# Internet Appendix for "The Joint Dynamics of Hedge Fund Returns, Illiquidity, and Volatility"

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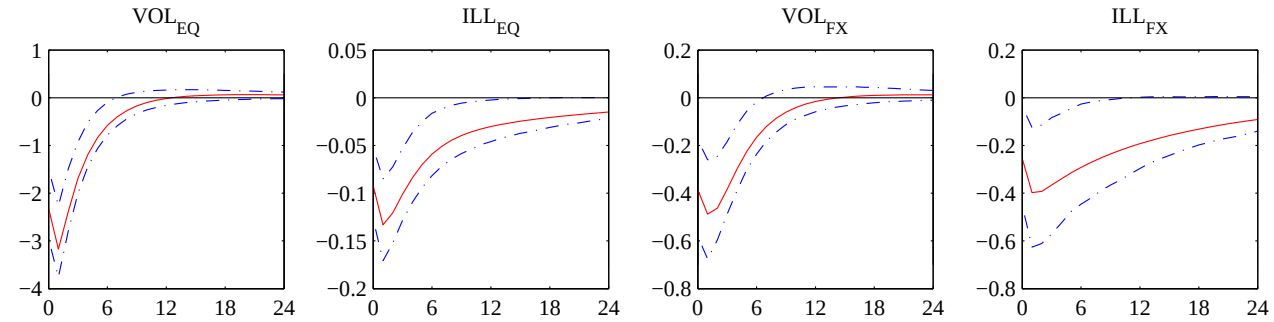
**Abstract**

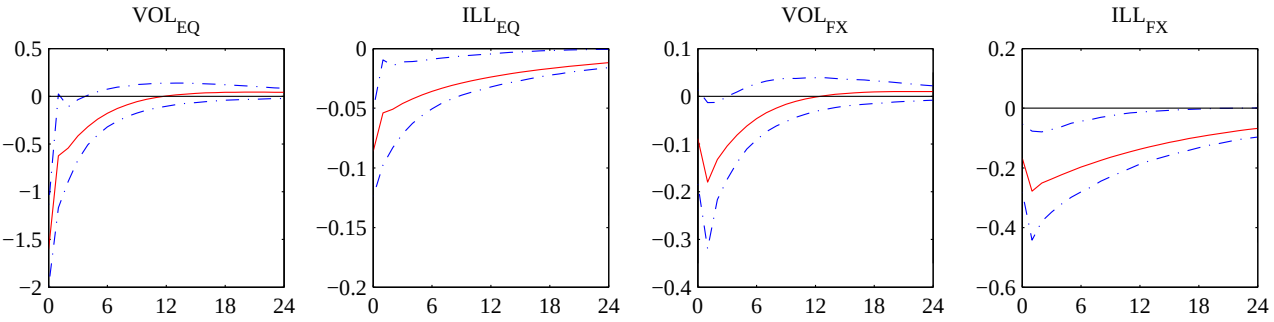
This supplemental appendix presents additional analyses and robustness checks. More precisely it shows the relation between volatility, illiquidity and the remaining risk factors. Moreover, I repeat the whole analysis of the paper using HFRI instead of Dow Jones Credit Suisse hedge fund indexes.

## Relation to Risk Factors

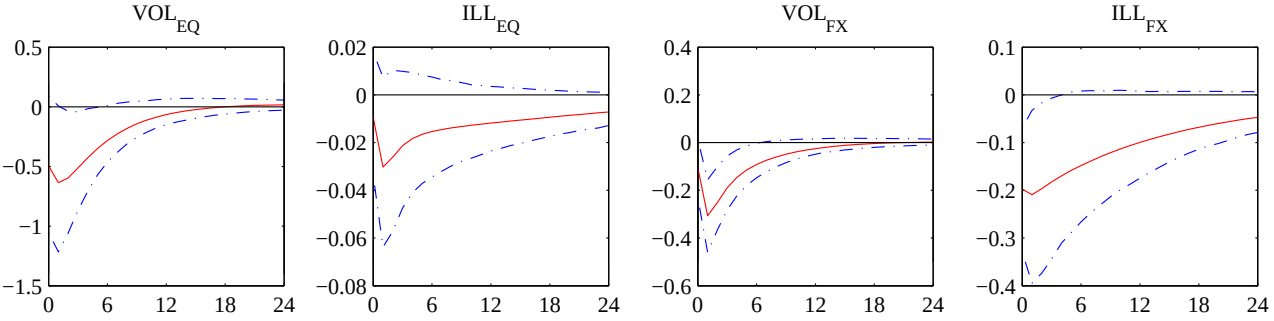
**Exhibit I.1:** Impulse response functions of equity and foreign exchange illiquidity and volatility to further risk factors.




(a) Response to shock in $MKTRF$

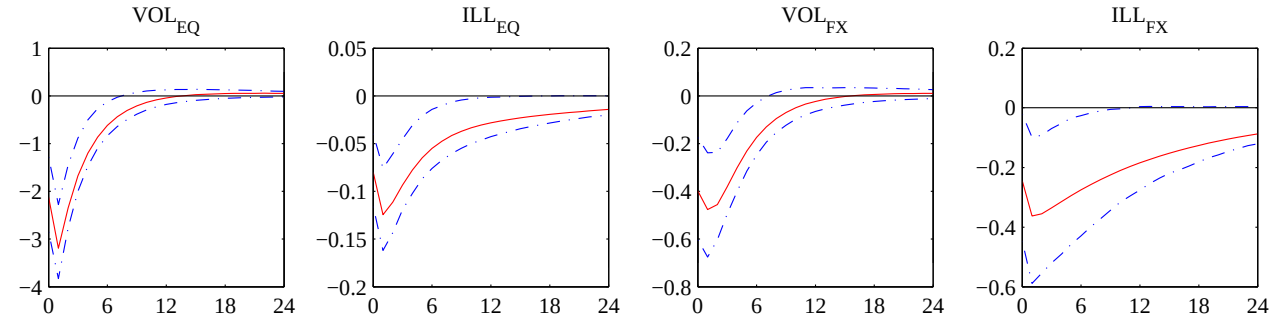



(b) Response to shock in $SMB$

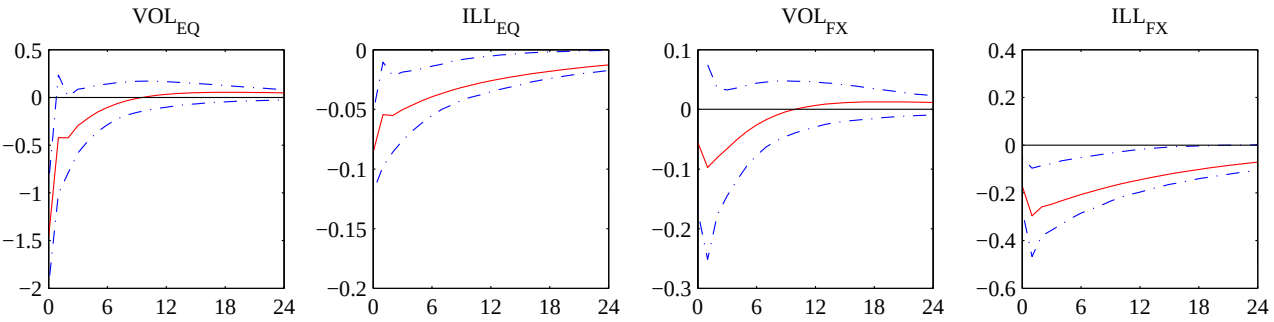



(c) Response to shock in $\Delta TERM$

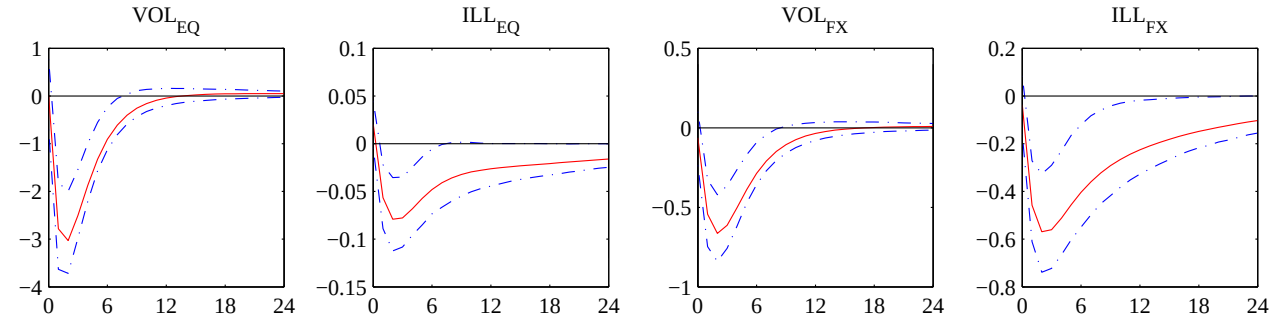
**Exhibit I.1 (continued):** Impulse response functions of equity and foreign exchange illiquidity and volatility to further risk factors.



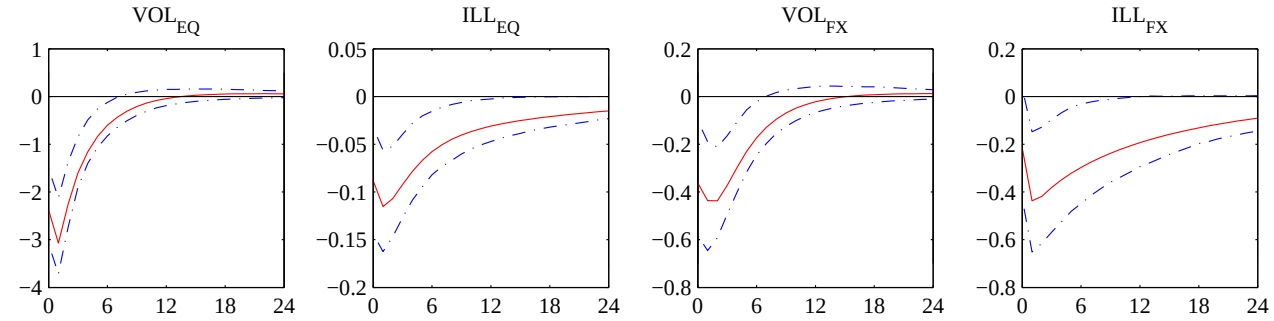

(d) Response to shock in $SP500$




(e) Response to shock in $SMALL$

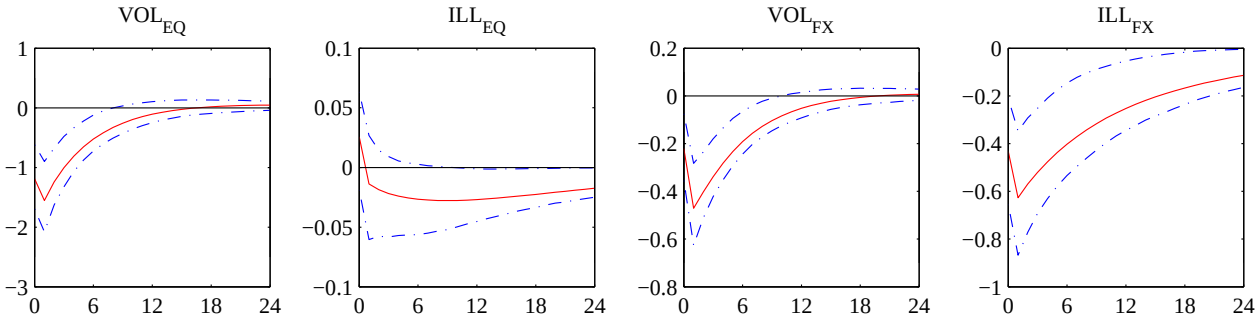



(f) Response to shock in $HY$

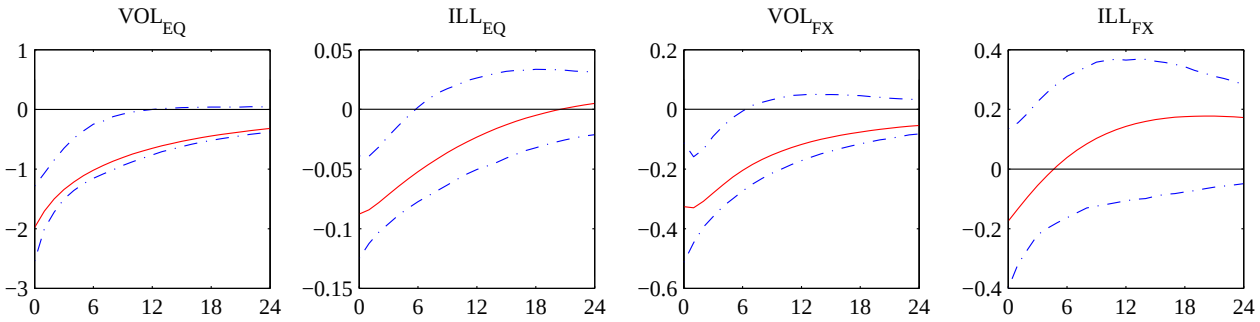



(g) Response to shock in $BXM$

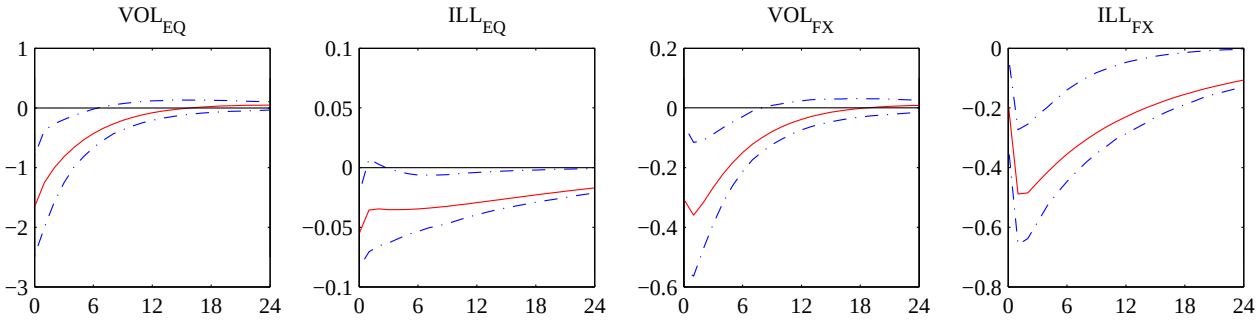
**Exhibit I.1 (continued):** Impulse response functions of equity and foreign exchange illiquidity and volatility to further risk factors.



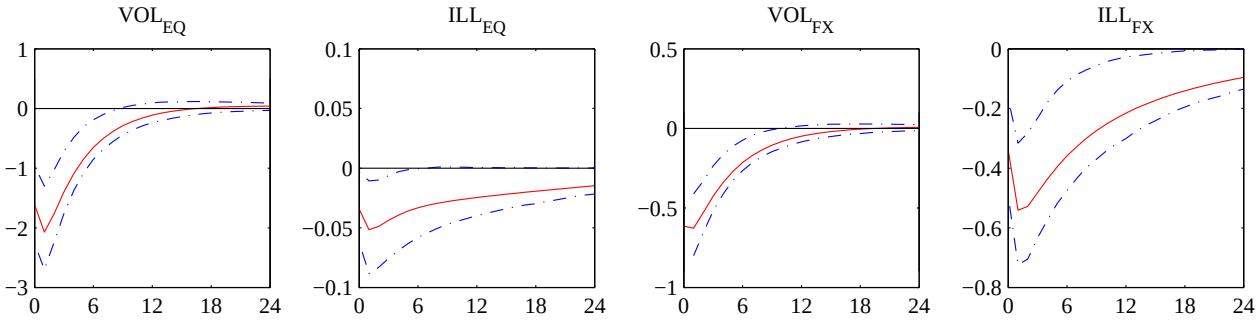

(h) Response to shock in $MERGER$




(i) Response to shock in $CPPI$




(j) Response to shock in $GSCI$




(k) Response to shock in $CARRY$

## Results for HFRI Data

**Exhibit I.2:** This table shows Fung-Hsieh factor loadings ($\beta$'s) of various HFRI hedge fund styles (standard errors in parenthesis).

| | $r_{HF,all}$ | $r_{HF,ca}$ | $r_{HF,dsb}$ | $r_{HF,ed}$ | $r_{HF,em}$ | $r_{HF,emn}$ | $r_{HF,fia}$ | $r_{HF,gm}$ | $r_{HF,lse}$ | $r_{HF,ms}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$ | 0.0060*** | 0.0059*** | 0.0057*** | 0.0072*** | 0.0058*** | 0.0049*** | 0.0062*** | 0.0065*** | 0.0068*** | 0.0066*** |
| | (0.0007) | (0.0011) | (0.0020) | (0.0008) | (0.0021) | (0.0007) | (0.0006) | (0.0012) | (0.0009) | (0.0015) |
| $MKTRF$ | 0.3320*** | 0.1373*** | −0.8774*** | 0.2784*** | 0.5450*** | 0.0383** | 0.1172*** | 0.1587*** | 0.4311*** | −0.0025 |
| | (0.0169) | (0.0256) | (0.0456) | (0.0178) | (0.0483) | (0.0153) | (0.0144) | (0.0285) | (0.0220) | (0.0358) |
| $SMB$ | 0.1471*** | −0.0223 | −0.6309*** | 0.1152*** | 0.1596*** | 0.0059 | 0.0101 | 0.0853** | 0.2044*** | −0.0170 |
| | (0.0201) | (0.0305) | (0.0542) | (0.0212) | (0.0574) | (0.0182) | (0.0171) | (0.0338) | (0.0261) | (0.0425) |
| $TERM$ | −0.0012 | −0.0295*** | −0.0084 | −0.0047 | 0.0046 | −0.0031 | −0.0111*** | −0.0099* | −0.0011 | −0.0140* |
| | (0.0035) | (0.0054) | (0.0095) | (0.0037) | (0.0101) | (0.0032) | (0.0030) | (0.0060) | (0.0046) | (0.0075) |
| $CREDIT$ | −0.0143*** | −0.0697*** | −0.0364*** | −0.0270*** | −0.0356*** | −0.0025 | −0.0307*** | −0.0069 | −0.0136** | −0.0124* |
| | (0.0044) | (0.0067) | (0.0119) | (0.0046) | (0.0126) | (0.0040) | (0.0038) | (0.0074) | (0.0057) | (0.0093) |
| $PTFSBD$ | −0.0086* | −0.0078 | −0.0045 | −0.0157*** | −0.0293** | −0.0078* | −0.0131*** | −0.0074 | −0.0015 | 0.0274** |
| | (0.0051) | (0.0078) | (0.0139) | (0.0054) | (0.0147) | (0.0047) | (0.0044) | (0.0087) | (0.0067) | (0.0109) |
| $PTFSFX$ | 0.0048 | −0.0041 | 0.0120 | 0.0034 | 0.0040 | 0.0053* | −0.0031 | 0.0182*** | 0.0022 | 0.0351*** |
| | (0.0041) | (0.0062) | (0.0110) | (0.0043) | (0.0117) | (0.0037) | (0.0035) | (0.0069) | (0.0053) | (0.0087) |
| $PTFSCOM$ | 0.0044 | −0.0127* | −0.0045 | −0.0024 | 0.0045 | 0.0001 | −0.0054 | 0.0282*** | 0.0057 | 0.0361*** |
| | (0.0057) | (0.0086) | (0.0153) | (0.0060) | (0.0162) | (0.0051) | (0.0048) | (0.0095) | (0.0074) | (0.0120) |

***, **, and * indicate significance at the 5%, 10%, and 25% levels, respectively.

**Exhibit I.3:** This table shows alternative beta factor loadings ($\beta$'s) of various HFRI hedge fund styles (standard errors in parenthesis).

| | $r_{HF,all}$ | $r_{HF,ca}$ | $r_{HF,dsb}$ | $r_{HF,ed}$ | $r_{HF,em}$ | $r_{HF,emn}$ | $r_{HF,fia}$ | $r_{HF,gm}$ | $r_{HF,lse}$ | $r_{HF,mf}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$ | 0.0056*** | 0.0051*** | 0.0010 | 0.0062*** | 0.0050** | 0.0043*** | 0.0054*** | 0.0054*** | 0.0063*** | 0.0039** |
| | (0.0008) | (0.0014) | (0.0023) | (0.0009) | (0.0022) | (0.0006) | (0.0007) | (0.0013) | (0.0010) | (0.0016) |
| $SGFII$ | 0.0001 | −0.0271 | 0.0444 | 0.0016 | −0.0585 | 0.0052 | −0.0219 | 0.1559*** | −0.0140 | 0.3369*** |
| | (0.0223) | (0.0379) | (0.0616) | (0.0240) | (0.0608) | (0.0159) | (0.0205) | (0.0348) | (0.0272) | (0.0433) |
| $BXM$ | −0.1221** | 0.0779 | 0.4663*** | 0.0025 | −0.2351* | −0.0662* | 0.0749* | −0.2281*** | −0.1147* | −0.1351* |
| | (0.0516) | (0.0879) | (0.1429) | (0.0557) | (0.1410) | (0.0369) | (0.0474) | (0.0806) | (0.0630) | (0.1003) |
| $TREAS$ | −0.0825 | −0.1405 | −0.1661 | −0.0951 | −0.5677** | 0.0579 | −0.1286* | −0.0333 | 0.0027 | 0.1406 |
| | (0.0873) | (0.1486) | (0.2416) | (0.0942) | (0.2385) | (0.0624) | (0.0802) | (0.1364) | (0.1066) | (0.1696) |
| $HY$ | 0.0043 | 0.1619*** | 0.0468 | 0.0297 | 0.0070 | 0.0241* | 0.0448* | −0.0171 | 0.0245 | −0.0108 |
| | (0.0249) | (0.0425) | (0.0691) | (0.0269) | (0.0682) | (0.0178) | (0.0229) | (0.0390) | (0.0305) | (0.0485) |
| $SMALL$ | 0.2230*** | 0.0338 | −0.7584*** | 0.2166*** | 0.2668*** | 0.0244* | 0.0497** | 0.1091*** | 0.3038*** | −0.0184 |
| | (0.0233) | (0.0397) | (0.0645) | (0.0251) | (0.0636) | (0.0166) | (0.0214) | (0.0364) | (0.0284) | (0.0452) |
| $SP500$ | 0.3846*** | 0.0535 | −1.1810*** | 0.2509*** | 0.6300*** | 0.1062*** | 0.0551* | 0.3329*** | 0.4671*** | 0.1411* |
| | (0.0386) | (0.0657) | (0.1068) | (0.0416) | (0.1054) | (0.0276) | (0.0355) | (0.0603) | (0.0471) | (0.0750) |
| $CPPI$ | 0.0064* | −0.0006 | 0.0276** | 0.0145*** | −0.0102 | 0.0095*** | 0.0075* | −0.0047 | 0.0149*** | −0.0164* |
| | (0.0047) | (0.0080) | (0.0130) | (0.0051) | (0.0128) | (0.0033) | (0.0043) | (0.0073) | (0.0057) | (0.0091) |
| $UMD$ | 0.0288* | −0.0397* | −0.0427 | 0.0061 | 0.0438 | 0.0847*** | −0.0003 | 0.0522** | 0.0419** | 0.0079 |
| | (0.0165) | (0.0281) | (0.0456) | (0.0178) | (0.0450) | (0.0118) | (0.0152) | (0.0258) | (0.0201) | (0.0320) |
| $VALUE$ | −0.0999*** | −0.0438 | 0.6742*** | 0.0221 | −0.0540 | 0.0598** | 0.0113 | −0.0220 | −0.1572*** | 0.0237 |
| | (0.0355) | (0.0605) | (0.0983) | (0.0383) | (0.0970) | (0.0254) | (0.0326) | (0.0555) | (0.0434) | (0.0690) |
| $MERGER$ | 0.0087 | 0.0602 | −0.1194 | 0.0829** | −0.0833 | −0.0032 | 0.0260 | −0.0977* | −0.0143 | −0.1564** |
| | (0.0353) | (0.0602) | (0.0979) | (0.0382) | (0.0966) | (0.0253) | (0.0325) | (0.0552) | (0.0432) | (0.0687) |
| $GSCI$ | 0.0533*** | 0.0845*** | 0.0106 | 0.0291** | 0.0969*** | 0.0227** | 0.0453*** | 0.0546*** | 0.0746*** | 0.0725*** |
| | (0.0125) | (0.0213) | (0.0347) | (0.0135) | (0.0342) | (0.0089) | (0.0115) | (0.0196) | (0.0153) | (0.0243) |
| $CARRY$ | 0.0932*** | 0.1221** | 0.0594 | 0.0959*** | 0.4487*** | −0.0166 | 0.0683** | 0.0731* | 0.0555* | 0.0236 |
| | (0.0323) | (0.0550) | (0.0894) | (0.0349) | (0.0882) | (0.0231) | (0.0297) | (0.0505) | (0.0394) | (0.0627) |

***, **, and * indicate significance at the 5%, 10%, and 25% levels, respectively.

**Exhibit I.4:** This table shows pairwise correlations of (excess) returns of various hedge fund strategies (HFRI data) as well as equity and foreign exchange volatility and illiquidity

| | $r_{all}$ | $r_{ca}$ | $r_{dsb}$ | $r_{ed}$ | $r_{em}$ | $r_{emn}$ | $r_{fia}$ | $r_{gm}$ | $r_{lse}$ | $r_{mf}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $VOL_{EQ}$ | $-0.4511***$ | $-0.3287***$ | $0.2250***$ | $-0.5256***$ | $-0.3824***$ | $-0.3372***$ | $-0.4696***$ | $-0.2007***$ | $-0.4355***$ | 0.0215 |
| $ILL_{EQ}$ | $-0.0825$ | 0.0912 | $0.1166*$ | $-0.0663$ | $-0.1540**$ | $0.1062*$ | 0.0202 | $-0.073$ | $-0.0549$ | 0.0047 |
| $VOL_{FX}$ | $-0.3135***$ | $-0.2440***$ | 0.0643 | $-0.3754***$ | $-0.3594***$ | $-0.3057***$ | $-0.3633***$ | $-0.1234*$ | $-0.2671***$ | 0.0354 |
| $ILL_{FX}$ | $-0.0324$ | $-0.0009$ | 0.0019 | $-0.0761$ | $-0.2139***$ | 0.0286 | $-0.0691$ | $-0.0432$ | 0.0853 | 0.0293 |
| | $r_{all}^{e,FH}$ | $r_{ca}^{e,FH}$ | $r_{dsb}^{e,FH}$ | $r_{ed}^{e,FH}$ | $r_{em}^{e,FH}$ | $r_{emn}^{e,FH}$ | $r_{fia}^{e,FH}$ | $r_{gm}^{e,FH}$ | $r_{lse}^{e,FH}$ | $r_{mf}^{e,FH}$ |
| $VOL_{EQ}$ | $-0.1446**$ | 0.0557 | $-0.1139*$ | $-0.2215***$ | $-0.0403$ | $-0.2444***$ | $-0.1161*$ | $-0.0488$ | $-0.1505**$ | $-0.053$ |
| $ILL_{EQ}$ | $0.1071*$ | $0.2517***$ | 0.0437 | $0.1370*$ | $-0.0502$ | $0.1695**$ | $0.2000***$ | 0.0244 | $0.1350*$ | 0.0067 |
| $VOL_{FX}$ | $-0.1987***$ | $-0.0183$ | $-0.1910***$ | $-0.2505***$ | $-0.2122***$ | $-0.2642***$ | $-0.1699**$ | $-0.0819$ | $-0.1239*$ | $-0.0727$ |
| $ILL_{FX}$ | 0.0624 | $0.1184*$ | $-0.0427$ | 0.0233 | $-0.2151***$ | 0.0692 | 0.0481 | $-0.0181$ | $0.2751***$ | $-0.0258$ |
| | $r_{all}^{e,AB}$ | $r_{ca}^{e,AB}$ | $r_{dsb}^{e,AB}$ | $r_{ed}^{e,AB}$ | $r_{em}^{e,AB}$ | $r_{emn}^{e,AB}$ | $r_{fia}^{e,AB}$ | $r_{gm}^{e,AB}$ | $r_{lse}^{e,AB}$ | $r_{mf}^{e,AB}$ |
| $VOL_{EQ}$ | $-0.0318$ | $-0.1570**$ | $-0.1262*$ | $-0.1720**$ | $-0.0906$ | $-0.0441$ | $-0.1610**$ | 0.0492 | 0.0444 | 0.0289 |
| $ILL_{EQ}$ | 0.0721 | $0.1726**$ | 0.0292 | 0.0589 | $-0.1252*$ | $0.1755**$ | $0.1362*$ | $-0.0205$ | $0.1635**$ | 0.0021 |
| $VOL_{FX}$ | $-0.0058$ | $-0.0973*$ | $-0.1896***$ | $-0.1192*$ | $-0.1476**$ | $-0.0775$ | $-0.1289*$ | 0.0912 | $0.1053*$ | 0.0791 |
| $ILL_{FX}$ | 0.0166 | 0.0661 | $-0.0654$ | $-0.0528$ | $-0.2514***$ | 0.0114 | $-0.0486$ | $-0.0215$ | $0.2566***$ | 0.0545 |

$^{***}$, $^{**}$, and $^{*}$ indicate significance at the 1%, 5%, and 20% levels, respectively.

**Exhibit I.5:** This table shows pair-wise Granger causality test statistics ($p$-values in parentheses) with HFRI data. The null hypothesis is that the row variable does not Granger cause the column variable.

Panel I: Fung-Hsieh seven factor model

| | $r^{e,FH}_{all}$ | $r^{e,FH}_{ca}$ | $r^{e,FH}_{dsb}$ | $r^{e,FH}_{ed}$ | $r^{e,FH}_{em}$ | $r^{e,FH}_{emn}$ | $r^{e,FH}_{fia}$ | $r^{e,FH}_{gm}$ | $r^{e,FH}_{lse}$ | $r^{e,FH}_{mf}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $VOL_{EQ}$ | 0.4283 | 0.2901 | 0.2979 | 1.8746* | 0.0510 | 8.0608*** | 0.3311 | 0.5713 | 1.1813 | 0.4981 |
| | (0.5136) | (0.5908) | (0.5858) | (0.1726) | (0.8215) | (0.0050) | (0.5657) | (0.4507) | (0.2785) | (0.4812) |
| $ILL_{EQ}$ | 1.3913 | 1.2004 | 0.4953 | 5.5322** | 0.4523 | 8.0407*** | 0.3820 | 2.4203* | 0.0890 | 0.8257 |
| | (0.2397) | (0.2746) | (0.4824) | (0.0197) | (0.5021) | (0.0051) | (0.5373) | (0.1215) | (0.7657) | (0.3647) |
| $VOL_{FX}$ | 0.0005 | 0.0858 | 3.9004** | 0.0015 | 0.5706 | 0.0655 | 1.7432* | 0.5650 | 0.0403 | 0.5642 |
| | (0.9821) | (0.7699) | (0.0497) | (0.9695) | (0.4510) | (0.7983) | (0.1883) | (0.4532) | (0.8412) | (0.4535) |
| $ILL_{FX}$ | 0.5113 | 0.8370 | 0.0147 | 0.0814 | 1.4810 | 0.0395 | 1.6119 | 1.1862 | 7.9794*** | 0.4925 |
| | (0.4755) | (0.3614) | (0.9035) | (0.7758) | (0.2251) | (0.8427) | (0.2058) | (0.2775) | (0.0052) | (0.4837) |
| ALL | 1.0592 | 1.7866* | 2.2442* | 2.4010* | 0.4454 | 5.5489*** | 1.2515 | 0.6461 | 3.6784*** | 0.7216 |
| | (0.3781) | (0.1332) | (0.0659) | (0.0515) | (0.7757) | (0.0003) | (0.2907) | (0.6303) | (0.0066) | (0.5781) |

Panel II: Alternative beta factor model

| | $r^{e,AB}_{all}$ | $r^{e,AB}_{ca}$ | $r^{e,AB}_{dsb}$ | $r^{e,AB}_{ed}$ | $r^{e,AB}_{em}$ | $r^{e,AB}_{emn}$ | $r^{e,AB}_{fia}$ | $r^{e,AB}_{gm}$ | $r^{e,AB}_{lse}$ | $r^{e,AB}_{mf}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $VOL_{EQ}$ | 0.0546 | 2.2781* | 0.1024 | 2.7073* | 0.1623 | 1.2091 | 0.7256 | 0.8999 | 0.0693 | 6.7403** |
| | (0.8154) | (0.1329) | (0.7493) | (0.1016) | (0.6875) | (0.2729) | (0.3954) | (0.3440) | (0.7927) | (0.0102) |
| $ILL_{EQ}$ | 1.5463 | 3.5760* | 0.6245 | 7.0506*** | 0.0772 | 8.6478*** | 2.0427* | 0.0460 | 0.9084 | 0.5530 |
| | (0.2152) | (0.0602) | (0.4304) | (0.0086) | (0.7815) | (0.0037) | (0.1546) | (0.8304) | (0.3418) | (0.4580) |
| $VOL_{FX}$ | 0.2112 | 3.7489* | 1.0707 | 2.8655* | 0.6553 | 0.6706 | 1.0678 | 0.0003 | 0.3435 | 4.8107** |
| | (0.6464) | (0.0543) | (0.3021) | (0.0922) | (0.4193) | (0.4139) | (0.3028) | (0.9858) | (0.5585) | (0.0295) |
| $ILL_{FX}$ | 0.0045 | 0.1964 | 0.7034 | 3.5489* | 2.3740* | 2.1246* | 0.5586 | 0.2144 | 3.8345* | 1.2405 |
| | (0.9464) | (0.6581) | (0.4027) | (0.0611) | (0.1251) | (0.1466) | (0.4557) | (0.6439) | (0.0517) | (0.2668) |
| ALL | 0.8835 | 1.7314* | 1.7937* | 1.9646* | 0.7049 | 2.2542* | 0.6006 | 0.5954 | 3.4611*** | 1.7705* |
| | (0.4749) | (0.1447) | (0.1318) | (0.1016) | (0.5895) | (0.0649) | (0.6627) | (0.6664) | (0.0094) | (0.1365) |

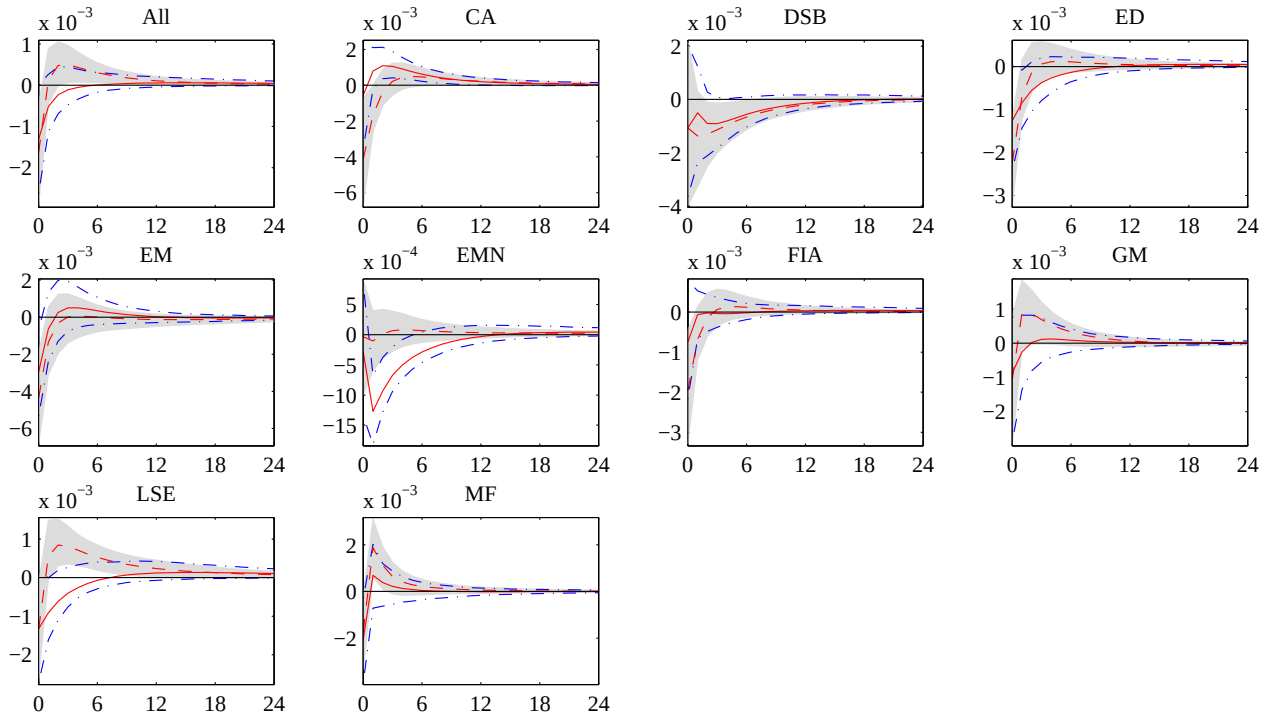
***, **, and * indicate significance at the 1%, 5%, and 20% levels, respectively.

**Exhibit I.6:** This table shows pair-wise Granger causality test statistics ($p$-values in parentheses) with HFRI data. The null hypothesis is that the row variable does not Granger cause the column variable.

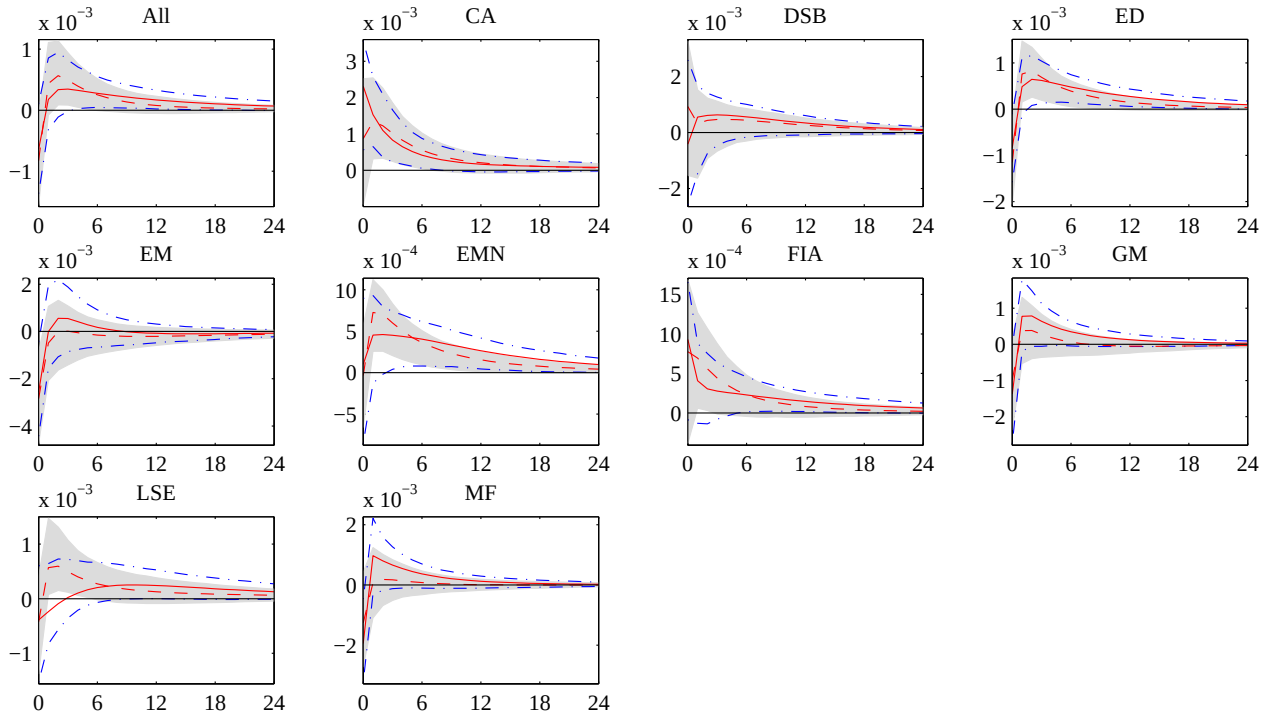
| Panel I: Fung-Hsieh seven factor model | | | | | Panel II: Alternative beta factor model | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | $VOL_{EQ}$ | $ILL_{EQ}$ | $VOL_{FX}$ | $ILL_{FX}$ | | $VOL_{EQ}$ | $ILL_{EQ}$ | $VOL_{FX}$ | $ILL_{FX}$ |
| $r^{e,FH}_{all}$ | 1.4421 | 0.7305 | 5.0150** | 3.9662** | $r^{e,AB}_{all}$ | 1.3606 | 0.7487 | 1.2261 | 1.8760* |
| | (0.2313) | (0.3938) | (0.0263) | (0.0479) | | (0.2449) | (0.3880) | (0.2696) | (0.1724) |
| $r^{e,FH}_{ca}$ | 2.3362* | 1.2284 | 6.5789** | 13.4571*** | $r^{e,AB}_{ca}$ | 1.0919 | 0.1257 | 1.4926 | 0.0230 |
| | (0.1281) | (0.2691) | (0.0111) | (0.0003) | | (0.2974) | (0.7233) | (0.2234) | (0.8796) |
| $r^{e,FH}_{dsb}$ | 0.1730 | 3.5789* | 1.3439 | 0.0035 | $r^{e,AB}_{dsb}$ | 0.0273 | 2.3809* | 3.0174* | 1.5921 |
| | (0.6779) | (0.0601) | (0.2478) | (0.9526) | | (0.8690) | (0.1245) | (0.0840) | (0.2086) |
| $r^{e,FH}_{ed}$ | 0.0570 | 2.1621* | 2.5241* | 6.1207** | $r^{e,AB}_{ed}$ | 0.8985 | 2.7365* | 0.0015 | 0.9325 |
| | (0.8116) | (0.1431) | (0.1138) | (0.0142) | | (0.3444) | (0.0997) | (0.9693) | (0.3355) |
| $r^{e,FH}_{em}$ | 1.4289 | 1.2945 | 2.6352* | 3.4466* | $r^{e,AB}_{em}$ | 2.2736* | 1.1606 | 0.4427 | 0.1662 |
| | (0.2334) | (0.2567) | (0.1062) | (0.0649) | | (0.1333) | (0.2827) | (0.5066) | (0.6840) |
| $r^{e,FH}_{emn}$ | 0.1524 | 0.8865 | 0.9366 | 0.2120 | $r^{e,AB}_{emn}$ | 0.0725 | 2.7198* | 0.0893 | 0.0306 |
| | (0.6967) | (0.3476) | (0.3344) | (0.6457) | | (0.7881) | (0.1008) | (0.7654) | (0.8612) |
| $r^{e,FH}_{fia}$ | 0.0501 | 0.3228 | 6.2353** | 11.4889*** | $r^{e,AB}_{fia}$ | 0.8769 | 0.0026 | 0.0070 | 0.2242 |
| | (0.8232) | (0.5706) | (0.0134) | (0.0009) | | (0.3502) | (0.9593) | (0.9334) | (0.6364) |
| $r^{e,FH}_{gm}$ | 2.7420* | 0.0049 | 0.4589 | 0.1917 | $r^{e,AB}_{gm}$ | 1.6264 | 0.0127 | 0.4298 | 0.2262 |
| | (0.0994) | (0.9443) | (0.4990) | (0.6620) | | (0.2038) | (0.9103) | (0.5129) | (0.6349) |
| $r^{e,FH}_{lse}$ | 1.6985* | 0.1228 | 4.5988** | 4.1704** | $r^{e,AB}_{lse}$ | 2.0299* | 0.2348 | 1.1503 | 2.7250* |
| | (0.1941) | (0.7265) | (0.0333) | (0.0425) | | (0.1559) | (0.6286) | (0.2849) | (0.1005) |
| $r^{e,FH}_{mf}$ | 0.9705 | 0.0218 | 2.2604* | 0.7789 | $r^{e,AB}_{mf}$ | 0.1107 | 0.0318 | 0.8811 | 0.0327 |
| | (0.3258) | (0.8828) | (0.1344) | (0.3786) | | (0.7397) | (0.8587) | (0.3491) | (0.8568) |

***, **, and * indicate significance at the 1%, 5%, and 20% levels, respectively.

**Exhibit I.7:** Impulse response functions of various HFRI excess hedge fund returns to shocks in equity and FX volatility and illiquidity.

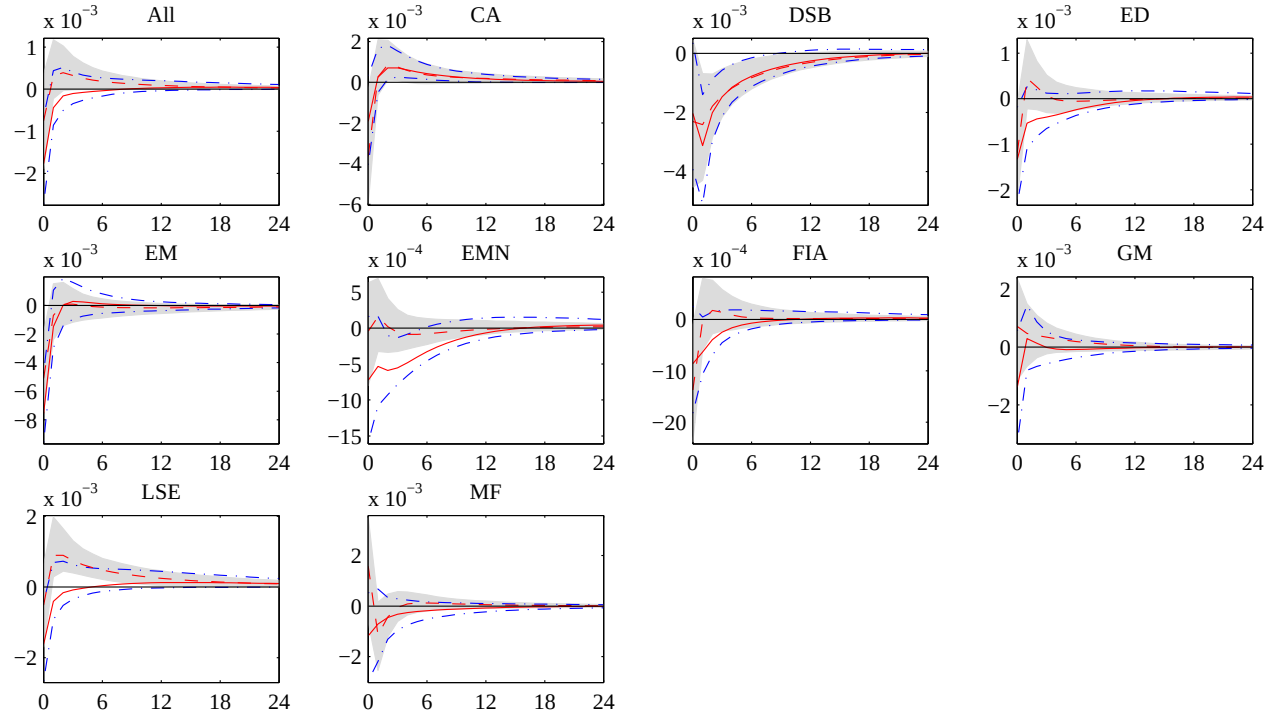



(a) Response to shock in $VOL_{EQ}$

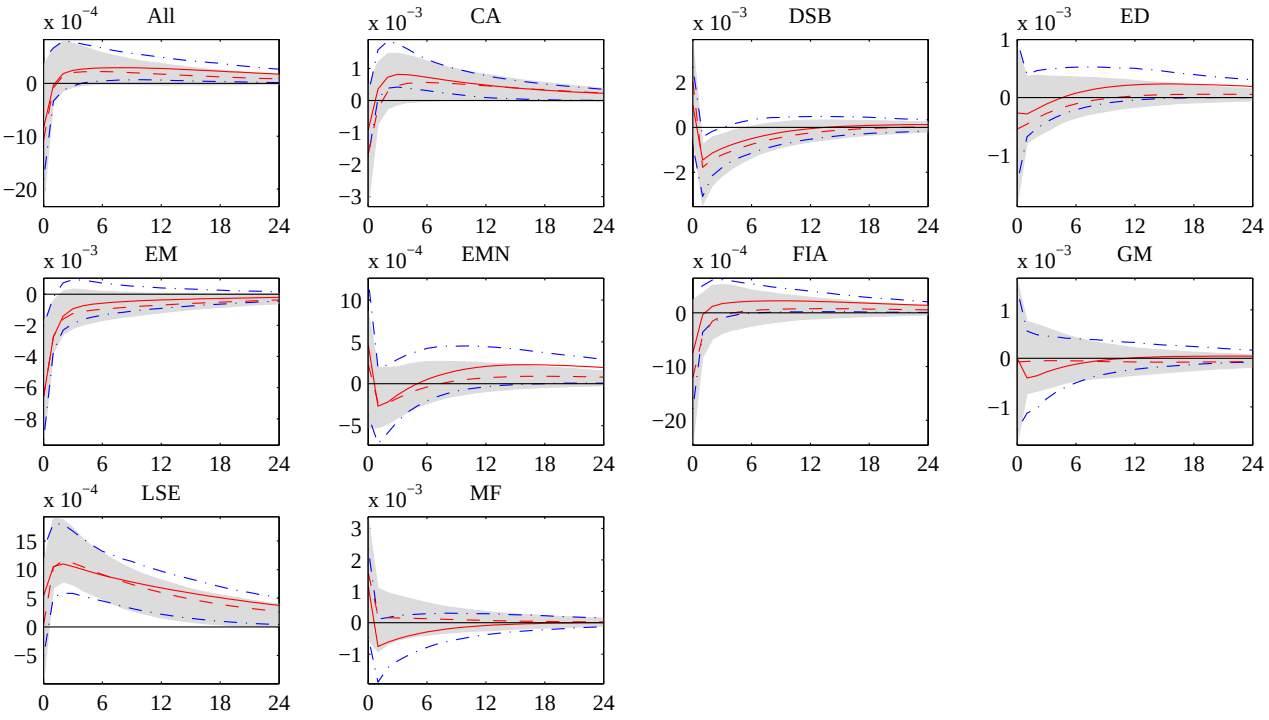



(b) Response to shock in $ILL_{EQ}$

**Exhibit I.7 (continued):** Impulse response functions of various HFRI excess hedge fund returns to shocks in equity and FX volatility and illiquidity.

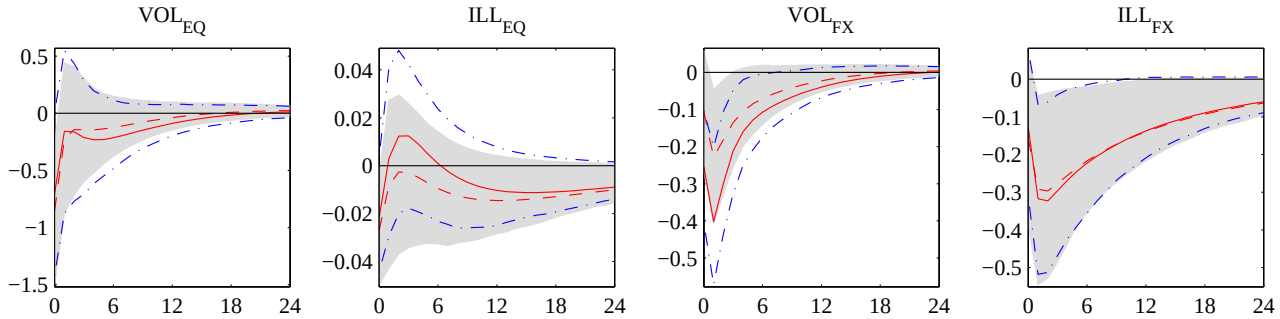



(c) Response to shock in $VOL_{FX}$

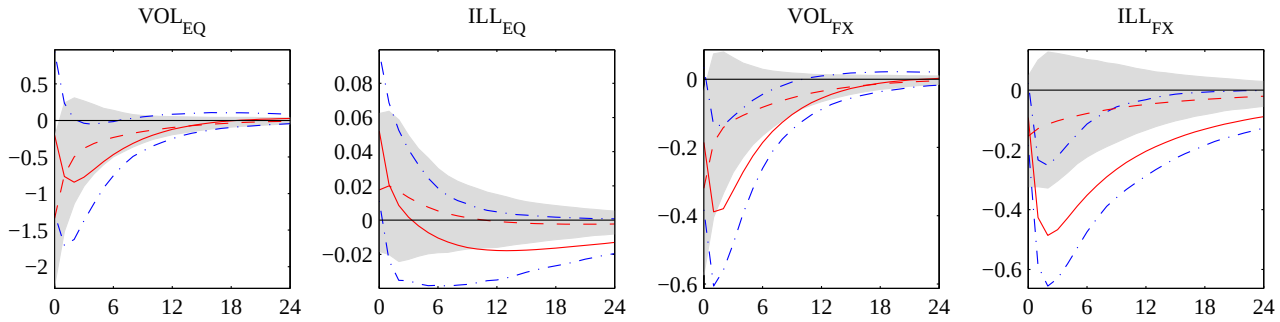



(d) Response to shock in $ILL_{FX}$

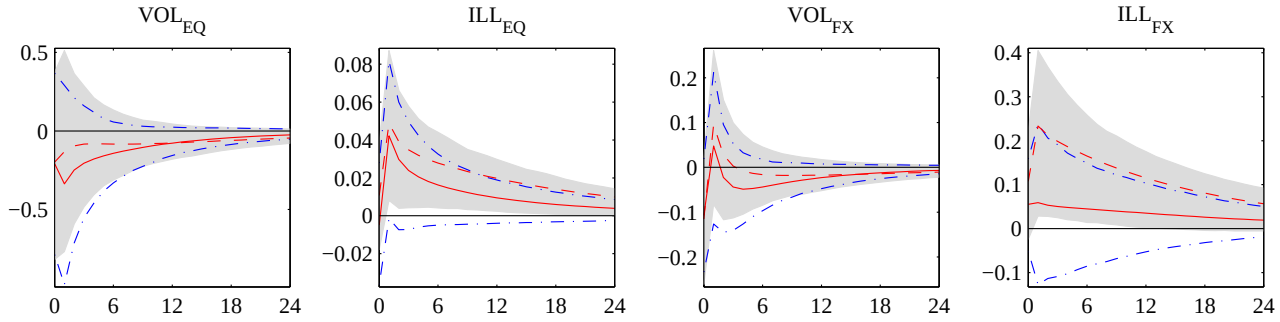
**Exhibit I.8:** Impulse response functions of equity and foreign exchange illiquidity and volatility to shocks in HFRI excess hedge fund returns.



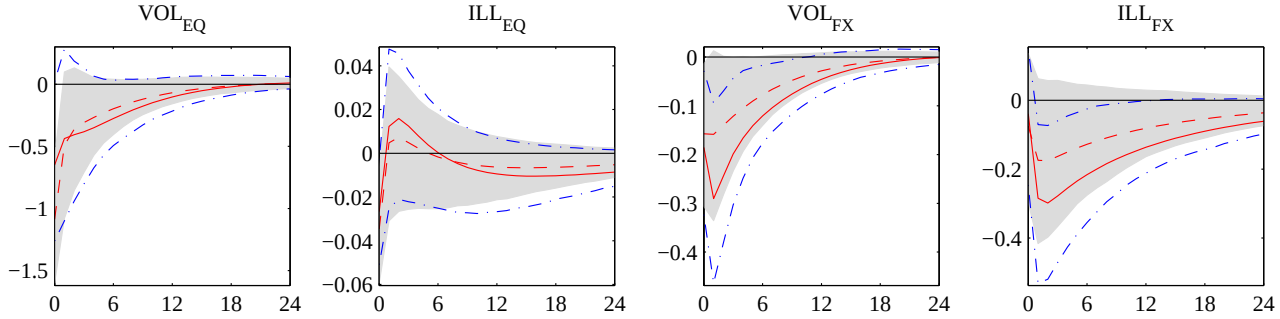

(a) Response to shock in $r_{all}$




(b) Response to shock in $r_{ca}$

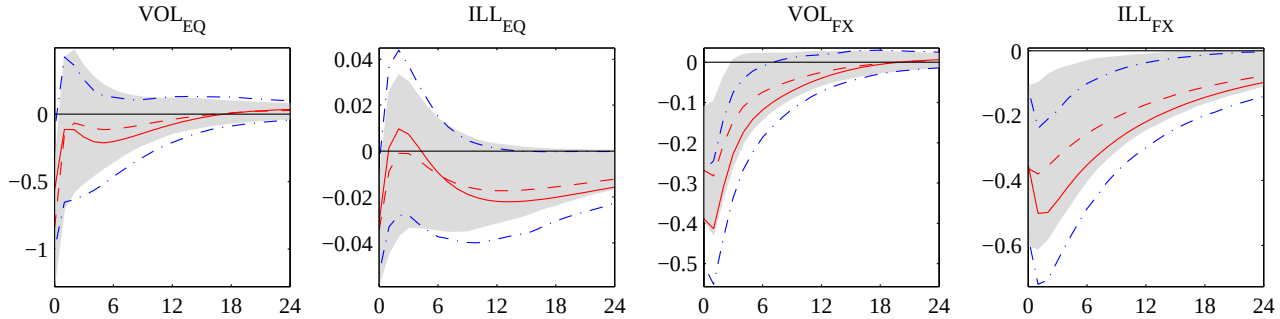



(c) Response to shock in $r_{dsb}$

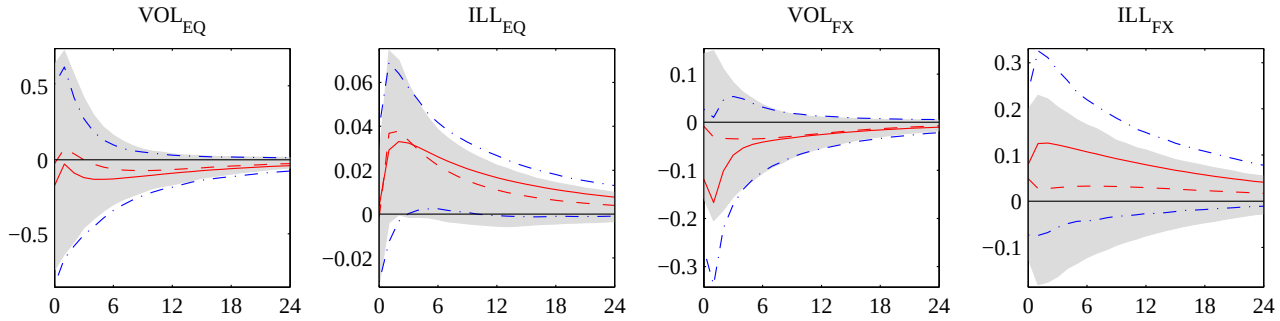



(d) Response to shock in $r_{ed}$

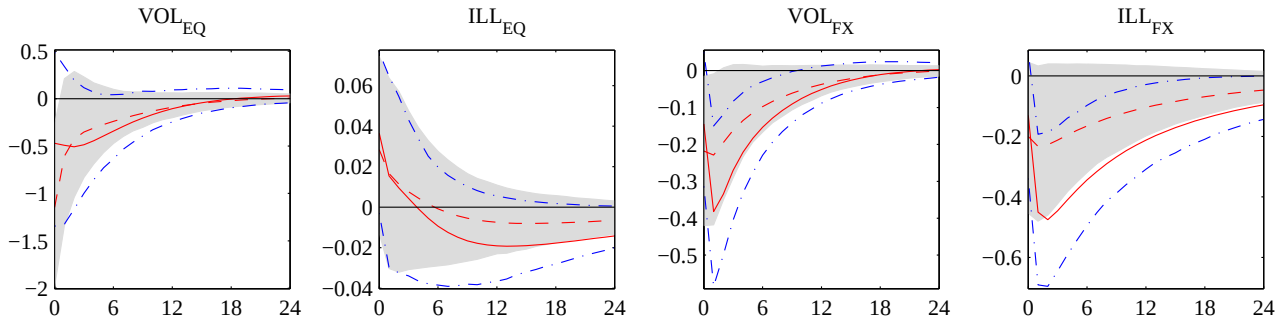
**Exhibit I.8 (continued):** Impulse response functions of equity and foreign exchange illiquidity and volatility to shocks in HFRI excess hedge fund returns.




(e) Response to shock in $r_{em}$

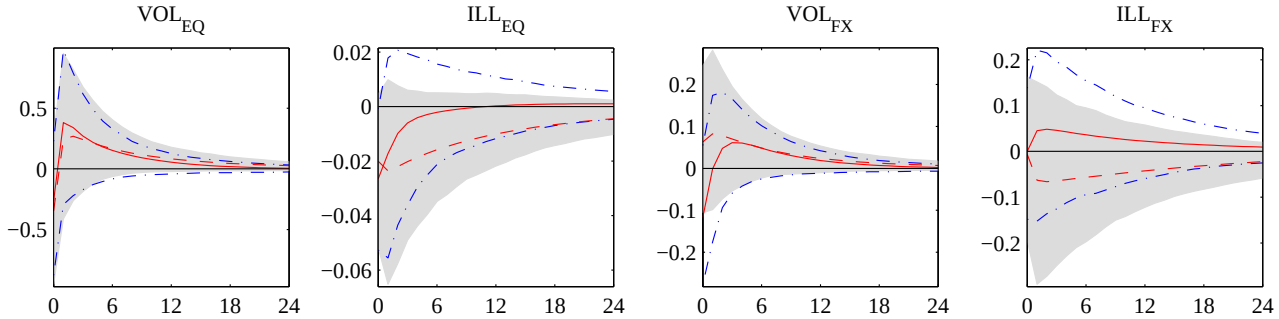



(f) Response to shock in $r_{emn}$

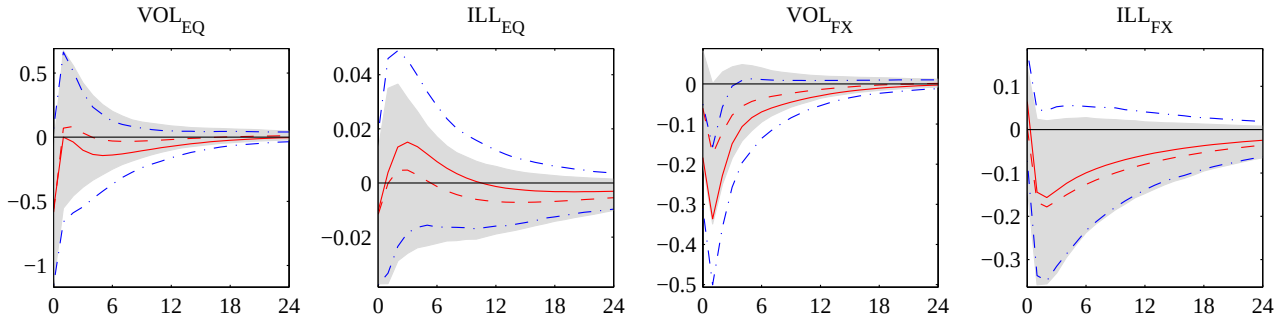



(g) Response to shock in $r_{fia}$

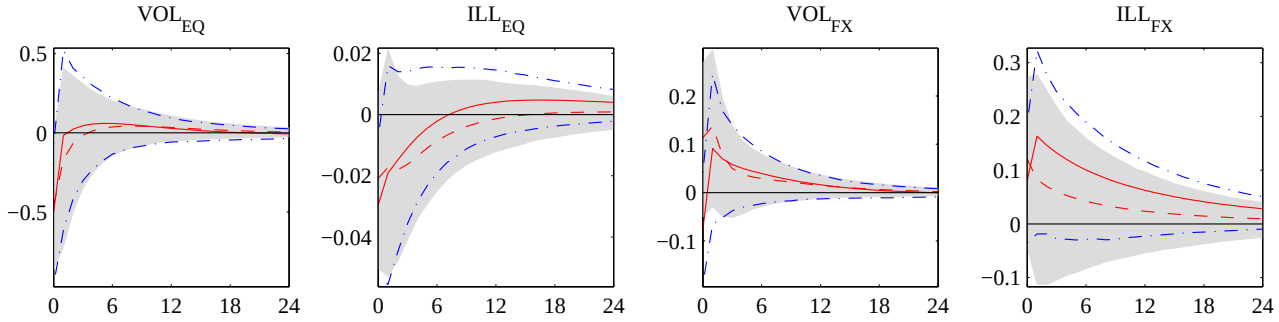
**Exhibit I.8 (continued):** Impulse response functions of equity and foreign exchange illiquidity and volatility to shocks in HFRI excess hedge fund returns.




(h) Response to shock in $r_{gm}$




(i) Response to shock in $r_{lse}$




(j) Response to shock in $r_{mf}$