comove	High-Low	
						Mean	t-value
United States	0.521	0.592	0.633	0.674	0.736	0.215	97.74
<i>Other G7 markets</i>							
Japan	0.507	0.579	0.621	0.662	0.724	0.217	86.06
United Kingdom	0.397	0.500	0.558	0.612	0.693	0.296	45.13
France	0.444	0.528	0.574	0.618	0.683	0.239	120.29
Germany	0.431	0.512	0.560	0.606	0.675	0.244	77.77
Canada	0.381	0.481	0.534	0.584	0.659	0.277	34.52
Italy	0.527	0.595	0.636	0.677	0.739	0.212	51.54
<i>Other developed markets</i>							
Hong Kong	0.464	0.539	0.584	0.630	0.705	0.241	100.94
Australia	0.386	0.466	0.518	0.572	0.655	0.269	58.44
Sweden	0.471	0.544	0.591	0.637	0.704	0.233	61.50
Singapore	0.426	0.509	0.560	0.609	0.686	0.260	41.53
Israel	0.484	0.549	0.590	0.629	0.688	0.204	130.12
<i>Non-developed markets</i>							
China	0.615	0.676	0.712	0.748	0.803	0.189	53.14
India	0.513	0.579	0.618	0.657	0.719	0.206	99.30
South Korea	0.512	0.576	0.616	0.655	0.716	0.203	105.17
Taiwan	0.550	0.614	0.652	0.689	0.747	0.197	77.60
Indonesia	0.421	0.504	0.551	0.596	0.663	0.242	71.15
South Africa	0.405	0.498	0.550	0.598	0.667	0.263	42.54
Malaysia	0.477	0.550	0.592	0.633	0.697	0.220	43.64
Thailand	0.488	0.562	0.606	0.648	0.710	0.222	96.09
Turkey	0.545	0.615	0.658	0.698	0.758	0.213	75.00
Poland	0.425	0.507	0.553	0.597	0.664	0.239	33.12
Greece	0.527	0.593	0.635	0.678	0.744	0.217	43.71
Pakistan	0.474	0.554	0.601	0.646	0.717	0.242	41.21
International						0.236	95.50

Table IA2. Summary statistics of the US sample

In this table, we report the summary statistics for our US sample. *Comove* is defined as the frequency of equally signed weekly stock and market (S&P 500) returns during the last 52 weeks. *Return_t* is the monthly excess stock return. *Ln(size)* is the log of a firm's equity market capitalization. *Ln(B/M)* is the log of a firm's book-to-market ratio. The book-to-market ratio is calculated following Fama and French (2008). We fill the missing book equity values with data from Davis, Fama, and French (2000). *Return_{t-12,t-2}* is the cumulative stock return from month $t-12$ to $t-2$. *Beta* is the factor loading on the market factor from a CAPM one-factor regression estimated based on a one-year rolling window of daily data. *IVOL* is the standard deviation of residuals from the Fama and French (1993) model, estimated using the previous month's daily returns. *Min* is a stock's minimum daily return over the previous month, multiplied by -1 . *Max* is a stock's maximum daily return over the previous month. The statistics are based on pooled observations of all US common stocks traded on the NYSE, Amex, and NASDAQ. We exclude stocks whose price falls below \$1 or whose market capitalization falls below the 10th NYSE-percentile in the month before portfolio formation. The sample period is from July 1963 to December 2020.

Variable	Mean	Median	Std. Dev.	P10	P90	N
<i>Comove</i>	0.6287	0.6226	0.0961	0.5094	0.7547	1,601,619
<i>Return_t</i>	0.0073	0.0031	0.1326	-0.1275	0.1432	1,601,619
<i>Ln(size)</i>	20.0289	19.8632	1.7338	17.9291	22.3595	1,601,619
<i>Ln(B/M)</i>	-0.7084	-0.6165	0.9158	-1.8492	0.3111	1,340,585
<i>Return_{t-12,t-2}</i>	0.2102	0.1123	0.6842	-0.3080	0.7327	1,601,619
<i>Beta</i>	0.9600	0.9052	0.5580	0.2797	1.7091	1,601,619
<i>IVOL</i>	0.0199	0.0165	0.0127	0.0078	0.0363	1,601,614
<i>Min</i>	0.0468	0.0370	0.0378	0.0163	0.0858	1,601,618
<i>Max</i>	0.0560	0.0426	0.0530	0.0184	0.1053	1,601,618

Table IA3. The *Comove* portfolios – value-weighted

In this table, we report the performance of *Comove* portfolios. The portfolios are value-weighted. *Comove* is measured as the frequency of equally signed stock and market returns over the last 52 weeks. The market returns are measured based on the local market index. Each month, for each market, stocks are sorted into quintiles based on *beta*. Then, within each *beta* quintile, stocks are further sorted into quintiles based on *Comove*. *Beta* is measured using the last year's daily stock and value-weighted market returns. The returns of the five *Comove* portfolios over the next month are averaged across the five *beta* quintiles. We report the excess return of the five *Comove* portfolios. We also report the excess return and the regional-factor model alphas of the high-*Comove* minus low-*Comove* long-short portfolio. In the last row, we aggregate the high-minus-low *Comove* portfolios across the 23 international markets, using the local total market capitalization as the weight. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Economy	Low Comove	2	3	4	High Comove	High-Low			
						Excess	<i>t</i>	Alpha	<i>t</i>
United States	0.510	0.568	0.572	0.619	0.580	0.071	0.70	0.142	1.52
<i>Other G7 markets</i>									
Japan	0.154	0.350	0.294	0.396	0.339	0.185	1.29	0.218	1.74
UK	0.287	0.514	0.690	0.547	0.521	0.234	2.06	0.150	1.15
France	0.556	0.622	0.660	0.713	0.827	0.271	1.97	0.257	1.90
Germany	0.058	0.362	0.515	0.478	0.687	0.628	3.37	0.731	3.97
Canada	0.711	0.694	0.595	0.638	0.708	-0.002	-0.01	0.019	0.07
Italy	0.083	0.680	0.644	0.526	0.696	0.613	2.38	0.760	3.32
<i>Other developed markets</i>									
Hong Kong	0.416	0.527	0.637	0.591	0.600	0.185	0.65	-0.023	-0.10
Australia	1.006	1.060	0.854	0.997	0.888	-0.118	-0.39	-0.224	-0.83
Sweden	0.641	1.098	1.063	1.238	1.001	0.360	1.11	0.505	1.53
Singapore	0.755	0.762	0.714	0.678	0.851	0.095	0.30	0.304	1.37
Israel	1.053	0.884	0.718	0.739	1.180	0.127	0.47	0.237	0.91
<i>Non-developed markets</i>									
China	0.981	0.960	0.876	0.739	0.841	-0.140	-0.63	-0.608	-3.02
India	0.674	1.202	0.979	1.041	1.115	0.441	1.57	0.473	1.45
South Korea	0.394	0.285	0.368	0.837	1.044	0.650	2.25	0.090	0.27
Taiwan	0.257	0.255	0.364	0.866	0.613	0.356	1.81	0.399	2.06
Indonesia	0.355	0.309	0.580	0.602	0.632	0.277	0.71	0.248	0.57
South Africa	0.798	0.836	1.046	1.132	1.145	0.347	1.31	0.384	1.13
Malaysia	0.094	0.425	0.363	0.566	0.464	0.370	1.88	0.610	2.25
Thailand	0.540	0.703	1.002	0.577	0.898	0.358	1.20	0.440	1.55
Turkey	1.509	1.511	1.413	1.847	1.710	0.201	0.52	0.172	0.54
Poland	0.323	-0.472	-0.120	0.183	0.288	-0.035	-0.07	-0.161	-0.47
Greece	0.174	-0.025	0.339	0.341	0.061	-0.113	-0.18	-0.515	-0.62
Pakistan	1.497	1.209	0.735	0.988	0.781	-0.716	-1.32	-1.133	-2.36
International						0.239	2.74	0.203	3.01

Table IA4. Adjusting with an *IVOL* factor – value-weighted

This table reports the alphas of the high-minus-low *Comove* long-short portfolio. The portfolios are value-weighted. The *Comove* portfolios are constructed by controlling for beta, as in Table 2. We report the alphas from a model with the local market factor plus the *IVOL* factor (Panel A) and the alphas from the regional factor model plus the *IVOL* factor (Panel B). The *IVOL* factor is constructed based on a double sort: first by beta and then by *IVOL*, and is value-weighted. In the last row, we aggregate the high-minus-low *Comove* portfolios across the 23 international markets, using the local total market capitalization as the weight. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Economy	Panel A. CAPM + <i>IVOL</i> factor						Panel B. FF5 + <i>IVOL</i> factor					
	Alpha	<i>t</i>	MktRf	<i>t</i>	<i>IVOL</i> factor	<i>t</i>	Alpha	<i>t</i>	MktRf	<i>t</i>	<i>IVOL</i> factor	<i>t</i>
United States	-0.112	-1.58	0.127	2.99	0.463	10.68	0.026	0.28	0.095	3.61	0.380	3.99
<i>Other G7 markets</i>												
Japan	0.228	1.75	0.100	3.41	-0.055	-0.70	0.204	1.63	0.126	3.94	0.094	1.10
UK	0.107	0.84	-0.107	-1.14	0.094	1.80	0.087	0.89	0.105	3.14	0.253	5.67
France	0.244	1.80	0.312	3.23	0.050	1.15	0.122	0.87	0.122	5.53	0.095	2.55
Germany	0.695	3.59	0.175	1.28	0.031	0.72	0.377	2.59	0.135	4.67	0.097	2.06
Canada	-0.139	-0.53	-0.055	-0.74	0.353	6.25	0.017	0.08	-0.017	-0.41	0.377	7.96
Italy	0.556	3.27	0.198	1.25	0.182	2.31	0.603	4.46	0.152	3.51	0.212	2.91
<i>Other developed markets</i>												
Hong Kong	-0.087	-0.50	0.110	1.56	0.482	8.90	-0.220	-1.34	0.164	5.43	0.639	15.81
Australia	-0.540	-2.51	-0.031	-0.17	0.363	6.78	-0.598	-4.03	-0.012	-0.36	0.488	12.56
Sweden	0.296	0.92	0.089	1.03	0.339	6.52	-0.306	-1.25	0.060	1.78	0.391	8.21
Singapore	0.076	0.37	-0.097	-0.60	0.397	5.08	-0.070	-0.36	0.013	0.41	0.442	6.75
Israel	0.113	0.45	0.199	2.74	0.124	1.99	-0.020	-0.09	0.089	2.75	0.138	2.33
<i>Non-developed markets</i>												
China	-0.834	-3.68	0.011	0.28	0.248	1.99	-0.397	-1.45	0.033	0.97	0.411	3.31
India	0.045	0.16	0.051	1.28	0.334	5.85	0.120	0.63	0.072	2.91	0.328	6.12
South Korea	-0.045	-0.14	0.031	0.49	0.321	4.76	-0.099	-0.36	0.102	4.80	0.382	6.85
Taiwan	0.355	1.89	0.171	2.06	0.187	2.13	0.244	1.53	0.022	0.67	0.277	3.42
Indonesia	0.048	0.12	0.152	1.07	0.209	4.33	0.005	0.02	0.121	1.84	0.241	5.35
South Africa	0.196	0.67	-0.074	-0.85	0.139	1.62	-0.071	-0.32	0.098	2.90	0.163	1.75
Malaysia	0.625	2.12	0.285	6.70	0.293	5.64	0.061	0.42	0.144	2.99	0.357	6.88
Thailand	0.319	1.36	0.121	2.94	0.320	3.57	0.302	1.38	0.151	6.38	0.257	3.53
Turkey	0.184	0.60	0.039	0.90	0.216	3.83	-0.002	-0.01	0.014	0.48	0.213	4.40
Poland	-0.729	-1.86	-0.056	-1.09	0.507	3.73	-0.184	-0.49	0.044	1.63	0.364	2.43
Greece	-0.489	-0.78	0.020	0.22	0.393	3.69	-0.594	-2.02	0.096	3.28	0.492	9.47
Pakistan	-0.956	-2.42	-0.062	-0.85	0.322	6.72	-0.395	-1.12	0.018	0.43	0.333	8.19
International	0.082	1.10	0.082	2.93	0.262	6.82	0.119	1.74	0.070	1.53	0.185	4.44

Table IA5. Triple sorts – value-weighted

In this table, we report the performance of *Comove* portfolios in a triple-sort analysis. The portfolios are value-weighted. Each month, for each market, stocks are sorted into terciles based on *beta*. Then, within each *beta* tercile, stocks are further sorted into quintiles based on idiosyncratic volatility (*IVOL*). Then, within each *beta-IVOL* portfolio, stocks are further sorted into *Comove* quintiles. The returns of the five *Comove* portfolios over the next month are averaged across the 30 *beta-IVOL* quintiles. We report the excess return of the five *Comove* portfolios. We also report the excess return and the regional-factor model alphas of the high-*Comove* minus low-*Comove* long-short portfolio. In the last row, we aggregate the high-minus-low *Comove* portfolios across the 23 international markets, using the local total market capitalization as the weight. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Economy	Low Comove	2	3	4	High Comove	High-Low			
						Excess	<i>t</i>	Alpha	<i>t</i>
United States	0.564	0.496	0.595	0.575	0.638	0.074	0.89	0.085	1.10
<i>Other G7 markets</i>									
Japan	0.230	0.278	0.312	0.357	0.370	0.140	1.27	0.166	1.65
UK	0.516	0.495	0.577	0.413	0.598	0.082	0.76	0.109	0.98
France	0.476	0.639	0.605	0.702	0.647	0.170	1.10	0.193	1.24
Germany	0.065	0.229	0.252	0.215	0.189	0.124	0.67	0.196	1.63
Canada	0.793	0.722	0.616	0.674	0.645	-0.148	-0.84	-0.272	-1.41
Italy	-0.062	0.305	0.387	0.641	0.513	0.574	2.46	0.662	3.42
<i>Other developed markets</i>									
Hong Kong	0.644	0.463	0.370	0.669	0.764	0.120	0.53	-0.108	-0.46
Australia	1.067	0.943	0.849	0.647	0.634	-0.433	-2.03	-0.391	-2.13
Sweden	0.718	0.924	0.871	0.909	1.003	0.285	1.34	0.427	1.89
Singapore	0.891	0.893	0.593	0.722	0.737	-0.154	-0.90	-0.199	-1.06
Israel	0.893	0.990	0.817	0.846	0.860	-0.033	-0.15	-0.069	-0.38
<i>Non-developed markets</i>									
China	1.071	0.986	0.841	0.828	0.765	-0.305	-1.48	-0.677	-4.07
India	0.817	0.879	0.881	0.834	1.011	0.194	0.92	0.195	0.84
South Korea	0.371	0.291	0.411	0.561	0.783	0.412	1.72	0.088	0.32
Taiwan	0.235	0.291	0.433	0.463	0.533	0.298	1.80	0.278	1.80
Indonesia	1.037	0.716	0.662	0.551	0.936	-0.100	-0.29	-0.102	-0.25
South Africa	1.114	0.890	1.056	0.801	0.863	-0.251	-0.99	-0.497	-1.32
Malaysia	0.337	0.314	0.485	0.502	0.511	0.174	1.08	0.344	1.59
Thailand	0.928	0.843	0.906	0.924	0.940	0.012	0.04	-0.072	-0.29
Turkey	1.918	1.674	1.789	1.859	1.947	0.029	0.09	-0.112	-0.36
Poland	0.194	-0.029	0.022	-0.399	-0.185	-0.379	-1.89	-0.383	-2.03
Greece	-0.082	0.151	-0.155	-0.081	0.148	0.230	0.79	-0.215	-0.41
Pakistan	1.552	1.375	1.025	1.237	1.357	-0.194	-0.50	-0.260	-0.70
International						0.086	1.14	0.060	1.13

Table IA6. The idiosyncratic volatility effect – value-weighted

This table reports the results of the idiosyncratic volatility (*IVOL*) effect. The portfolios are value-weighted. In the double sort analysis, the stocks are sorted into beta quintiles and then *IVOL* quintiles. The returns of the five *IVOL* portfolios over the next month are averaged across the five beta quintiles. For the double sort, we report the alpha of the low-minus-high *IVOL* portfolio alphas based on the regional factor model and the alphas based on the regional alpha model augmented with a *Comove* factor. In the triple sort analysis, stocks were first sorted into beta terciles. Then within each beta tercile, stocks are sorted into *Comove* deciles. Then, within each beta-*Comove* portfolio, stocks are further sorted into *IVOL* quintiles. The returns of the five *IVOL* portfolios over the next month are averaged across the 30 beta-*Comove* portfolios. For the triple sort, we report the alpha of the low-minus-high *IVOL* portfolio alphas based on the regional factor model. In the *MktRf* column, we report the loading on the market factor. In the *Comove factor* column, we report the loading on the *Comove* factor. In the last row, we aggregate the low-minus-high *IVOL* portfolios across the 23 international markets, using the local total market capitalization as the weight. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Economy	Double sort		Double sort adjusted with a Comove factor						Triple sort	
	Alpha	<i>t</i>	Alpha	<i>t</i>	MktRf	<i>t</i>	Comove factor	<i>t</i>	Alpha	<i>t</i>
United States	0.313	3.61	0.264	3.44	-0.174	-6.03	0.346	3.93	0.260	3.14
<i>Other G7 markets</i>										
Japan	0.195	1.61	0.212	1.80	-0.233	-5.18	-0.078	-0.71	0.299	3.01
UK	0.456	2.51	0.424	2.42	-0.148	-0.95	0.209	2.03	0.279	1.53
France	0.252	1.15	0.222	1.02	-0.089	-0.60	0.116	1.24	0.193	1.03
Germany	1.148	4.93	1.091	4.59	-0.037	-0.27	0.078	0.70	0.924	4.84
Canada	0.449	1.13	0.434	1.17	-0.356	-4.56	0.777	3.08	0.396	1.50
Italy	1.124	5.62	0.921	5.92	-0.418	-3.32	0.268	2.99	0.937	3.83
<i>Other developed markets</i>										
Hong Kong	0.133	0.39	0.151	0.57	-0.348	-2.73	0.793	8.53	-0.088	-0.24
Australia	0.869	2.51	1.027	3.71	0.100	0.56	0.701	6.77	0.932	3.16
Sweden	0.617	2.22	0.326	1.19	-0.054	-0.58	0.576	7.11	1.108	5.07
Singapore	0.575	2.04	0.408	1.62	-0.034	-0.22	0.548	7.73	0.391	1.86
Israel	1.006	3.17	0.952	3.29	-0.035	-0.39	0.227	1.87	1.171	4.18
<i>Non-developed markets</i>										
China	0.909	2.54	1.056	3.43	-0.111	-3.09	0.242	1.61	1.097	3.60
India	1.282	3.83	0.990	3.41	-0.227	-3.34	0.618	9.06	1.270	4.71
South Korea	0.421	1.13	0.372	1.06	-0.180	-2.83	0.546	4.10	0.741	1.87
Taiwan	0.232	0.81	0.116	0.40	-0.410	-4.27	0.289	1.87	0.185	0.76
Indonesia	0.958	2.29	0.864	2.42	0.144	1.57	0.378	3.69	0.027	0.06
South Africa	1.354	3.66	1.283	3.91	-0.072	-1.14	0.185	1.53	0.972	3.31
Malaysia	-0.049	-0.11	-0.499	-1.12	-0.407	-4.70	0.736	6.33	0.405	1.50
Thailand	0.380	1.19	0.096	0.35	-0.186	-4.09	0.646	4.29	0.244	0.74
Turkey	-0.057	-0.13	-0.110	-0.26	0.101	2.24	0.308	2.16	0.848	2.23
Poland	1.120	2.37	1.243	2.95	0.034	0.36	0.761	7.33	0.967	2.54
Greece	-0.065	-0.09	0.299	0.59	-0.218	-2.35	0.706	3.66	0.012	0.02
Pakistan	-0.550	-1.14	0.333	0.93	-0.150	-2.03	0.780	4.87	0.129	0.26
International	0.482	5.92	0.461	5.96	-0.169	-3.33	0.314	4.44	0.460	5.83

Table IA7. The characteristics of the *Comove* portfolios – individual economy

This table reports the differences in characteristics (moderate beta, extreme beta, and idiosyncratic volatility) of the high-*Comove* and the low-*Comove* portfolios. The *Comove* portfolios are constructed by controlling for beta, as in Table 2. Panel A reports the characteristics calculated based on the past twelve months' data, contemporaneous to the data used to calculate *Comove*. Panel B reports the characteristics calculated based on the twelve months' data following portfolio formation. To calculate moderate and extreme betas, for each twelve months estimation period, we group the days into two categories by the absolute value of the market return. The extreme market return days are the days with the 20% highest absolute market returns, and the remaining days are the moderate return days. Moderate beta is the beta estimated using the data of the moderate return days, and extreme beta is estimated using data of the extreme return days. In the US, idiosyncratic volatility (*IVOL*) is calculated relative to the Fama-French three-factor model. In the international data, *IVOL* is calculated relative to the local market factor. Reported *IVOL* is annualized by multiplying the standard deviation of daily return residuals by the square root of 252. We winsorize *IVOL* at the 1% and 99% levels by market. In the last row, we aggregate the high-minus-low *Comove* portfolios across the 23 international markets using the local total market capitalization as the weight. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Economy	Panel A. Contemporaneous						Panel B. Future					
	Moderate Beta	<i>t</i>	Extreme Beta	<i>t</i>	<i>IVOL</i>	<i>t</i>	Moderate Beta	<i>t</i>	Extreme Beta	<i>t</i>	<i>IVOL</i>	<i>t</i>
United States	0.098	8.77	0.037	8.13	-0.120	-19.11	0.017	1.12	0.021	1.80	-0.112	-17.42
<i>Other G7 markets</i>												
Japan	0.105	11.3	0.031	5.34	-0.103	-11.59	0.144	13.03	0.129	10.16	-0.089	-11.10
UK	0.070	7.47	0.028	5.57	-0.161	-15.81	0.153	10.24	0.142	7.87	-0.144	-15.63
France	0.098	10.69	0.053	9.64	-0.116	-13.76	0.180	15.98	0.177	17.34	-0.108	-13.44
Germany	0.067	4.47	0.050	8.40	-0.231	-8.19	0.190	10.84	0.191	12.06	-0.216	-7.91
Canada	0.077	5.29	0.054	7.95	-0.426	-11.95	0.149	9.34	0.168	12.36	-0.417	-12.22
Italy	0.102	7.57	0.067	7.65	-0.088	-17.15	0.128	6.53	0.145	7.94	-0.074	-14.02
<i>Other developed markets</i>												
Hong Kong	0.100	5.87	0.044	6.49	-0.238	-16.73	0.183	8.59	0.148	5.60	-0.207	-17.05
Australia	0.070	4.60	0.012	2.76	-0.487	-15.04	0.127	4.66	0.085	6.42	-0.466	-16.00
Sweden	0.101	9.82	0.016	2.35	-0.255	-9.68	0.135	6.95	0.105	6.74	-0.238	-9.15
Singapore	0.048	2.19	0.029	3.33	-0.333	-13.20	0.065	2.19	0.106	4.85	-0.314	-13.27
Israel	0.057	3.96	0.009	1.56	-0.106	-9.16	0.089	6.55	0.077	5.71	-0.087	-7.55
<i>Non-developed markets</i>												
China	0.009	0.64	0.030	5.90	-0.071	-10.05	0.021	1.11	0.020	2.00	-0.053	-9.26
India	0.104	11.25	0.037	6.92	-0.164	-10.51	0.109	3.95	0.100	6.38	-0.153	-10.03
South Korea	0.072	8.73	0.029	8.68	-0.140	-14.92	0.068	5.77	0.058	7.16	-0.123	-14.27
Taiwan	0.055	8.24	0.043	15.03	-0.078	-9.96	0.073	6.80	0.078	8.64	-0.069	-9.64
Indonesia	0.104	7.18	0.036	3.90	-0.184	-16.48	0.189	9.10	0.195	10.68	-0.149	-14.70
South Africa	0.032	3.89	0.035	5.44	-0.266	-12.69	0.066	1.75	0.099	7.19	-0.256	-12.28
Malaysia	0.092	6.34	0.032	6.20	-0.174	-9.35	0.103	4.46	0.079	5.17	-0.163	-8.64
Thailand	0.114	9.64	0.048	9.41	-0.124	-7.88	0.159	10.42	0.142	12.61	-0.105	-7.23
Turkey	0.105	12.81	0.019	5.13	-0.137	-16.34	0.121	11.29	0.080	8.71	-0.107	-14.54
Poland	0.074	7.53	0.023	3.58	-0.237	-9.47	0.144	6.68	0.138	10.02	-0.218	-9.34
Greece	0.060	2.18	0.036	4.05	-0.140	-9.87	-0.055	-1.94	-0.022	-0.95	-0.129	-8.94
Pakistan	0.085	5.02	0.020	2.85	-0.255	-10.60	0.115	6.07	0.102	5.31	-0.239	-10.81
International	0.080	26.27	0.035	24.78	-0.200	-30.06	0.123	26.02	0.116	29.27	-0.183	-28.16

Table IA8. The characteristics of the *Comove* portfolios – 10% tail as extreme

This table reports the differences in characteristics (moderate beta, extreme beta, and idiosyncratic volatility) of the high-*Comove* and the low-*Comove* portfolios. The *Comove* portfolios are constructed by controlling for beta, as in Table 2. Panel A reports the characteristics calculated based on the past twelve months' data, contemporaneous to the data used to calculate *Comove*. Panel B reports the characteristics calculated based on the twelve months' data following portfolio formation. To calculate moderate and extreme betas, for each twelve months estimation period, we group the days into two categories by the absolute value of the market return. The extreme market return days are the days with the 10% highest absolute market returns, and the remaining days are the moderate return days. Moderate beta is the beta estimated using the data of the moderate return days, and extreme beta is estimated using data of the extreme return days. In the US, idiosyncratic volatility (*IVOL*) is calculated relative to the Fama-French three-factor model. In the international data, *IVOL* is calculated relative to the local market factor. Reported *IVOL* is annualized by multiplying the standard deviation of daily return residuals by the square root of 252. We winsorize *IVOL* at the 1% and 99% levels by market. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Economy	Panel A. Contemporaneous						Panel B. Future					
	Moderate Beta	<i>t</i>	Extreme Beta	<i>t</i>	<i>IVOL</i>	<i>t</i>	Moderate Beta	<i>t</i>	Extreme Beta	<i>t</i>	<i>IVOL</i>	<i>t</i>
United States	0.090	9.73	0.017	3.00	-0.120	-19.11	0.018	1.29	0.021	1.83	-0.112	-17.42
<i>Other G7 markets</i>												
Japan	0.103	12.12	0.009	1.16	-0.103	-11.59	0.160	11.59	0.118	8.61	-0.089	-11.10
UK	0.074	9.57	0.013	2.05	-0.161	-15.81	0.160	10.46	0.132	7.25	-0.144	-15.63
France	0.087	11.04	0.048	7.78	-0.116	-13.76	0.175	19.87	0.171	16.28	-0.108	-13.44
Germany	0.073	6.55	0.036	4.47	-0.231	-8.19	0.198	12.30	0.181	11.83	-0.216	-7.91
Canada	0.084	7.60	0.047	4.96	-0.426	-11.95	0.160	11.91	0.166	11.05	-0.417	-12.22
Italy	0.092	7.42	0.066	7.87	-0.088	-17.15	0.131	7.53	0.151	8.10	-0.074	-14.02
<i>Other developed markets</i>												
Hong Kong	0.108	7.58	0.016	1.51	-0.238	-16.73	0.173	8.29	0.136	4.61	-0.207	-17.05
Australia	0.074	5.94	-0.007	-0.98	-0.487	-15.04	0.145	3.57	0.065	4.26	-0.466	-16.00
Sweden	0.080	10.93	0.005	0.50	-0.255	-9.68	0.133	7.62	0.097	6.49	-0.238	-9.15
Singapore	0.061	4.06	0.015	1.40	-0.333	-13.20	0.087	3.21	0.086	4.00	-0.314	-13.27
Israel	0.049	4.67	0.001	0.18	-0.106	-9.16	0.093	6.30	0.058	4.49	-0.087	-7.55
<i>Non-developed markets</i>												
China	0.010	1.24	0.036	5.49	-0.071	-10.05	0.015	1.31	0.019	1.94	-0.053	-9.26
India	0.097	11.87	0.026	3.90	-0.164	-10.51	0.111	4.89	0.095	5.51	-0.153	-10.03
South Korea	0.069	12.99	0.017	3.38	-0.140	-14.92	0.071	6.72	0.053	7.00	-0.123	-14.27
Taiwan	0.057	10.15	0.037	9.20	-0.078	-9.96	0.081	8.45	0.070	7.03	-0.069	-9.64
Indonesia	0.084	8.22	0.020	1.51	-0.184	-16.48	0.192	14.07	0.172	8.25	-0.149	-14.70
South Africa	0.042	5.51	0.025	3.74	-0.266	-12.69	0.083	3.14	0.097	6.88	-0.256	-12.28
Malaysia	0.088	7.62	0.019	2.68	-0.174	-9.35	0.053	1.41	0.075	4.41	-0.163	-8.64
Thailand	0.107	11.66	0.033	5.16	-0.124	-7.88	0.158	11.67	0.133	11.39	-0.105	-7.23
Turkey	0.096	11.96	-0.001	-0.14	-0.137	-16.34	0.115	12.06	0.072	7.79	-0.107	-14.54
Poland	0.068	7.56	0.016	2.01	-0.237	-9.47	0.147	7.70	0.130	9.41	-0.218	-9.34
Greece	0.061	3.89	0.019	1.74	-0.140	-9.87	-0.046	-1.72	-0.027	-1.15	-0.129	-8.94
Pakistan	0.096	7.30	-0.007	-0.83	-0.255	-10.60	0.139	11.58	0.070	2.79	-0.239	-10.81
International	0.079	32.76	0.022	11.95	-0.200	-30.06	0.126	25.96	0.107	25.90	-0.183	-28.16

Table IA9. Adjusting with an *IVOL* factor – CAPM augmented with an *IVOL* factor

Description: This table reports the alphas of the high-minus-low *Comove* long-short portfolio. The portfolios are equal-weighted. The *Comove* portfolios are constructed by controlling for beta, as in Table 2. We report the alphas from a model with the local market factor plus the *IVOL* factor. The *IVOL* factor is constructed based on a double sort: first by beta and then by *IVOL*, and is equal-weighted. In the last row, we aggregate the high-minus-low *Comove* portfolios across the 23 international markets, using the local total market capitalization as the weight. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. The bold typeface indicates statistical significance at the 5% level.

Interpretation: The high-minus-low *Comove* long-short portfolio has an alpha that is indistinguishable from zero once the *IVOL* factor is adjusted.

Economy	Alpha	<i>t</i>	MktRf	<i>t</i>	<i>IVOL</i> factor	<i>t</i>
United States	0.044	0.63	0.133	7.33	0.493	13.42
Japan	0.083	0.99	0.147	6.22	0.386	5.14
UK	0.053	0.57	0.181	7.22	0.48	15.05
France	0.199	1.50	0.181	8.65	0.185	2.99
Germany	0.173	1.15	0.237	8.04	0.199	3.67
Canada	−0.263	−1.57	0.168	6.21	0.526	11.19
Italy	0.169	0.90	0.094	4.88	0.208	6.14
Hong Kong	−0.291	−1.76	0.256	8.40	0.749	9.31
Australia	−0.798	−6.68	0.091	4.81	0.581	14.94
Sweden	0.033	0.15	0.140	5.85	0.506	8.66
Singapore	−0.162	−1.20	0.167	6.20	0.591	8.40
Israel	−0.378	−2.08	0.026	1.00	0.295	5.52
China	−0.362	−2.20	0.021	0.86	0.453	5.81
India	−0.048	−0.31	0.084	4.59	0.498	9.81
South Korea	−0.108	−0.53	0.075	3.80	0.421	10.15
Taiwan	0.308	2.56	0.040	1.43	0.151	2.19
Indonesia	−0.152	−0.50	0.155	3.28	0.319	4.90
South Africa	−0.201	−1.26	0.115	5.95	0.428	10.25
Malaysia	−0.066	−0.65	0.151	12.17	0.422	11.11
Thailand	0.084	0.61	0.213	10.23	0.308	3.83
Turkey	−0.164	−0.78	0.034	2.29	0.488	6.70
Poland	−0.555	−2.64	0.053	1.75	0.423	10.67
Greece	−0.148	−0.82	0.079	3.58	0.489	8.62
Pakistan	−0.428	−1.75	0.120	4.26	0.432	10.83
International	−0.032	−0.57	0.126	5.45	0.379	11.09