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Institutional distance and US-based international mutual funds' financial performance

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ABSTRACT

In this research, we analyse the impact of the institutional distance between investor and investee countries on the risk-adjusted financial performance for a broad sample of US-based international mutual funds in the period 1997-2021 (1,704 equity mutual funds/106,521 monthly portfolios). Our results show that a greater institutional distance jeopardizes mutual fund financial performance. Another relevant finding is that holding a more country-concentrated portfolio positively impacts financial performance. In addition, we reveal an interaction effect between the two variables, meaning that the portfolio country concentration moderates the negative impact of institutional distance, supporting the information advantage theory.

1. Introduction, literature review and research hypotheses

International mutual funds invest in stocks issued by foreign companies. From a diversification standpoint, investing in foreign markets could benefit mutual fund performance through risk mitigation (Demicri et al., 2022; Fletcher and Marshall, 2005). However, at the same time, mutual fund literature has identified a home bias puzzle in which investors seem to prefer investing in local stocks, neglecting the opportunities available in international markets (Coval and Moskowitz, 1999, 2001). In addition, some authors have found that international mutual funds with more concentrated portfolios achieve better financial results (Choi et al., 2017; Hiraki and Liu, 2021). Coval and Moskowitz (1999, 2001) explain that the reasons behind the home bias puzzle can be classified into two subsets: i) those related to the existence of national boundaries in capital markets, and ii) those related to a preference for geographic proximity. In the first subset, we can find factors such as the exchange rate fluctuation, as well as variation in regulation, culture and taxation, and sovereign risk. The second subset mainly includes the information asymmetry between local and foreign investors. Thus, mutual fund literature has highlighted geographical proximity as one source of informational advantage that could be exploited by mutual fund managers to achieve a consistent superior financial performance (Ferreira et al., 2018). In this way, Coval and Moskowitz (1999, 2001) find that mutual fund managers investing in nearby stocks achieve abnormal financial performance. Similarly, other researchers explain that investing in familiar markets leads to lower search costs and an easier and better understanding of information (Massa and Simonov, 2006). Although, over recent years, the costs of investing in foreign markets have significantly reduced, the home bias persists (Levy and Levy, 2014). Moreover, when institutional investors buy foreign stocks, they prefer to purchase those of well-known firms (Liu et al., 2020a). We can find a plethora of studies that have analysed the financial performance of international

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mutual funds, but some issues remain underexplored. This is the case of the impact of the distance between the investor and investee countries. Recently, Abou-Tanos (2022) has assessed the impact of cultural distance on US global mutual fund financial performance, noting that investing in stocks from familiar cultural proximate markets improves the financial performance of these funds. However, Abou-Tanos and Jimenez-Garcès (2022) state that investing in familiar markets is not sufficient, during crisis periods, to achieve superior financial performance.

In this research, we want to shed light on this salient but still underexplored issue in the literature on international mutual funds by analysing how the distance in formal institutions impacts the financial performance of these portfolios. Formal institutions could be defined as those that "determine the rules that govern economic activity and thus reduce uncertainty, risk, and transaction costs" (Kostova et al., 2020, p. 470). Consequently, the institutional distance can be understood as the differences between the regulatory, normative, and cognitive institutional environments that exist between different markets where transactions take place (Kostova and Zaheer, 1999; Salomon and Wu, 2012). The impact of distance in formal institutions has been analysed in other fields of international business literature. Thus, Liu et al. (2020b) highlight the two mechanisms through which institutional distance impacts international trade: i) first, the institutional similarity can raise bilateral trust and reduce uncertainty around the transactions, leading to lower adjustment and transactions costs (de Groot et al., 2004; de Mendoça et al., 2014); and ii) second, institutions can represent business and contractual environments so that a similar level of institutional quality can provide superior contract enforcement and transaction mechanisms (Miura and Takechi, 2014). The transaction cost theory (TCT; Williamson, 1979) also endorses this idea: uncertainty and information asymmetry emerging from the institutional distance constitute sources of transaction costs that could hamper the investment decision-making processes of international mutual fund managers, leading to the jeopardization of their financial outcomes. Thus, we hypothesize that those mutual fund managers investing in stocks from institutionally distant markets will suffer higher transaction costs, reducing the financial performance achieved.

RH1: A higher institutional distance negatively impacts the financial performance of US-based international equity mutual funds.

The previous literature has shown that international mutual funds with a more concentrated portfolio achieve better financial results (Choi et al., 2017; Hiraki and Liu, 2021). Choi et al. (2017) point out that portfolio concentration in foreign markets is consistent with the information advantage theory (Van Niewerburgh and Veldkamp, 2009), which establishes that under-diversified portfolios could be optimal whether or not investors benefit from an informational advantage in the decision-making process. Choi et al. (2017) provide empirical evidence supporting the information advantage theory, in which "investors capitalize on their initial information advantage and amplify their advantage through learning and specialization in markets in which they can add the most value" (p. 205). Thus, we hypothesize that holding a more geographically concentrated portfolio will impact positively on financial performance and moderate the negative effect of the institutional distance on this performance.

RH2: A greater portfolio geographical concentration positively impacts the financial performance of US-based international mutual funds.
RH3: A greater portfolio geographical concentration moderates the negative impact of institutional distance on US-based international equity mutual funds' financial performance.

The rest of the paper is organized as follows: the second section explains the data and methods used, the third section presents the main empirical findings, and the fourth section concludes the paper by discussing the main conclusions as well as avenues for further research.

2. Data and methods

We analyse a sample of 1,704 US-based international equity mutual funds[1]. Most of the information required for the analyses is obtained from the Morningstar database. First, we identify those equity mutual funds domiciled in the US market with an international investment vocation. We therefore select all the funds that are identified as "International Equity" in the label "US Category Group" in the period spanning January 1997 to November 2021. From this subset, following Chevalier and Ellison (1997) or Muñoz et al. (2022), among others, we select those funds that have at least two years of observations and a minimum size of $10 million to avoid noisy results. Our sample is free of survivorship bias. To build our variables of institutional distances at the fund level, we match the details regarding the monthly country allocation of the portfolio holdings of funds with the information relating to the Worldwide Governance Indicators (WGI). More concretely, the Morningstar database provides data on the monthly equity country allocation across 51

[1] The sample is formed by 7,616 different share classes, but we aggregate the information at the fund level since all the share classes in a fund share the same geographical allocation of the portfolio holdings. We perform the method described in Renneboog et al. (2011) to merge the information regarding share classes.

different markets. In our final sample, we work with 106,521 monthly portfolios. In average terms, the percentage of the country weight portfolio controlled is 94.20% (see Appendix A). Following Liu et al. (2020b), we approach the institutional distance as the Euclidean distance of the six dimensions of the WGI (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption; see Appendix B for a detailed description of each dimension)[2]. We compute the distance between the US (the country where the international mutual funds in the sample are domiciled) and each one of the 51 countries for which Morningstar provides information. See Equation 1.

$$ID_{US,i,y} = \sqrt{\sum_{k=1}^{6} \left(I_{k,US,y} - I_{k,i,y}\right)^2}. \tag{1}$$

where $I_{k,US,y}$ represents the value of the institutional factor k in the US market in the year y, and $I_{k,i,y}$ is the value of the institutional factor k in the country i in the year y. This indicator shows the distance in the institutional quality between the investor country (US) and the investee one (country i) from an overall point of view (considering the six WGI dimensions together). In addition, we also compute this indicator for each one of the six institutional factors separately, showing the distance between the US market and the investee one in that specific institutional dimension. See Equation 2.

$$ID^{*}_{US,i,y} = \sqrt{\left(I_{k,US,y} - I_{k,i,y}\right)^2}. \tag{2}$$

For each fund/month, we match the information relating to the equity country allocation of the portfolio holdings and to the institutional distance to compute our proxy for institutional distance at the fund level (see Equation 3).

$$ID_{j,t} = \sum_{i=1}^{51} \omega_{i,t} * ID_{US,i,t}. \tag{3}$$

where $ID_{j,t}$ is the level of institutional distance[3] for fund j in month t, $\omega_{i,t}$ is the percentage of the portfolio of fund j investee in the country i in the period t, and $ID_{US,i,t}$ is the institutional distance between the US market and the country i in the period t. We compute seven different indicators for each fund (the overall one and one for each of the six WGI factors).

As a proxy for the geographical portfolio concentration, we compute the Herfindahl index for each fund/month observation from the equity country allocation information.

$$GC_{j,t} = \sum_{i=1}^{51} \omega_{i,t}^2. \tag{4}$$

To measure the financial performance of mutual funds, we estimate the monthly six-factor alphas using a rolling window of 36 months. The specification of the six-factor model (Fama and French, 2018) is provided in Equation 5.

$$r_{j,t} = \alpha_j + \beta_{MKT}\left(R_{M,t} - R_{f,t}\right) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \beta_{MOM}MOM_t + \beta_{RMW}RMW_t + \beta_{CMA}CMA_t + \varepsilon_{j,t}. \tag{5}$$

where $r_{j,t}$ is the excess return of the fund j on the free-risk asset in month t; $(R_{M,t}\text{-}R_{f,t})$ is the excess return of the market benchmark on the free-risk asset in month t; SMB_t, HML_t, MOM_t, RMW_t, and CMA_t are, respectively, the size, book-to-market, momentum, profitability and investment factors in month t (see Fama and French, 2018, for a more detailed explanation). The information on the international factors has been obtained from Kenneth French's website[4].

To test our research hypotheses, we perform several fixed effects panel data models. First, as the base model, we regress the estimated alphas on several control variables (Equation 6). Then, we subsequently add the institutional distance variables, the geographical portfolio concentration indicator, and the interaction term between them to test RH1 (Equation 7), RH2 (Equation 8), and RH3 (Equation 9), respectively. Following previous literature, we included all the explanatory variables one-period lagged (see Abou-Tanos, 2022). We run these regressions separately for each one of our proxies for institutional distance to avoid multicollinearity problems.

$$\alpha_{j,t} = \alpha_0 + \beta_2 * NCF_{j,t-1} + \beta_3 * NER_{j,t-1} + \beta_4 * TR_{j,t-1} + \beta_5 * SIZE_{j,t-1} + \beta_6 * AGE_{j,t-1} + fundfixedeffects + timefixedeffects + \varepsilon_{j,t}. \tag{6}$$

[2] The use of the WGI is convenient since, as Van Hoorn and Maseland (2016) explain, "WGI data are oft-used in institutional research, publicly available, and extremely comprehensive, providing scores for over 200 countries" (p. 377). Tang and Buckley (2022) point out that the WGI indicators are computed from several hundred variables from 30 underlying data sources, which guarantees a comprehensive coverage of formal institutions. The Euclidean distance, computed from these indicators, has previously been used in the international business literature to approach the institutional distance between countries (Liu et al., 2020b; Tang and Buckley, 2022).

[3] Since the information for the WGI is yearly and the geographical portfolio allocation is monthly, we consider the value of the WGI to be the same for all the months of the year.

[4] We thank Kenneth French for making this information available in his website: https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Table 1
Descriptive statistics of the variables.

Label	Obs	Mean	10th percentile	Median	90th percentile	SD
6-factor alpha	106,521	-0.00199	-0.00781	-0.00197	0.00353	0.00549
NCF	106,521	0.00065	-0.03434	-0.00327	0.03583	0.05814
NER	106,521	0.01186	0.00568	0.01160	0.01794	0.00486
TR	106,521	0.62763	0.11670	0.48970	1.29000	0.54043
SIZE	106,521	5.96051	3.71447	5.91491	8.23350	1.72624
AGE	106,521	13.49855	4.31507	11.54247	24.92055	8.86870
GC	106,521	0.20711	0.08530	0.13103	0.39746	0.19173
(ID) WGI_DIST	106,521	1.39894	0.55972	1.11593	2.90556	0.86292
(ID) VA_DIST	106,521	0.49540	0.16345	0.34685	1.12456	0.39588
(ID) PS_DIST	106,521	0.50471	0.22317	0.47332	0.82538	0.24995
(ID) GE_DIST	106,521	0.43324	0.14534	0.31386	1.02414	0.33430
(ID) RQ_DIST	106,521	0.50971	0.18296	0.38649	1.10933	0.35511
(ID) RL_DIST	106,521	0.51735	0.15518	0.32116	1.34671	0.44956
(ID) CC_DIST	106,521	0.64097	0.26100	0.52752	1.31429	0.38104

This table reports descriptive statistics for the variables used across the models for the sample analysed. Specifically, it provides information for the monthly six-factor estimated alphas considering a 36-month rolling window, as well as net money flows, in addition to the net expense ratio, turnover ratio, fund size (expressed in the log of TNA in $ millions), fund age (expressed in years), the geographical concentration variable (GC) and the institutional distance (ID) variables: for the overall institutions (WGI_DIST) and each one of the six dimensions in the WGI, (voice and accountability/VA_DIST, political stability/PS_DIST, government effectiveness/GE_DIST, regulatory quality/RQ_DIST, rule of law/RL_DIST and control of corruption/CC_dist). The mean, the 10th percentile, the median, the 90th percentile, and the standard deviation are provided for each variable. The number of observations is also reported.

$$\alpha_{j,t} = \alpha_0 + \beta_2 * NCF_{j,t-1} + \beta_3 * NER_{j,t-1} + \beta_4 * TR_{j,t-1} + \beta_5 * SIZE_{j,t-1} + \beta_6 * AGE_{j,t-1} + \beta_7 * ID_{j,t-1} + fundfixedeffects + timefixedeffects + \varepsilon_{j,t}. \quad (7)$$

$$\alpha_{j,t} = \alpha_0 + \beta_2 * NCF_{j,t-1} + \beta_3 * NER_{j,t-1} + \beta_4 * TR_{j,t-1} + \beta_5 * SIZE_{j,t-1} + \beta_6 * AGE_{j,t-1} + \beta_7 * ID_{j,t-1} + \beta_8 * GC_{j,t-1} + fundfixedeffects + timefixedeffects + \varepsilon_{j,t}. \quad (8)$$

$$\alpha_{j,t} = \alpha_0 + \beta_2 * NCF_{j,t-1} + \beta_3 * NER_{j,t-1} + \beta_4 * TR_{j,t-1} + \beta_5 * SIZE_{j,t-1} + \beta_6 * AGE_{j,t-1} + \beta_7 * ID_{j,t-1} + \beta_8 * GC_{j,t-1} + \beta_9 * ID_{j,t-1} * GC_{j,t-1} + fundfixedeffects + timefixedeffects + \varepsilon_{j,t}. \quad (9)$$

where $NCF_{j,t-1}$ is the relative net cash flows, $NER_{j,t-1}$ is the net expense ratio, $TR_{j,t-1}$ is the turnover ratio[5], $SIZE_{j,t-1}$ is the size of the funds approached by the log of total net assets expressed in $ millions, and $AGE_{j,t-1}$ is the age of the fund measured in years. Following Rabe-Hesketh and Skrondal (2012, pp. 36–42) or Aiken et al. (1991, pp. 9–11) interactions between individual variables (i.e. $ID_{j,t-1}$, $GC_{j,t-1}$), are introduced in Equation 9 by multiplying them together (i.e. $ID_{j,t-1}$*$GC_{j,t-1}$). This makes it possible to verify whether the negative effect of institutional distance on the performance of the funds depends on the level of geographic portfolio concentration (RH3). A positive and significant value of β_9 would indicate that the potential negative effect of a greater institutional distance (RH1) would be moderated by holding a higher geographically concentrated portfolio (RH2). The variables involved in the interaction term are used mean-centred to avoid multicollinearity problems (Aiken et al., 1991). We perform monthly panel regressions with time and fund fixed effects where the dependent variable is the alpha coefficient of fund j in month t.

Table 1 shows the descriptive statistics for the variables across models and Appendix C reports the correlation matrix of the variables.

3. Empirical findings

Table 2 reports the results for Equations 6 and 7.

If we focus on the results of the variables for testing RH1, we can observe that the estimated coefficients provide empirical evidence supporting this hypothesis. More concretely, the estimated coefficients on the ID variables are negative and significant in five out of seven models (and non-significant in the rest). Significant results are obtained for the overall WGI indicator and the PS, GE, RL, and CC dimensions. These results mean that those managers investing in more institutionally distant markets, from both an overall point of view and in these specific dimensions, jeopardize their financial performance. This result is consistent with the TCT predictions and

[5] $NCF_{j,t}=[TNA_{j,t}-TNA_{j,t-1}(1+r_{j,t})]/TNA_{j,t-1}$ where $TNA_{j,t}$ represents the total net assets of fund j in period t and $r_{j,t}$ the return of fund j in period t. Following previous literature, we winsorize the NCF at 1% and 99% levels (see Kostovetsky and Warner, 2020, or Alda et al., 2022, among others). TR and NER information is yearly. Following previous literature, we consider that these variables adopt the same value for all the months in a year (see Muñoz, 2019, among others).

Table 2
Impact of the institutional distance on the US international mutual funds' financial performance.

	Model 1: Base model	Model 2: WGI_Dist	Model 3: VA_Dist	Model 4: PS_Dist	Model 5: GE_Dist	Model 6: RQ_Dist	Model 7: RL_Dist	Model 8: CC_Dist
ID (RH1)		**-0.0012*** **	-0.0002	**-0.0049*** **	**-0.0011***	0.00005	**-0.0015** **	**-0.0028*** **
		(-3.8)	(-0.33)	**(-11.55)**	**(-1.7)**	(0.09)	**(-2.48)**	**(-4.05)**
NCF	0.00706***	0.0071***	0.0071***	0.0069***	0.0071***	0.0071***	0.0071***	0.0071***
	(14.4)	(14.49)	(14.4)	(14.37)	(14.46)	(14.4)	(14.43)	(14.52)
NER	-0.02566	-0.0246	-0.0258	-0.0116	-0.0238	-0.0256	-0.0263	-0.0250
	(-0.67)	(-0.64)	(-0.67)	(-0.31)	(-0.62)	(-0.67)	(-0.69)	(-0.65)
TR	-0.00042**	-0.0004**	-0.0004**	-0.0004**	-0.0004**	-0.0004**	-0.0004**	-0.0004**
	(-2.51)	(-2.43)	(-2.5)	(-2.44)	(-2.51)	(-2.51)	(-2.47)	(-2.4)
SIZE	0.000404***	0.0004***	0.0004***	0.0004***	0.0004***	0.0004***	0.0004***	0.0004***
	(4.37)	(4.35)	(4.37)	(4.49)	(4.35)	(4.37)	(4.38)	(4.23)
AGE	0.00005**	0.00005***	0.00005**	0.00008***	0.00004**	0.00005**	0.00005**	0.00005***
	(2.43)	(2.71)	(2.46)	(4.38)	(2.05)	(2.42)	(2.43)	(2.64)
Intercept	-0.00362***	-0.0020**	-0.0035***	-0.0018**	-0.0030***	-0.0036***	-0.0029***	-0.0019*
	(-4.05)	(-2.03)	(-3.76)	(-2.04)	(-3.25)	(-3.84)	(-3.12)	(-1.88)
Model F-test	19.14***	19.31***	19.14***	21.14***	19.5***	19.29***	19.18***	19.5***
Fixed Effects F-test	21.59***	21.17***	21.47***	20.73***	21.12***	21.18***	21.30***	21.2***
Adj-R2	0.3007	0.3039	0.3007	0.3211	0.3012	0.3007	0.3019	0.3051
Mean VIF	1.19	1.18	1.17	1.17	1.19	1.18	1.18	1.18
LR-Chi Test		494.44***	3.33*	3152.60***	75.54***	0.18	181.05***	681.96***
Wald Test		14.42***	0.11	133.33***	2.90*	0.01	6.16**	16.44***
Obs	106,521	106,521	106,521	106,521	106,521	106,521	106,521	106,521

This table reports the results from the monthly panel regressions with time and fund fixed effects for Equations 6 and 7. The dependent variable is the monthly six-factor estimated alphas considering a 36-month rolling window. The explanatory variables include the following mutual funds' characteristics: relative net cash flows, as well as the net expense ratio, turnover ratio, size and age (Model 1), in addition to the different proxies for institutional distance (Models 2–8). All the explanatory variables are one-period lagged. The table shows the estimated coefficients, the t-ratios computed with robust standard errors, the model F-test assessing the reliability of independent variables, the fixed effect F-test which verifies that the fixed effect model is preferred to a pooled ordinary least squares (OLS) regression, the mean VIF evaluating multicollinearity problems, the adjusted R-squared, the likelihood (LR Chi test) that compares the goodness-of-fit between models, including the institutional distance variable and the base model, the Wald test that analyses whether the estimated coefficients on the institutional distance variables are significantly different from zero, and the number of observations. *** Significant at 1%; ** significant at 5%; *significant at 10 %.

converges with the empirical findings in the mutual fund literature showing superior financial performance for those funds investing in nearby stocks. With regard to our RH2, the results are reported in Table 3.

We observe that the estimated coefficient on the geographical concentration (GC) variable is positive and significant in six out of seven models. This means that those portfolios showing a higher degree of country concentration achieve better financial results. Although this result could seem striking from a mean-variance optimization point of view, it is congruent with the information advantage theory (Choi et al., 2017; Van Niewerburgh and Veldkamp, 2009). Thus, we obtain empirical evidence supporting that those managers concentrated in some markets could take advantage of a deeper knowledge of their investee universe to achieve a better financial outcome. The estimated coefficients on control variables show consistency across models.

Table 4 reports the results of Equation 9 which allow us to test RH3.

First, we observe that the results for the variables testing the RH1 and RH2 are highly consistent with those provided in Tables 2 and 3. In addition, the results for the control variables are consistent across models and with those provided in Tables 2 and 3. Focusing on the estimated coefficients of the interaction variables, we note that the results support RH3. More concretely, the estimated coefficients on the interaction terms are positive and significant in six out of seven models. This means that the geographical concentration of the portfolio diminishes the negative effect of institutional distance, that is, those managers concentrated in some specific markets could take advantage of superior information and a deeper knowledge of these markets and perform a more optimal investment decision-making process, leading that to a better financial result.

To check the consistency of our previous empirical findings, Table 5 reports the results of testing our research hypotheses with alternative specifications of the dependent variable. Thus, the results for Equations 7, 8, and 9, considering the estimated five-factor (Fama and French, 2015), four-factor (Carhart, 1997), and three-factor (Fama and French, 1992) alphas as the dependent variable, and the overall WGI indicator as the proxy for the institutional distance, are reported.

As can be seen, in general terms, the empirical findings are consistent with those shown in Tables 2–4.

Finally, we have performed a sorting analysis to test the impact of institutional distance and geographical concentration of the portfolio in mutual fund returns and six-factor alphas (see Tables D.1 and D.2 in Appendix D for details). We observe that the institutional distance and the geographical concentration level are not very relevant to achieving a better return in absolute terms, but they are more relevant to accomplishing a better risk-adjusted financial performance that would be consistent with the informational advantage theory predictions. Thus, the return level could be determined by the specific market/s in which the mutual fund manager invests, but those managers with a deeper knowledge and more information about the market in which they invest can make better managerial decisions and attain a better risk-adjusted financial performance.

Table 3
Impact of the institutional distance and the country portfolio concentration on the US international mutual funds' financial performance.

	Model 1: WGI_Dist	Model 2: VA_Dist	Model 3: PS_Dist	Model 4: GE_Dist	Model 5: RQ_Dist	Model 6: RL_Dist	Model 7: CC_Dist
ID (RH1)	**-0.00093*****	0.00017	**-0.00476*****	-0.00034	0.00068	**-0.00099***	**-0.00232*****
	(-3.05)	(0.29)	**(-11.64)**	(-0.48)	(1.19)	**(-1.72)**	**(-3.36)**
GC (RH2)	**0.00244****	**0.00355*****	0.00070	**0.00337*****	**0.00376*****	**0.00312*****	**0.00209***
	(2.26)	**(3.45)**	(0.66)	**(2.99)**	**(3.54)**	**(2.94)**	**(1.92)**
NCF	0.00711***	0.00711***	0.00693***	0.00712***	0.00710***	0.00711***	0.00710***
	(14.54)	(14.5)	(14.35)	(14.52)	(14.48)	(14.51)	(14.55)
NER	-0.02309	-0.02299	-0.01145	-0.02272	-0.02211	-0.02386	-0.02365
	(-0.61)	(-0.6)	(-0.31)	(-0.59)	(-0.58)	(-0.63)	(-0.62)
TR	-0.00040**	-0.00040**	-0.00041**	-0.00040**	-0.00040**	-0.00040**	-0.00040**
	(-2.37)	(-2.4)	(-2.42)	(-2.4)	(-2.4)	(-2.38)	(-2.35)
SIZE	0.00039***	0.00039***	0.00042***	0.00039***	0.00039***	0.00039***	0.00039***
	(4.27)	(4.24)	(4.47)	(4.24)	(4.24)	(4.27)	(4.18)
AGE	0.00005***	0.00005**	0.00008***	0.00005**	0.00005***	0.00005**	0.00005***
	(2.73)	(2.46)	(4.35)	(2.44)	(2.68)	(2.54)	(2.67)
Intercept	-0.00285***	-0.00441***	-0.00197**	-0.00413***	-0.00476***	-0.00379***	-0.00260**
	(-2.83)	(-4.64)	(-2.19)	(-4.12)	(-4.79)	(-3.94)	(-2.51)
Model F-test	17.74***	17.87***	18.01***	17.69***	17.75***	17.75***	17.78***
Fixed Effects F-test	19.68***	19.46***	21.62***	19.75***	19.38***	19.49***	19.85***
Adj-R2	0.3051	0.3034	0.3212	0.3034	0.3036	0.3039	0.3060
Mean VIF	1.18	1.16	1.18	1.19	1.18	1.18	1.18
LR-Chi Test	173.81***	410.39***	15.52***	342.07***	443.07***	305.44***	124.40***
Wald Test	5.11**	11.93***	0.44	8.94***	12.56***	8.64***	3.69*
Obs	106,521	106,521	106,521	106,521	106,521	106,521	106,521

This table reports the results from the monthly panel regressions with time and fund fixed effects for Equation 8. The dependent variable is the monthly six-factor estimated alphas considering a 36-month rolling window. The explanatory variables include the different proxies for institutional distance, the geographical portfolio concentration indicator, and the following mutual funds' characteristics: relative net cash flows, as well as the net expense ratio, turnover ratio, size, and age. All the explanatory variables are one-period lagged. The table shows the estimated coefficients, the t-ratios computed with robust standard errors, the model F-test assessing the reliability of independent variables, the fixed effect F-test which verifies that the fixed effect model is preferred to a pooled OLS regression, the mean VIF evaluating multicollinearity problems, the adjusted R-squared, the likelihood (LR Chi test) that compares the goodness-of-fit between models, including the institutional distance and geographical concentration variables and those including only the institutional distance variable, the Wald test that analyses whether the estimated coefficients on the geographical concentration variable are significantly different from zero, and the number of observations. *** Significant at 1%; ** significant at 5%; *significant at 10 %.

4. Conclusions and further research

Our empirical evidence shows that a greater formal institutional distance between the investor and investee markets jeopardizes the financial performance of international mutual funds. Another finding in our research points out that those funds holding a more country-concentrated portfolio obtain a better financial outcome. In addition, we reveal that there is an interaction effect between both dimensions, i.e. the country portfolio concentration moderates the negative effect of institutional distance. Our research contributes to the international mutual fund literature by providing empirical evidence on a growing but still underexplored topic (as far as we know, this is the first attempt to explore the impact of the formal institutions' distance through the WGI). In addition, we identify the country portfolio concentration as a moderator factor of the negative impact of institutional distance on the international mutual funds' financial performance. The novelty of the study is that it expands the prior knowledge of previous works that analyse informal/cultural institutions (Abou-Tanos, 2022), by considering formal institutions, in addition to the moderating effect of the country concentration portfolio level. For these reasons, the results of this research could be useful for the decision-making processes of both international mutual fund managers and investors. Further research emerging from the limitations of this paper could also be performed. In this paper, we have analysed a sample of international mutual funds domiciled in the US market. Thus, we have computed the distance benchmarked with the US market. However, additional assessments should pay attention to the analysis of the impact of the institutional distance between other markets by studying international mutual funds domiciled in other countries. This could provide salient additional insights. For example, it could be interesting to disentangle whether the institutional distance between two countries has a symmetric impact on the financial performance of the international mutual funds domiciled in the country that is investing in the other one. It could be also relevant to examine mutual fund investing in other types of assets, such as bonds. Moreover, alternative proxies for formal institutional distances should be explored.

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Table 4
Interaction effect of the institutional distance and the country concentration portfolio level.

	Model 1: WGI_Dist	Model 2: VA_Dist	Model 3: PS_Dist	Model 4: GE_Dist	Model 5: RQ_Dist	Model 6: RL_Dist	Model 7: CC_Dist
ID (RH1)	**-0.00149*** **	-0.00025	**-0.00507*** **	**-0.00153*** **	-0.00042	**-0.00195*** **	**-0.00327*** **
	(-4.72)	(-0.34)	**(-12.67)**	**(-2.63)**	(-0.7)	**(-3.29)**	**(-4.96)**
GC (RH2)	**0.00352*** **	**0.00366*** **	0.00138	**0.00446*** **	**0.00452*** **	**0.00387*** **	**0.00376*** **
	(3.29)	**(3.59)**	(1.33)	**(3.79)**	**(4.09)**	**(3.54)**	**(3.6)**
ID*GC (RH3)	**0.00289*** **	0.00151	**0.00321** **	**0.00831*** **	**0.00529*** **	**0.00565*** **	**0.00737*** **
	(4.08)	(1.3)	**(2.5)**	**(3.89)**	**(3.37)**	**(3.46)**	**(4.76)**
NCF	0.00709***	0.00710***	0.00695***	0.00713***	0.00709***	0.00711***	0.00707***
	(14.49)	(14.46)	(14.36)	(14.59)	(14.49)	(14.5)	(14.52)
NER	-0.02088	-0.02158	-0.01333	-0.02179	-0.02114	-0.01999	-0.02206
	(-0.54)	(-0.56)	(-0.35)	(-0.56)	(-0.55)	(-0.52)	(-0.57)
TR	-0.00042**	-0.00041**	-0.00040**	-0.00042***	-0.00042**	-0.00042**	-0.00043**
	(-2.49)	(-2.44)	(-2.39)	(-2.49)	(-2.54)	(-2.51)	(-2.51)
SIZE	0.00041***	0.00039***	0.00042***	0.00039***	0.00040***	0.00041***	0.00039***
	(4.36)	(4.31)	(4.46)	(4.18)	(4.3)	(4.39)	(4.2)
AGE	0.00005**	0.00005**	0.00009***	0.00003*	0.00004**	0.00004**	0.00005**
	(2.52)	(2.5)	(4.47)	(1.7)	(2.2)	(2.22)	(2.38)
Intercept	-0.00364***	-0.00365***	-0.00418***	-0.00334***	-0.00358***	-0.00375***	-0.00356***
	(-4.04)	(-4.08)	(-4.68)	(-3.7)	(-3.98)	(-4.16)	(-3.93)
Model F-test	18.05***	17.75***	18.03***	18.11***	17.94***	18.02***	19.28***
Fixed Effects F-test	19.05***	19.45***	21.65***	19.35***	19.64***	19.02***	18.14***
Adj-R2	0.3084	0.3036	0.3221	0.3077	0.3057	0.3067	0.3105
LR-Chi Test	525.19***	38.42***	152.20***	653.90***	328.56***	438.00***	699.81***
Wald Test	16.64***	1.70	6.25**	15.14***	11.37***	12.00***	22.70***
Mean VIF	1.19	1.21	1.21	1.18	1.19	1.17	1.19
VIF ID*GC	1.14	1.25	1.22	1.08	1.13	1.17	1.14
Obs	106,521	106,521	106,521	106,521	106,521	106,521	106,521

This table reports the results from the monthly panel regressions with time and fund fixed effects for Equation 9. The dependent variable is the monthly six-factor estimated alphas considering a 36-month rolling window. The explanatory variables include the different proxies for institutional distance, the geographical portfolio concentration indicator, and the interaction between them. The variables involved in the interaction are mean-centred. In addition, the following mutual funds' characteristics are considered: relative net cash flows, as well as the net expense ratio, turnover ratio, size, and age. All the explanatory variables are one-period lagged. The table shows the estimated coefficients, the t-ratios computed with robust standard errors, the model F-test assessing the reliability of independent variables, the fixed effect F-test which verifies that the fixed effect model is preferred to a pooled OLS regression, the adjusted R-squared, the mean VIF evaluating multicollinearity problems, the contribution of the interaction term to the mean VIF, the likelihood (LR Chi test) that compares the goodness-of-fit between models, including the institutional distance and the geographical concentration variables, and those that in addition include the interaction term, the Wald test that analyses whether the estimated coefficients on the interaction term are significantly different from zero, and the number of observations. *** Significant at 1%; ** significant at 5%; *significant at 10 %.

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Data Availability Statement

Requests for data availability will be considered by the authors.

CRediT authorship contribution statement

Jorge Fleta-Asín: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft. **Fernando Muñoz:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft.

Declaration of Interests

None.

Data availability

Requests for data availability will be considered by the authors

Table 5
Robustness tests. Alternative specifications for alpha.

	Model 1: 5-factor alpha	Model 2: 5-factor alpha	Model 3: 5-factor alpha	Model 4: 4-factor alpha	Model 5: 4-factor alpha	Model 6: 4-factor alpha	Model 7: 3-factor alpha	Model 8: 3-factor alpha	Model 9 3-factor alpha
ID (RH1)	**-0.00114*** **	**-0.0009*** **	**-0.0014*** **	**-0.0010*** **	**-0.0008*** **	**-0.0012*** **	**-0.0009*** **	**-0.0008** **	**-0.0012*** **
	(-3.53)	**(-2.8)**	**(-4.33)**	**(-3.42)**	**(-2.71)**	**(-4.18)**	**(-3.03)**	**(-2.49)**	**.(-3.72)**
GC (RH2)		**0.0023** **	**0.0034*** **		**0.0020** **	**0.0029*** **		0.0015	**0.0022** **
		(2)	**(2.85)**		**(2.27)**	**(3.15)**		(1.42)	**(2.04)**
ID*GC (RH3)			**0.0028*** **			**0.0023*** **			**0.0020*** **
			(3.68)			**(3.89)**			**(2.85)**
NCF	0.0076***	0.0076***	0.0076***	0.0069***	0.0069***	0.0069***	0.0078***	0.0078***	0.0078***
	(15.14)	(15.18)	(15.12)	(15.33)	(15.37)	(15.34)	(15.49)	(15.51)	(15.48)
NER	0.0004	0.0018	0.0039	-0.0160	-0.0147	-0.0130	-0.0005	0.0004	0.0019
	(0.01)	(0.04)	(0.09)	(-0.44)	(-0.41)	(-0.36)	(-0.01)	(0.01)	(0.05)
TR	-0.0004*	-0.0004*	-0.0004*	-0.0005***	-0.0005***	-0.0005***	-0.0003	-0.0003	-0.0003
	(-1.9)	(-1.84)	(-1.95)	(-3.18)	(-3.12)	(-3.22)	(-1.49)	(-1.45)	(-1.53)
SIZE	0.0004***	0.0004***	0.0004***	0.0003***	0.0003***	0.0003***	0.0004***	0.0004***	0.0004***
	(4.58)	(4.51)	(4.59)	(3.44)	(3.36)	(3.46)	(4.39)	(4.33)	(4.41)
AGE	0.00008***	0.0001***	0.00008***	0.00005**	0.00005**	0.00005**	0.00004	0.00004	0.00003
	(3.35)	(3.36)	(3.2)	(2.55)	(2.27)	(2.4)	(1.58)	(1.42)	(1.48)
Intercept	-0.0029***	-0.0037***	-0.0045***	-0.0016*	-0.0023**	-0.0030***	-0.0023***	-0.0029***	-0.0036***
	(-2.74)	(-3.45)	(-4.34)	(-1.73)	(-2.49)	(-3.49)	(-2.25)	(-2.74)	(-3.66)
Model F-test	18.8***	19.45***	18.83***	20.43***	20.94***	20.39***	19.74***	20.23***	19.85***
Fixed Effects F-test	15.78***	13.74***	13.85***	15.57***	13.77***	13.97***	14.66***	13.33***	13.45***
Adjusted R2	0.2176	0.2184	0.2208	0.1964	0.1972	0.1993	0.1999	0.2002	0.2015
LR-Chi Test	295.80***	103.81***	331.24***	311.23***	104.64***	282.16***	221.01***	48.83***	176***
Wald Test	12.43***	4.00***	13.56***	11.71***	5.17**	15.12***	9.20***	2.02	8.12***
Mean VIF	1.18	1.15	1.19	1.18	1.18	1.19	1.18	1.18	1.19
VIF ID*GC			1.14			1.14			1.14
Obs	106,521	106,521	106,521	106,521	106,521	106,521	106,521	106,521	106,521

This table reports the results from the monthly panel regressions with time and fund fixed effects for Equations 7, 8, and 9. The dependent variable is the monthly five-factor (Models 1–3)/four-factor (Models 4–6)/three-factor (Models 7–9) estimated alphas considering a 36-month rolling window. The explanatory variables include the different control variables and the overall WGI institutional distance (Models 1, 4, and 7), the overall WGI institutional distance and the geographical concentration indicator (Models 2, 5, and 8), and the overall WGI institutional distance, the geographical concentration indicator and the interaction term between them (Models 3, 6 and 9). The variables involved in the interaction term are mean-centred. All the explanatory variables are one-period lagged. The table shows the estimated coefficients, the t-ratios computed with robust standard errors, the model F-test assessing the reliability of independent variables, the fixed effect F-test which verifies that the fixed effect model is preferred to a pooled OLS regression, the adjusted R-squared, the mean VIF evaluating multicollinearity problems, the contribution of the interaction term to the mean VIF, the likelihood (LR Chi test) that compares the goodness-of-fit between the models that subsequently add variables to test the research hypotheses, the Wald test that analyses whether the estimated coefficients on the subsequently added variables are significantly different from zero, and the number of observations. *** Significant at 1%; ** significant at 5%; *significant at 10 %.

Appendix A

Morningstar provides information about the monthly equity country allocation across the following 51 markets: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Poland, Portugal, Russian Federation, Singapore, Slovak Republic, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United Kingdom, the United States, Venezuela, and Vietnam.

This information allows us to control a high percentage of the total portfolio. This means that our proxies for institutional distances between the US and the investee markets show a high level of accuracy. The following table shows the summary statistics for the percentage of country weight portfolio controlled:

Label	Obs	Mean	10th percentile	Median	90th percentile	SD
% of controlled portfolio	106,521	0.942	0.879	0.961	0.991	0.073

Appendix B

The information about the WGI is available at: https://info.worldbank.org/governance/wgi/. The WGI project "reports aggregate and individual governance indicators for over 200 countries and territories". Governance is referred to as "the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them". Kauffman et al. (2011) define each one of these dimensions:

Voice and accountability (VA): "the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media".

Political stability and absence of violence (PS): "perception of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism".

Government effectiveness (GE): "perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies".

Regulatory quality (RQ): "the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development".

Rule of law (RL): "the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence".

Control of corruption (CC): "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests".

Appendix C. Correlation Matrix

	6-factor Alpha	NCF	NER	TR	SIZE	AGE	GC	WGI_DIST	VA_DIST	PS_DIST	GE_DIST	RQ_DIST	RL_DIST
NCF	**0.0739**												
NER	-0.0003	**-0.0315**											
TR	**0.0083**	**-0.0135**	**0.3297**										
SIZE	**0.0643**	**0.0249**	**-0.4402**	**-0.2324**									
AGE	**0.0105**	**-0.0923**	**-0.0914**	**-0.096**	**0.2933**								
GC	**0.1753**	**-0.0355**	**0.1404**	**0.0263**	**-0.1544**	**0.095**							
WGI_DIST	**-0.0884**	**0.0162**	**0.1841**	**0.0331**	**-0.0246**	**-0.0978**	**-0.1358**						
VA_DIST	**-0.0307**	**0.0083**	**0.1537**	**0.023**	**-0.0378**	**-0.0525**	**-0.0549**	**0.9194**					
PS_DIST	**-0.1371**	**0.0124**	**0.0935**	**-0.0125**	**0.0137**	**-0.0667**	**-0.2176**	**0.7735**	**0.6243**				
GE_DIST	**-0.0885**	**0.0173**	**0.2271**	**0.0529**	**-0.0338**	**-0.1239**	**-0.1091**	**0.964**	**0.8216**	**0.7113**			
RQ_DIST	**-0.0991**	**0.0186**	**0.1973**	**0.0426**	**-0.035**	**-0.1102**	**-0.0911**	**0.9648**	**0.8744**	**0.6488**	**0.9516**		
RL_DIST	**-0.0707**	**0.0131**	**0.1978**	**0.0432**	**-0.0276**	**-0.0982**	**-0.083**	**0.9771**	**0.8894**	**0.685**	**0.9698**	**0.9567**	
CC_DIST	**-0.1004**	**0.0163**	**0.1736**	**0.0333**	**-0.0145**	**-0.1012**	**-0.1898**	**0.9796**	**0.8631**	**0.7547**	**0.9622**	**0.9449**	**0.9641**

The correlations significant at 5% are highlighted in bold.

Appendix D: Impact of the institutional distance and the geographical concentration portfolio level on the monthly returns and the six-factor alphas: sorting analysis

Tables D.1 and D.2

Table D.1
Sorting analysis with returns.

	Mean	Standard Deviation	25th percentile	Median	75th percentile	Difference Mean test Q1-Q4
Portfolio Q1 WBGI	0.0071	0.0461	-0.0176	0.0106	0.0359	
Portfolio Q4 WBGI	0.0066	0.0575	-0.0248	0.0105	0.0437	0.3358
Portfolio Q1 VA	0.0071	0.0460	-0.0174	0.0103	0.0360	
Portfolio Q4 VA	0.0065	0.0591	-0.0248	0.0104	0.0424	0.3942
Portfolio Q1 PS	0.0072	0.0461	-0.0172	0.0105	0.0362	
Portfolio Q4 PS	0.0065	0.0555	-0.0234	0.0106	0.0411	0.6309
Portfolio Q1 GE	0.0072	0.0460	-0.0173	0.0108	0.0360	
Portfolio Q4 GE	0.0062	0.0587	-0.0236	0.0106	0.0428	0.6603
Portfolio Q1 RQ	0.0072	0.0459	-0.0173	0.0108	0.0359	
Portfolio Q4 RQ	0.0067	0.0578	-0.0244	0.0104	0.0425	0.3810
Portfolio Q1 RL	0.0071	0.0459	-0.0173	0.0109	0.0359	
Portfolio Q4 RL	0.0069	0.0573	-0.0249	0.0097	0.0438	0.1853
Portfolio Q1 CC	0.0071	0.0459	-0.0174	0.0106	0.0361	
Portfolio Q4 CC	0.0069	0.0563	-0.0239	0.0099	0.0437	0.2139
Portfolio Q1 GC	0.0071	0.0473	-0.0183	0.0096	0.0362	
Portfolio Q4 GC	0.0077	0.0473	-0.0195	0.0109	0.0374	-0.7713

This table reports the summary statistics of the monthly returns from size-weighted portfolios built from the mutual funds showing a lower/greater institutional distance and geographical concentration level (Q1/Q4). For each month in the sample and dimension considered, we sort the mutual funds into quartiles, with those in quartile 1 (4) the mutual funds with a lower (greater) institutional distance/geographical concentration, and subsequently, we construct size-weighted portfolios from these funds. Overall, the mean returns of the portfolios formed from the mutual funds with a lower (greater) institutional distance (geographical concentration level) are higher than those obtained by the portfolios created from the mutual funds with the opposite characteristics. Although these results are consistent with the research hypotheses, the differences in these returns are small and non-significant.

Table D.2
Sorting analysis with six-factor alphas.

	Mean	Standard Deviation	25th percentile	Median	75th percentile	Difference Mean test Q1-Q4
Portfolio Q1 WBGI	-0.0009	0.0021	-0.0025	-0.0013	0.0008	
Portfolio Q4 WBGI	-0.0022	0.0078	-0.0083	-0.0013	0.0031	3.5912***
Portfolio Q1 VA	-0.0007	0.0020	-0.0023	-0.0011	0.0010	
Portfolio Q4 VA	-0.0024	0.0080	-0.0084	-0.0015	0.0028	4.5926***
Portfolio Q1 PS	-0.0006	0.0021	-0.0023	-0.0009	0.0011	
Portfolio Q4 PS	-0.0033	0.0068	-0.0081	-0.0031	0.0002	8.6160***
Portfolio Q1 GE	-0.0007	0.0020	-0.0023	-0.0011	0.0008	
Portfolio Q4 GE	-0.0024	0.0080	-0.0084	-0.0016	0.0029	4.4669***
Portfolio Q1 RQ	-0.0006	0.0021	-0.0023	-0.0011	0.0011	
Portfolio Q4 RQ	-0.0020	0.0078	-0.0079	-0.0010	0.0032	3.8237***
Portfolio Q1 RL	-0.0007	0.0020	-0.0023	-0.0011	0.0010	
Portfolio Q4 RL	-0.0022	0.0077	-0.0084	-0.0015	0.0028	4.2919***
Portfolio Q1 CC	-0.0006	0.0021	-0.0023	-0.0010	0.0011	
Portfolio Q4 CC	-0.0020	0.0072	-0.0079	-0.0013	0.0031	4.0211***
Portfolio Q1 GC	-0.0013	0.0028	-0.0035	-0.0017	0.0008	
Portfolio Q4 GC	0.0006	0.0029	-0.0009	0.0001	0.0023	-12.1904***

This table reports the results of the sorting analysis shown in Table D.1. but considering six-factor alphas instead of returns when building mutual fund portfolios. The portfolios formed by the funds with a lower/greater institutional distance/geographical concentration level again show better records than those by the funds with the opposite characteristics. However, in contrast to the results of the returns, in the case of the alphas, these differences are statistically significant.

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