1. Online Appendix

This Appendix is intended for online publication. The data and code for all results are available at `https://meta-analysis.cz/alphas`.

Hedge Fund Characteristics

It is commonly believed that the first hedge fund was created in 1949 by a former Fortune magazine writer Alfred Winslow Jones (Connor and Woo, 2004; Stulz, 2007). Even though the financial industry has undergone a dramatic development over the seven decades that have passed since then, many of the features of this first hedge fund resemble common hedge fund characteristics today. First, A. Jones structured the fund to be exempt from the Investment Company Act of 1940, which was the main pillar of the Security and Exchange Commission (SEC) regulations of investment entities at the time (Connor and Woo, 2004). This exemption gave the fund greater flexibility in the use of investment techniques. Second, the fund made a relatively concentrated (rather than well-diversified) investment in a limited number of stocks that it considered undervalued and it hedged some of its risks by short selling other stocks. The long-short equity strategy still remains one of the most popular hedge fund strategies. It is also a strategy that gave "hedge" funds their name. Third, to build investors' confidence A. Jones co-financed a substantial portion of the fund's assets (40%) with his own money (Stulz, 2007). Fourth, A. Jones used financial leverage to increase risk and simultaneously enhance the fund's ability to earn a higher return

on the base capital. Fifth, A. Jones charged the investors a performance fee of 20% of returns earned (Connor and Woo, 2004). All of these features are quite common in hedge funds even nowadays.

In the 1960s, news about the high and relatively stable returns earned by A. Jones' hedge fund inspired imitation and many new hedge funds arose. Many of these new funds modified the original investment strategy. First, due to the hedged long-short strategy, hedge funds missed out on the strong bull market of the late 1960s. That prompted many hedge funds to abandon hedging against market downturns and to pursue a leveraged long-bias strategy that keeps the fund exposed to overall market movements (Connor and Woo, 2004). In the 1980s, new global macro funds started to appear, e.g. Julian Robertson's Tiger Fund, George Soros' Quantum Fund (Connor and Woo, 2004). In contrast to the original hedge fund that aimed at limiting its exposure to overall market conditions, these funds aimed to exploit the impact of general macroeconomic conditions typically in foreign exchange markets. The global macro funds made highly leveraged bets on the appreciation or depreciation of specific currencies. When successful (e.g. the Tiger Fund's bet on U.S. dollar appreciation, the Quantum Fund's bet on U.K. pound depreciation) these strategies generated spectacular returns, which attracted further investors (Connor and Woo, 2004). However, betting against currencies also earned hedge funds a reputation as a destabilizing force that profits from financial market turmoil.

Naturally, not all hedge fund bets turned out successful. Especially, the

events of the late 1990s with the dot-com equity market bubble and the Russian debt crisis uncovered many vulnerabilities in hedge fund investment strategies. Both the Tiger Fund and the Quantum Fund lost billions on bets against the new economy that they were not able to sustain. The late 1990s also witnessed perhaps the most infamous hedge fund collapse of the Long-Term Capital Management (LTCM). The fund was started in 1993 by John Meriwether (a renowned Wall Street trader) and Myron Scholes and Robert Merton (Nobel Prize-winning economists). Between 1994 and 1998 it was very successful in pursuing the fixed-income arbitrage strategy that exploits small interest rate spreads between various debt securities. Pricing discrepancies in fairly efficient bond markets tend to be relatively small. Thus, the LTCM used very high leverage to earn an acceptable return on the capital provided by investors. This leverage became unsustainable during the Russian debt crisis when debt markets exhibited temporary anomalies. Some large investors "flew to safety" and closed their positions in riskier debt securities (Connor and Woo, 2004), which prompted the LTCM's collapse. To avoid wider contagion in financial markets the Federal Reserve Bank (FED) organized a bailout. The cost of this bailout led to further discussions about the potentially destabilizing macroeconomic impact of hedge funds. It became widely acknowledged that notwithstanding their prominent role in promoting financial markets' efficiency hedge funds may also play a more detrimental role. This understanding provided a strong motivation for systematic research in hedge funds.

Despite their growth there is, in fact, no universally accepted definition of a hedge fund (Brav et al., 2008). However, hedge funds share several characteristics that distinguish them from other investment facilities. First, hedge funds are structured to take advantage of exceptions from regulatory requirements and to benefit from a favorable tax treatment (Connor and Woo, 2004). The legal framework that regulates investment entities, such as the Securities Act of 1933 and the Investment Company Act of 1940, typically allows funds with a number of investors below some threshold (often 100) to be exempted from regulatory requirements that commonly apply to mutual funds (Connor and Woo, 2004; Stulz, 2007). To qualify for such exceptions hedge funds target a limited number of high-net-worth individuals and institutional investors. From the regulatory perspective, these investors may be considered sufficiently competent to make investment decisions and sufficiently wealthy to sustain potential losses. Hence, regulators may consider it unnecessary to protect these investors from potentially adverse consequences of their investment decisions (Stulz, 2007). Furthermore, hedge funds tend to be organized as limited partnerships to benefit from pass-through tax treatment where the returns are only taxed at the individual investors' level rather than at the level of the hedge fund (Connor and Woo, 2004).

Second, the exemptions from regulatory oversight allow hedge funds to implement unorthodox and often dynamic investment strategies that may exploit a wide range of diverse investment opportunities. Furthermore, hedge funds typically use limited amounts of base capital and they use substan-

tial leverage to increase the return earned on their investment strategies. Leverage makes hedge fund investments substantially riskier than what is common for mutual funds. Nevertheless, hedge funds frequently engage in short selling and they make a complex use of financial derivatives (Aragon and Spencer Martin, 2012) to concentrate their exposure to the idiosyncratic risk components that are inherent to the information trading they perform (Brown et al., 2018). Besides the investment strategies already discussed above (long-short equity, global macro, and fixed-income arbitrage) hedge funds also engage in event-driven strategies that are based on investing in anticipation of major corporate events, e.g. mergers and acquisitions (M&As), spin-offs, reorganizations, and bankruptcies (Stulz, 2007). The success of event-driven strategies crucially depends on fund managers' ability to predict the outcome and the price impact of these events and on identifying the optimal time to make the investment.

Third, hedge funds often require their investors to commit their investment for a fairly long time (Teo, 2009). The "lockup periods" may last for several years. Even after the expiration of the lockup periods investors may be obliged to notify managers several months in advance when they want to redeem their investment (Aragon, 2007). These withdrawal restrictions give managers more flexibility in investing in illiquid assets, the value of which may remain depressed for some time. Hedge funds may also exploit opportunities that arise when more conservative investment entities such as pension funds are obliged to divest distressed securities (Connor and Woo, 2004).

Holding distressed securities is typically associated with higher liquidity risk. Hence, hedge funds may have substantial exposures to macroeconomic liquidity shocks (Boyson et al., 2006; Sadka, 2010). The lockup period and redemption notice period thus limit the likelihood that hedge funds will be forced to quickly liquidate these assets under unfavorable conditions.

Fourth, being exempted from many regulatory requirements allows hedge funds to remain rather opaque, which helps them protect their proprietary trading strategies from imitation by competitors. Hence, investors can typically barely learn about the rough contours of investment strategies that a given fund aims to pursue. Furthermore, unlike mutual funds, most hedge funds are not obliged to periodically report audited financial statements to regulators. Nevertheless, some funds may provide information on their performance on a voluntary basis (Stulz, 2007). Hedge funds are not allowed to publicly advertise and so having their performance record included in commercial databases may help them attract investors (Fung and Hsieh, 2004; Baquero et al., 2005). This discretion was constrained by the Dodd-Frank Act of 2010 which mandates investment funds domiciled in the U.S. that manage more than $150 million in aggregate assets to register with the SEC and to provide basic periodic disclosures on asset values, returns, borrowings, strategy classifications, investor composition, and their largest counterparties (Barth et al., 2020). The asset value cutoff implies that the regulation applies only to the large hedge funds that may be systemically important.

Fifth, hedge funds typically charge their investors substantial manage-

ment and performance fees (Malkiel and Saha, 2005). A common arrangement consists of a flat management fee of 1% to 2% of AUM and a variable performance fee usually 20% of realized returns above the risk-free rate (Fung and Hsieh, 1999; Connor and Woo, 2004; Stulz, 2007; Kouwenberg and Ziemba, 2007; Getmansky et al., 2015). The performance fee is usually paid only after reaching the so-called "high water mark", i.e. the minimum level of absolute performance over the entire investment lifetime (Asness et al., 2001; Goetzmann et al., 2003; Lim et al., 2016; Stulz, 2007). In other words, in a given year fund managers receive the performance fee only after having recovered any losses incurred in previous years. However, effectively the performance fees constitute even a larger portion of realized returns because investors cannot offset gains and losses across funds, they tend to withdraw capital after a poor past performance, and managers sometimes terminate hedge funds after large losses, which renders the high water mark provision irrelevant. Ben-David et al. (2020) find that due to these three reasons the effective performance fees alone, excluding management fees, approach one-half of the aggregate gross profits. The high level of hedge fund managers' participation in realized returns strongly incentivizes them to perform and it allows successful managers to earn compensation similar to what they would earn in mutual funds 10 times their hedge fund size (Connor and Woo, 2004; Jobman, 2002). Furthermore, unlike in mutual funds, the performance fee in hedge funds makes the compensation structure highly asymmetric. Hedge fund managers are compensated for gains, but they are not equivalently pe-

nalized for commensurate losses. These option-like payoffs strongly motivate them to take risk. The high-water mark provisions are likely to only partially moderate these risk-taking incentives because managers of unsuccessful hedge funds may opt to close the fund down and open a new one (Stulz, 2007). Getmansky et al. (2015) report that only about one-half of hedge funds survive for more than five years. Hence, hedge funds are likely to take substantial risks, which should be taken into consideration when measuring their performance.

Hedge Fund Performance

A priori, it is not quite obvious whether hedge funds should be expected to outperform other types of investments. Hedge funds typically make their investments in financial markets that are rather competitive and where investors have strong incentives to quickly eliminate any mispricing. In efficient markets, any quest for mispriced assets that subsequently earn abnormal returns may be elusive. In the past, many famous hedge fund successes were followed by spectacular failures, which suggests that extraordinary performance may be temporary and driven by chance. For example, the once-lauded and abundantly financed investment strategy of the LTCM later failed and necessitated a massive bailout (Stulz, 2007). Furthermore, competition is intensive even within the hedge fund industry. Light regulation implies relatively low barriers to entry. Any profitable strategies discovered by hedge funds may invite imitation by competitors and their ability to generate abnormal returns

may quickly disappear.

Furthermore, the generous and convex "option-like" compensation packages that reward success but do not commensurately penalize failure may encourage excessive risk-taking (Cao et al., 2016). Hedge fund managers may thus take aggressive positions that expose investors to substantial risks. Stulz (2007) argues that hedge fund risk profiles may resemble those of firms selling earthquake insurance. They may exhibit stable profitability for a long time but incur catastrophic losses at rare events when a disaster strikes. The LTCM's arbitrage strategy was ex-post likened to "*picking up pennies in front of a steamroller*" (Stulz, 2007). Since most hedge funds are not obliged to systematically report their performance some of these failures may be kept off the radar. If successful hedge funds are more likely to be included in the private databases and become better known to investors than the failed ones (Posthuma and Van der Sluis, 2003), investors' view of overall hedge fund performance may be distorted.

In addition, the light regulatory oversight and limited reporting requirements may impair managerial accountability and complicate monitoring by investors. Information on the portfolio composition and periodic performance may not be independently audited and so its reliability may be in question. Hedge fund managers may thus be able to camouflage inferior performance for some time, which may prevent investors from taking timely corrective action. When investors are kept in the dark they may find it difficult to base their investment decisions on a pragmatic economic calculus. Rather,

they may fall prey to hedge fund managers' personal charm and keep trusting them for longer than appropriate. The Bernard L. Madoff Investment Securities investors mention the founder's personality as one of the reasons why they remained confident in the fund for so long.[1]

Finally, hedge funds charge very substantial management and performance fees. Thus, it is also conceivable that hedge funds actually beat the benchmark but the return they generate is not sufficient to cover these high fees. Paying these fees may thus leave the investors worse off than they would be by simply tracking the market index at a modest cost.

On the other hand, the flexibility resulting from the regulatory status puts hedge funds in a strong position to exploit opportunities that others cannot. It allows them to adopt a wide range of rather unorthodox investment styles that cannot be pursued by more tightly regulated mutual funds and pension funds. The light regulation allows hedge funds to remain secretive about the nature of their strategies, their holdings, and annual performance, which may allow them to protect their proprietary trading strategies and keep exploiting them longer than conventional mutual funds could. Hedge funds can thus act as investment strategy innovators and benefit from their first-mover advantage. They can also benefit from being a counterparty to transactions when more conventional investment entities are obliged due to regulation to divest distressed assets. Hedge funds may also benefit from introducing com-

[1]Source: https://www.nbcnews.com/business/business-news/madoff-exploited-weak-oversight-did-regulators-learn-their-lesson-n1264094.

petition into previously oligopolistic market segments such as fixed-income arbitrage that used to be the domain of investment banks (Connor and Woo, 2004; Schneeweis, 1998).

Furthermore, investors typically agree to forgo some of the diversification benefits, which allows hedge funds to keep asset holdings relatively concentrated and to specialize in a fairly narrowly defined niche. Investment concentration may allow hedge funds to realize some gains from their high degree of investment specialization. The lack of aspiration to hold well-diversified portfolios may also give hedge funds an opportunity to act more aggressively in acquiring substantial stakes in firms and to become "activist", i.e. they can actively use their ownership rights to alter how the companies are run. Hedge fund activism can make the companies more valuable by rectifying some of the agency conflicts between the owners and managers, by adopting more suitable business strategies, and by reducing inefficiencies in operations. Besides hedge funds' stock picking and market timing skills, their activism may be another source of generating value for investors.

Hedge funds may also benefit from their flexibility in designing specific contractual arrangements with their investors and their managers. The lockup periods and the withdrawal restrictions may relieve hedge fund managers from potentially myopic short-term performance pressures and allow them to pursue strategies that may temporarily underperform but that are profitable in the long run avoiding the risk of being forced to liquidate some of their assets at temporarily depressed prices. Hedge funds may also benefit

from their flexibility in designing managerial compensation contracts (Agarwal et al., 2009; Cao et al., 2016). Mutual fund regulation obliges incentive compensation to be symmetric, i.e. gains and losses of equal size must have an identical opposite effect on managerial compensation (Elton et al., 2003; Stulz, 2007). Most mutual funds thus make limited use of performance-based compensation and they mostly remunerate managers based on the value of assets under their management (Elton et al., 2003; Stulz, 2007). In contrast, hedge funds are unconstrained in the design of their compensation packages. They may offer managers highly asymmetric (i.e. "option-like") compensation contracts, which helps them attract managerial talent and keep managers incentivized to perform and to take risks. Exceptionally talented and strongly motivated managers are likely to have a positive impact on hedge fund performance.

Hedge funds may also be more efficient on the cost side. They target a limited number of accredited investors, which allows them to save on marketing and communication costs. Their opacity also implies that they avoid the disclosure and attestation (audit) costs. Thus, whether hedge funds generate abnormal returns to investors is ultimately an empirical question.

2. Database composition

Table OA1: Recorded database combinations and sensitivity checks

Combination	Estimates	Studies	Database-count range	Distinct counts
CISDM	105	6	[1, 1]	1
Default	447	40	[1, 3]	3
CST	235	14	[1, 1]	1
Other	122	10	[1, 1]	1
Hand	5	3	[1, 1]	1
Default + CISDM	44	8	[2, 5]	4
Default + CST + CISDM + Other	9	1	[5, 5]	1
Default + Other	5	1	[3, 3]	1
Default + CISDM + Hand	3	1	[6, 6]	1
None coded	1	1	[0, 0]	1
Default + CST	12	1	[2, 2]	1
Default + CISDM + Other	17	1	[7, 7]	1
Hand + Other	14	1	[2, 2]	1

Variable	Estimate	SE	95 percent interval	p
Panel A: Original nine-variable OLS ($N = 1{,}019$; 74 studies)				
Intercept	1.858	0.113	[1.636, 2.079]	0.000
Net returns	-0.439	0.081	[-0.598, -0.280]	0.000
Log data year	-0.239	0.034	[-0.306, -0.172]	0.000
CISDM	0.236	0.064	[0.111, 0.361]	0.000
Database count	-0.085	0.022	[-0.129, -0.041]	0.000
Bear market	-0.280	0.072	[-0.421, -0.139]	0.000
Funds of funds	-0.202	0.050	[-0.299, -0.105]	0.000
One factor	-0.159	0.068	[-0.292, -0.026]	0.019
Backfilling treated	-0.198	0.062	[-0.320, -0.077]	0.001
Log publication year	-0.138	0.056	[-0.247, -0.028]	0.013
Panel B: Excluding CISDM estimates ($N = 841$; 59 studies)				
Intercept	1.736	0.132	[1.477, 1.995]	0.000
Net returns	-0.517	0.049	[-0.612, -0.421]	0.000
Log data year	-0.197	0.043	[-0.282, -0.112]	0.000
Database count	0.071	0.053	[-0.034, 0.176]	0.183
Bear market	-0.270	0.075	[-0.416, -0.124]	0.000
Funds of funds	-0.229	0.055	[-0.337, -0.121]	0.000
One factor	-0.190	0.092	[-0.371, -0.009]	0.040
Backfilling treated	-0.219	0.071	[-0.359, -0.079]	0.002
Log publication year	-0.170	0.057	[-0.282, -0.057]	0.003

Variable	Estimate	SE	95 percent interval	p
Panel C: Adding database count × CISDM (N = 1,019; 74 studies)				
Intercept	1.630	0.134	[1.368, 1.892]	0.000
Net returns	-0.456	0.074	[-0.602, -0.311]	0.000
Log data year	-0.189	0.040	[-0.266, -0.111]	0.000
CISDM	0.453	0.092	[0.273, 0.634]	0.000
Database count	0.069	0.052	[-0.034, 0.172]	0.187
Bear market	-0.272	0.072	[-0.413, -0.131]	0.000
Funds of funds	-0.200	0.051	[-0.299, -0.101]	0.000
One factor	-0.166	0.069	[-0.302, -0.030]	0.017
Backfilling treated	-0.203	0.061	[-0.324, -0.083]	0.001
Log publication year	-0.160	0.057	[-0.272, -0.048]	0.005
Database count × CISDM	-0.173	0.053	[-0.277, -0.068]	0.001

Notes: TASS, HFR, BarclayHedge and EurekaHedge are pooled in the default indicator, so their separate contributions cannot be recovered. The indicators can overlap. These regressions use the same dependent variable as Table 3.

3. Bootstrap intervals

Table OA2: Study-bootstrap intervals by specification and benchmark (S0–S8 as in Table A5 of the main text)

Specification: benchmark	Mean	Bias	SD	Percentile	Basic	Bias corrected	Negative share
Log: All strategies	-0.079	0.039	0.206	[-0.444, 0.372]	[-0.531, 0.286]	[-0.591, 0.269]	0.599
Log: All funds	-0.068	0.038	0.203	[-0.438, 0.372]	[-0.508, 0.303]	[-0.535, 0.282]	0.580
Log: Equity hedge	-0.075	0.015	0.217	[-0.484, 0.369]	[-0.519, 0.334]	[-0.531, 0.315]	0.632
Log: Event driven	-0.048	0.075	0.206	[-0.379, 0.457]	[-0.553, 0.283]	[-0.640, 0.252]	0.450
Log: Relative value	-0.073	0.012	0.210	[-0.483, 0.350]	[-0.495, 0.338]	[-0.509, 0.316]	0.637
Log: Global	-0.067	0.062	0.206	[-0.418, 0.435]	[-0.569, 0.283]	[-0.619, 0.250]	0.528
Log: Funds of funds	-0.246	0.048	0.229	[-0.633, 0.277]	[-0.770, 0.140]	[-0.726, 0.175]	0.817
Log: Multistrategy	-0.067	0.046	0.202	[-0.430, 0.381]	[-0.515, 0.296]	[-0.568, 0.261]	0.558
Log: Other	-0.068	0.037	0.203	[-0.441, 0.373]	[-0.510, 0.304]	[-0.539, 0.279]	0.586
Log, S0: All strategies	-0.079	0.039	0.206	[-0.444, 0.372]	[-0.531, 0.286]	[-0.591, 0.269]	0.599
Log, S0: Funds of funds	-0.246	0.048	0.229	[-0.633, 0.277]	[-0.770, 0.140]	[-0.726, 0.175]	0.817
Log, S1: All strategies	-0.071	0.081	0.202	[-0.382, 0.432]	[-0.574, 0.240]	[-0.619, 0.210]	0.496
Log, S1: Funds of funds	-0.238	0.090	0.222	[-0.558, 0.313]	[-0.789, 0.081]	[-0.749, 0.109]	0.766
Log, S2: All strategies	-0.069	0.098	0.149	[-0.273, 0.324]	[-0.462, 0.136]	[-0.449, 0.103]	0.408
Log, S2: Funds of funds	-0.236	0.107	0.169	[-0.470, 0.212]	[-0.684, -0.002]	[-0.632, -0.028]	0.784
Log, S3: All strategies	-0.061	0.140	0.140	[-0.184, 0.379]	[-0.500, 0.062]	[-0.364, 0.048]	0.280
Log, S3: Funds of funds	-0.228	0.149	0.156	[-0.363, 0.255]	[-0.711, -0.092]	[-0.552, -0.091]	0.707
Log, S4: All strategies	-0.051	0.256	0.289	[-0.184, 0.872]	[-0.975, 0.081]	[-0.427, 0.096]	0.264
Log, S4: Funds of funds	-0.219	0.265	0.304	[-0.379, 0.748]	[-1.185, -0.058]	[-0.547, 0.015]	0.538

Specification: benchmark	Mean	Bias	SD	Percentile	Basic	Bias corrected	Negative share
Log, S5: All strategies	-0.085	-0.008	0.181	[-0.471, 0.257]	[-0.428, 0.300]	[-0.477, 0.238]	0.714
Log, S5: Funds of funds	-0.253	0.001	0.204	[-0.678, 0.153]	[-0.658, 0.173]	[-0.687, 0.145]	0.897
Log, S6: All strategies	-0.086	-0.015	0.181	[-0.478, 0.249]	[-0.421, 0.305]	[-0.471, 0.259]	0.729
Log, S6: Funds of funds	-0.254	-0.006	0.203	[-0.686, 0.145]	[-0.652, 0.179]	[-0.680, 0.149]	0.905
Log, S7: All strategies	-0.079	0.002	0.199	[-0.476, 0.318]	[-0.477, 0.317]	[-0.501, 0.290]	0.670
Log, S7: Funds of funds	-0.246	0.011	0.220	[-0.675, 0.221]	[-0.714, 0.182]	[-0.696, 0.197]	0.868
Log, S8: All strategies	-0.092	0.054	0.118	[-0.283, 0.187]	[-0.372, 0.098]	[-0.422, 0.072]	0.617
Log, S8: Funds of funds	-0.259	0.063	0.135	[-0.451, 0.076]	[-0.594, -0.068]	[-0.586, -0.054]	0.919
Linear: All strategies	-0.274	0.111	0.224	[-0.580, 0.333]	[-0.882, 0.031]	[-0.859, 0.032]	0.795
Linear: All funds	-0.266	0.112	0.223	[-0.564, 0.324]	[-0.857, 0.031]	[-0.827, 0.031]	0.788
Linear: Equity hedge	-0.271	0.090	0.233	[-0.602, 0.318]	[-0.860, 0.060]	[-0.796, 0.094]	0.806
Linear: Event driven	-0.248	0.151	0.226	[-0.523, 0.405]	[-0.900, 0.028]	[-0.854, 0.004]	0.702
Linear: Relative value	-0.271	0.083	0.227	[-0.620, 0.303]	[-0.845, 0.079]	[-0.783, 0.090]	0.818
Linear: Global	-0.260	0.135	0.223	[-0.529, 0.372]	[-0.893, 0.008]	[-0.859, 0.005]	0.748
Linear: Funds of funds	-0.412	0.083	0.242	[-0.769, 0.197]	[-1.020, -0.054]	[-0.916, -0.015]	0.914
Linear: Multistrategy	-0.266	0.121	0.221	[-0.555, 0.339]	[-0.871, 0.023]	[-0.857, 0.016]	0.775
Linear: Other	-0.267	0.111	0.222	[-0.559, 0.322]	[-0.856, 0.025]	[-0.850, 0.036]	0.790
Quadratic: All strategies	-0.277	0.096	0.244	[-0.651, 0.323]	[-0.877, 0.096]	[-0.967, 0.072]	0.794
Quadratic: All funds	-0.269	0.098	0.243	[-0.624, 0.327]	[-0.866, 0.085]	[-0.957, 0.075]	0.783
Quadratic: Equity hedge	-0.273	0.075	0.253	[-0.689, 0.318]	[-0.864, 0.142]	[-0.908, 0.127]	0.806
Quadratic: Event driven	-0.252	0.138	0.245	[-0.583, 0.399]	[-0.903, 0.079]	[-1.010, 0.052]	0.706
Quadratic: Relative value	-0.273	0.070	0.248	[-0.710, 0.306]	[-0.852, 0.164]	[-0.892, 0.122]	0.810
Quadratic: Global	-0.264	0.120	0.244	[-0.597, 0.375]	[-0.902, 0.070]	[-1.007, 0.060]	0.746
Quadratic: Funds of funds	-0.411	0.064	0.261	[-0.844, 0.189]	[-1.010, 0.022]	[-1.046, 0.009]	0.918
Quadratic: Multistrategy	-0.269	0.106	0.242	[-0.623, 0.344]	[-0.882, 0.086]	[-0.982, 0.064]	0.770
Quadratic: Other	-0.270	0.096	0.243	[-0.632, 0.320]	[-0.860, 0.093]	[-0.975, 0.075]	0.785
No citations: All strategies	-0.089	-0.029	0.182	[-0.507, 0.216]	[-0.394, 0.329]	[-0.469, 0.262]	0.758
No citations: All funds	-0.077	-0.029	0.179	[-0.491, 0.226]	[-0.379, 0.337]	[-0.459, 0.262]	0.737
No citations: Equity hedge	-0.085	-0.054	0.195	[-0.567, 0.214]	[-0.384, 0.397]	[-0.464, 0.318]	0.774
No citations: Event driven	-0.056	0.003	0.187	[-0.460, 0.298]	[-0.410, 0.348]	[-0.506, 0.245]	0.600
No citations: Relative value	-0.083	-0.057	0.187	[-0.551, 0.196]	[-0.361, 0.386]	[-0.424, 0.338]	0.790
No citations: Global	-0.076	-0.007	0.181	[-0.463, 0.243]	[-0.395, 0.310]	[-0.484, 0.227]	0.682
No citations: Funds of funds	-0.260	-0.019	0.205	[-0.708, 0.125]	[-0.644, 0.188]	[-0.684, 0.159]	0.924
No citations: Multistrategy	-0.076	-0.022	0.181	[-0.486, 0.231]	[-0.383, 0.333]	[-0.473, 0.246]	0.719
No citations: Other	-0.078	-0.031	0.180	[-0.494, 0.222]	[-0.377, 0.339]	[-0.456, 0.265]	0.741

The intervals are the 2.5th and 97.5th percentiles of 1,999 resamples of the 74 primary studies, with the data preparation and the BMA estimation repeated in each resample. All draws are retained. If a resample leaves an indicator constant, we set its coefficient to zero, so every draw yields a prediction. Keeping only the draws in which no benchmark indicator is dropped does not change whether any interval includes zero. All percentile intervals include zero, although in five comparisons the basic or bias-corrected interval excludes zero. We report percentile intervals throughout.

4. Prior sensitivity

Table OA3: Posterior inclusion probabilities and means under alternative priors

Prior	Regressor	PIP	Mean	Conditional mean
UIP/random	Standard error (SE)	0.102	-0.010	-0.097
UIP/random	SE * IV method	0.133	0.085	0.636
UIP/random	Individual funds	0.052	-0.004	-0.081
UIP/random	Equal-weighted funds	0.163	0.011	0.068
UIP/random	Net-of-fee returns	1.000	-0.440	-0.440
UIP/random	Cross-section data	0.023	-0.001	-0.051
UIP/random	Data year	1.000	-0.248	-0.248
UIP/random	Database: default	0.022	0.001	0.027
UIP/random	Database: CST	0.068	-0.005	-0.071
UIP/random	Database: CISDM	0.995	0.223	0.224
UIP/random	Database: hand-collected	0.200	0.044	0.222
UIP/random	Number of databases	0.997	-0.084	-0.085
UIP/random	Developed markets	0.022	0.001	0.046
UIP/random	Bull market	0.323	-0.066	-0.204
UIP/random	Bear market	0.916	-0.259	-0.282
UIP/random	Strategy: all funds	0.024	0.001	0.036
UIP/random	Strategy: equity hedge	0.097	-0.006	-0.065
UIP/random	Strategy: event driven	0.200	0.020	0.102
UIP/random	Strategy: relative value	0.054	-0.004	-0.078

Prior	Regressor	PIP	Mean	Conditional mean
UIP/random	Strategy: global	0.027	0.001	0.046
UIP/random	Strategy: fund of funds	0.893	-0.178	-0.199
UIP/random	Strategy: multi	0.021	0.001	0.061
UIP/random	IV method	0.043	-0.008	-0.187
UIP/random	1-factor model	0.864	-0.144	-0.167
UIP/random	3-factor model	0.047	-0.006	-0.129
UIP/random	4-factor model	0.101	-0.017	-0.164
UIP/random	7-factor model	0.057	-0.009	-0.160
UIP/random	Modeling model uncertainty	0.105	-0.020	-0.187
UIP/random	Asset-based model	0.097	-0.018	-0.189
UIP/random	Survivorship treated	0.034	-0.001	-0.044
UIP/random	Backfilling treated	1.000	-0.196	-0.196
UIP/random	Publication year	0.984	-0.124	-0.126
UIP/random	Citations	0.064	0.002	0.031
UIP/random	Impact factor	0.028	0.000	0.003
UIP/uniform	Standard error (SE)	0.224	-0.023	-0.103
UIP/uniform	SE * IV method	0.289	0.208	0.720
UIP/uniform	Individual funds	0.110	-0.011	-0.105
UIP/uniform	Equal-weighted funds	0.214	0.014	0.064

Prior	Regressor	PIP	Mean	Conditional mean
UIP/uniform	Net-of-fee returns	1.000	-0.442	-0.442
UIP/uniform	Cross-section data	0.054	-0.005	-0.092
UIP/uniform	Data year	1.000	-0.255	-0.255
UIP/uniform	Database: default	0.038	0.001	0.023
UIP/uniform	Database: CST	0.067	-0.004	-0.052
UIP/uniform	Database: CISDM	1.000	0.229	0.229
UIP/uniform	Database: hand-collected	0.358	0.081	0.227
UIP/uniform	Number of databases	1.000	-0.087	-0.087
UIP/uniform	Developed markets	0.047	0.003	0.058
UIP/uniform	Bull market	0.447	-0.090	-0.202
UIP/uniform	Bear market	0.940	-0.262	-0.278
UIP/uniform	Strategy: all funds	0.043	0.001	0.033
UIP/uniform	Strategy: equity hedge	0.165	-0.011	-0.065
UIP/uniform	Strategy: event driven	0.319	0.032	0.101
UIP/uniform	Strategy: relative value	0.111	-0.009	-0.082
UIP/uniform	Strategy: global	0.055	0.003	0.049
UIP/uniform	Strategy: fund of funds	0.943	-0.187	-0.198
UIP/uniform	Strategy: multi	0.039	0.002	0.061
UIP/uniform	IV method	0.112	-0.024	-0.218

Prior	Regressor	PIP	Mean	Conditional mean
UIP/uniform	1-factor model	0.952	-0.195	-0.205
UIP/uniform	3-factor model	0.177	-0.038	-0.213
UIP/uniform	4-factor model	0.314	-0.075	-0.240
UIP/uniform	7-factor model	0.214	-0.054	-0.253
UIP/uniform	Modeling model uncertainty	0.291	-0.079	-0.271
UIP/uniform	Asset-based model	0.303	-0.081	-0.266
UIP/uniform	Survivorship treated	0.078	-0.004	-0.052
UIP/uniform	Backfilling treated	1.000	-0.192	-0.192
UIP/uniform	Publication year	0.928	-0.112	-0.120
UIP/uniform	Citations	0.119	0.004	0.034
UIP/uniform	Impact factor	0.044	0.000	0.002
BRIC/random	Standard error (SE)	0.091	-0.009	-0.096
BRIC/random	SE * IV method	0.119	0.074	0.622
BRIC/random	Individual funds	0.047	-0.004	-0.077
BRIC/random	Equal-weighted funds	0.158	0.011	0.069
BRIC/random	Net-of-fee returns	1.000	-0.440	-0.440
BRIC/random	Cross-section data	0.020	-0.001	-0.045
BRIC/random	Data year	1.000	-0.247	-0.247
BRIC/random	Database: default	0.021	0.001	0.028

Prior	Regressor	PIP	Mean	Conditional mean
BRIC/random	Database: CST	0.068	-0.005	-0.073
BRIC/random	Database: CISDM	0.994	0.222	0.223
BRIC/random	Database: hand-collected	0.185	0.041	0.221
BRIC/random	Number of databases	0.997	-0.084	-0.084
BRIC/random	Developed markets	0.020	0.001	0.044
BRIC/random	Bull market	0.307	-0.063	-0.205
BRIC/random	Bear market	0.911	-0.257	-0.282
BRIC/random	Strategy: all funds	0.023	0.001	0.036
BRIC/random	Strategy: equity hedge	0.090	-0.006	-0.065
BRIC/random	Strategy: event driven	0.187	0.019	0.102
BRIC/random	Strategy: relative value	0.049	-0.004	-0.077
BRIC/random	Strategy: global	0.025	0.001	0.045
BRIC/random	Strategy: fund of funds	0.884	-0.176	-0.199
BRIC/random	Strategy: multi	0.019	0.001	0.061
BRIC/random	IV method	0.038	-0.007	-0.181
BRIC/random	1-factor model	0.851	-0.139	-0.164
BRIC/random	3-factor model	0.037	-0.004	-0.103
BRIC/random	4-factor model	0.085	-0.012	-0.147
BRIC/random	7-factor model	0.045	-0.006	-0.132

Prior	Regressor	PIP	Mean	Conditional mean
BRIC/random	Modeling model uncertainty	0.091	-0.015	-0.170
BRIC/random	Asset-based model	0.082	-0.014	-0.170
BRIC/random	Survivorship treated	0.030	-0.001	-0.043
BRIC/random	Backfilling treated	1.000	-0.196	-0.196
BRIC/random	Publication year	0.988	-0.125	-0.126
BRIC/random	Citations	0.059	0.002	0.031
BRIC/random	Impact factor	0.027	0.000	0.003
UIP/dilution	Standard error (SE)	0.178	-0.017	-0.097
UIP/dilution	SE * IV method	0.207	0.116	0.560
UIP/dilution	Individual funds	0.076	-0.005	-0.067
UIP/dilution	Equal-weighted funds	0.210	0.014	0.065
UIP/dilution	Net-of-fee returns	1.000	-0.441	-0.441
UIP/dilution	Cross-section data	0.027	-0.000	-0.009
UIP/dilution	Data year	1.000	-0.253	-0.253
UIP/dilution	Database: default	0.026	0.001	0.026
UIP/dilution	Database: CST	0.065	-0.004	-0.061
UIP/dilution	Database: CISDM	0.999	0.227	0.227
UIP/dilution	Database: hand-collected	0.319	0.070	0.221
UIP/dilution	Number of databases	1.000	-0.086	-0.086

Prior	Regressor	PIP	Mean	Conditional mean
UIP/dilution	Developed markets	0.025	0.001	0.039
UIP/dilution	Bull market	0.445	-0.091	-0.205
UIP/dilution	Bear market	0.954	-0.272	-0.285
UIP/dilution	Strategy: all funds	0.037	0.001	0.035
UIP/dilution	Strategy: equity hedge	0.158	-0.010	-0.065
UIP/dilution	Strategy: event driven	0.311	0.031	0.101
UIP/dilution	Strategy: relative value	0.098	-0.008	-0.078
UIP/dilution	Strategy: global	0.047	0.002	0.046
UIP/dilution	Strategy: fund of funds	0.947	-0.189	-0.200
UIP/dilution	Strategy: multi	0.040	0.002	0.062
UIP/dilution	IV method	0.051	-0.007	-0.143
UIP/dilution	1-factor model	0.910	-0.149	-0.163
UIP/dilution	3-factor model	0.045	-0.001	-0.026
UIP/dilution	4-factor model	0.133	-0.014	-0.105
UIP/dilution	7-factor model	0.048	-0.003	-0.065
UIP/dilution	Modeling model uncertainty	0.088	-0.013	-0.146
UIP/dilution	Asset-based model	0.138	-0.017	-0.124
UIP/dilution	Survivorship treated	0.050	-0.002	-0.047
UIP/dilution	Backfilling treated	1.000	-0.196	-0.196

Prior	Regressor	PIP	Mean	Conditional mean
UIP/dilution	Publication year	0.991	-0.125	-0.126
UIP/dilution	Citations	0.076	0.002	0.030
UIP/dilution	Impact factor	0.043	0.000	0.003

Table OA4: Best-practice estimates and credible intervals under alternative priors

Prior: strategy	Mean	Credible interval
UIP/random: All strategies	-0.079	[-0.273, 0.049]
UIP/random: All funds	-0.068	[-0.262, 0.059]
UIP/random: Equity hedge	-0.075	[-0.274, 0.055]
UIP/random: Event driven	-0.048	[-0.241, 0.119]
UIP/random: Relative value	-0.073	[-0.272, 0.055]
UIP/random: Global	-0.067	[-0.262, 0.061]
UIP/random: Funds of funds	-0.246	[-0.471, -0.017]
UIP/random: Multistrategy	-0.067	[-0.262, 0.066]
UIP/random: Other	-0.068	[-0.263, 0.058]
UIP/uniform: All strategies	-0.091	[-0.425, 0.114]
UIP/uniform: All funds	-0.078	[-0.415, 0.123]
UIP/uniform: Equity hedge	-0.091	[-0.427, 0.116]
UIP/uniform: Event driven	-0.048	[-0.376, 0.177]
UIP/uniform: Relative value	-0.089	[-0.426, 0.114]
UIP/uniform: Global	-0.077	[-0.415, 0.128]
UIP/uniform: Funds of funds	-0.267	[-0.602, 0.006]
UIP/uniform: Multistrategy	-0.077	[-0.415, 0.130]
UIP/uniform: Other	-0.080	[-0.417, 0.123]
BRIC/random: All strategies	-0.078	[-0.255, 0.044]

Prior: strategy	Mean	Credible interval
BRIC/random: All funds	-0.067	[-0.244, 0.054]
BRIC/random: Equity hedge	-0.073	[-0.255, 0.051]
BRIC/random: Event driven	-0.048	[-0.226, 0.114]
BRIC/random: Relative value	-0.071	[-0.253, 0.051]
BRIC/random: Global	-0.066	[-0.243, 0.056]
BRIC/random: Funds of funds	-0.244	[-0.457, -0.017]
BRIC/random: Multistrategy	-0.066	[-0.244, 0.060]
BRIC/random: Other	-0.067	[-0.244, 0.053]
UIP/dilution: All strategies	-0.078	[-0.264, 0.049]
UIP/dilution: All funds	-0.066	[-0.253, 0.061]
UIP/dilution: Equity hedge	-0.077	[-0.270, 0.055]
UIP/dilution: Event driven	-0.036	[-0.226, 0.133]
UIP/dilution: Relative value	-0.075	[-0.269, 0.056]
UIP/dilution: Global	-0.065	[-0.253, 0.064]
UIP/dilution: Funds of funds	-0.256	[-0.469, -0.046]
UIP/dilution: Multistrategy	-0.065	[-0.253, 0.072]
UIP/dilution: Other	-0.067	[-0.254, 0.060]

We compare each candidate regressor outside the nine selected ones with each of the nine. No absolute correlation reaches 0.600. The largest absolute correlation is 0.557, between the model-uncertainty indicator and the data year.

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