

International diversification and European firm value: the role of operating efficiency

Firm value and
operating
efficiency

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Abstract

Purpose – This study aims to investigate the impact of international diversification on the value and operating efficiency of European real estate firms.

Design/methodology/approach – The study is conducted using a panel fixed effects regression model to estimate the relationship of international diversification with firm value and operating efficiency. International diversification is mainly measured via the negative of the Herfindahl–Hirschman Index (HHI) using property-level data. Firm value and operating efficiency are proxied by financial ratios observed annually from 2002 to 2021 at the firm level.

Findings – The results demonstrate that international diversification has a negative effect on firm value. Additionally, it lowers operating efficiency by weakening a firm's ability to generate operating earnings from its assets. By examining whether the reduction in operating efficiency is due to the rental income channel or the capital gains channel, the authors find strong statistical evidence that international diversification negatively impacts capital gains. International diversification is negatively associated with net gains from property valuations (unrealized capital gains) and net profits from property disposals (realized capital gains).

Research limitations/implications – The empirical analysis is limited to Europe.

Originality/value – This paper extends the geographical diversification literature. While existing literature focuses on domestic diversification within the United States, this paper explores the effects of international diversification on European real estate firms. To the extent of the authors' knowledge, this is the first paper to examine the impact of geographical diversification on capital gains.

Keywords Firm value, Operating efficiency, Rental income, Capital gains, Diversification, European real estate

Paper type Research paper

Introduction

The average European listed real estate firm diversifies across three countries, with some firms expanding their presence to as many as 17 countries. This level of diversification has remained relatively consistent from 2002 to 2021, indicating that cross-country diversification is a strategic approach commonly adopted by European real estate firms. The purpose of this paper is to examine the effects of international diversification on the value of these firms.

Geographical diversification can be achieved either domestically within the same country or internationally across different countries. The existing literature that focuses on the impact of geographical diversification on a real estate firm's value has predominantly concentrated on domestic diversification within the USA (Capozza and Seguin, 1999; Feng *et al.*, 2021; Hartzell *et al.*, 2014) [1]. These studies have found that domestic diversification tends to decrease a real estate firm's value. International diversification may, however,



present an efficient form of geographic diversification due to potentially lower correlations between international real estate markets compared to domestic real estate markets within the same country. If this is the case, international diversification could effectively provide benefits that are generally associated with diversification. These benefits include a reduction in earnings volatility (Markowitz, 1952; Shapiro, 1978), co-insurance of debt (Lewellen, 1971), and the presence of internal capital markets (e.g. Stein, 1997), all of which can enhance a real estate firm's value. However, international diversification can also exacerbate agency and information problems commonly associated with diversification (e.g. Aggarwal and Samwick, 2003; Ozbas and Scharfstein, 2010; Wulf, 2009). Operating outside the firm's home country can limit its ability to effectively monitor and manage foreign managers, thereby increasing agency problems (Reeb *et al.*, 1998). Moreover, the local nature of the real estate market (e.g. Van Nieuwerburgh and Veldkamp, 2009) can put foreign real estate investors at a disadvantage in terms of information. This information disadvantage may reduce a real estate firm's efficiency in generating returns (Capozza and Seguin, 1999; Eichholtz *et al.*, 2016; Ling *et al.*, 2018). Therefore, while international diversification has the potential to deliver value-enhancing benefits, it can also increase agency risks and adversely impact a real estate firm's earnings.

Given the presence of both value-enhancing and value-reducing channels associated with international diversification, we conduct an empirical analysis to estimate the overall impact of international diversification on a real estate firm's value. We select European real estate firms. These firms are more likely to engage in cross-border investments to implement a geographical diversification strategy, compared, for instance, to US firms, where it may be enough to diversify domestically across almost a whole continent. Thus, international diversification can be more relevant to European real estate firms. Our measurement of international diversification utilizes the negative of the Herfindahl-Hirschman Index (–HHI) constructed from property-level data. Additionally, we employ alternative measures of diversification. The firm value is represented by Tobin's Q. Our findings consistently reveal a robust negative net effect of international diversification on firm value, regardless of the diversification measure employed. For instance, a one-standard-deviation increase in international diversification (–HHI) is associated with an average decrease in Tobin's Q by nearly 7.7%. Also, expanding into an additional country, on average, results in a decrease in Tobin's Q by 1.8%. For the average firm, this would translate into a loss in market value of nearly USD 337 (EUR 309) million and USD 79 (EUR 72) million, for a one standard deviation increase in international diversification and for expanding to one additional country, respectively, all else equal. These findings suggest that although international diversification may be efficient in delivering the benefits of geographical diversification, the negative implications stemming from agency and information problems outweigh this advantage. Consequently, the net effect of international diversification on firm value aligns with the impact observed in domestic diversification studies (e.g. Feng *et al.*, 2021; Hartzell *et al.*, 2014).

One potential reason for the value-reducing effect of international diversification may be a decline in operating efficiency (e.g. Capozza and Seguin, 1999). Therefore, in a second step of our analysis, we examine the impact of international diversification on operating efficiency. Operating efficiency is measured using the ratio of earnings before interest, taxes, depreciation and amortization, to total assets (EBITDA/assets). Our findings demonstrate a negative effect of international diversification on operating efficiency. Specifically, a one-standard-deviation increase in diversification is associated with a nearly 2.1% decrease in EBITDA/assets. Given that our sample average of EBITDA/assets is 7.2%, this result represents a nearly 30% decline, which can be considered economically significant. A possible explanation for this decline in operating efficiency observed among internationally diversified firms is the increased agency problems resulting from operating in foreign countries, as argued by Reeb *et al.* (1998), it may also arise from the potential

increase in the distance between the firm and its assets. [Eichholtz et al. \(2016\)](#) find that this distance reduces the effective rent of properties, while [Ling et al. \(2018\)](#) highlight its impact on increasing the acquisition price of properties.

To gain deeper insight into the impact of international diversification on operating efficiency, we analyze its effects on generating rental income and capital gains, which are the primary sources of earnings for real estate firms. We find no statistical evidence indicating that international diversification affects a firm's efficiency in generating rental income, including rental revenue and expenses. This implies that diversifying internationally is as efficient as focusing solely on the domestic market when it comes to generating rental income. However, we do find significant evidence suggesting that international diversification has a negative effect on a firm's efficiency in generating capital gains. Specifically, a one-standard-deviation increase in international diversification, on average, leads to a 1.4% decrease in the ratio of capital gains to total assets. The capital gains consist of two components: net gains from property valuations (unrealized gains) and net profits from property disposals (realized gains). Our findings indicate that internationally diversified firms are, on average, less efficient in generating realized capital gains by 1.2% and unrealized capital gains by 0.2%. These findings align with the existing literature suggesting that diversification can result in valuation errors and capital misallocation (e.g. [Rajan et al., 2000](#); [Scharfstein and Stein, 2000](#); [Ozbas and Scharfstein, 2010](#)). Additionally, our results support the proposition that internationally diversified firms may consistently pay a premium to acquire properties in distant locations ([Ling et al., 2018](#)).

The findings of our study contribute to the existing literature on diversification and its effects on firms (e.g. [Erdorf et al., 2013](#)). Proceeding from the argument that the effect of diversification varies across industries ([Santalo and Becerra, 2008](#); [Schmid and Walter, 2012](#)), this study contributes, in particular, to the literature on geographical diversification within the real estate industry ([Capozza and Seguin, 1999](#); [Eichholtz et al., 2011](#); [Feng et al., 2021](#); [Hartzell et al., 2014](#)). By providing empirically robust evidence, the study sheds light on the impact of international diversification on firm value. Furthermore, we introduce operating efficiency as a channel through which international diversification can negatively influence value. Notably, this study is, to the extent of our knowledge, the first to examine the impact of diversification on capital gains, which represents a specific channel through which diversification can affect operating efficiency and, ultimately, firm value, all else being equal.

The remainder of this paper proceeds as follows. The "Theoretical Framework and Literature Review" section provides an overview of relevant theories and the existing literature. The "Empirical Strategy" section follows, which describes the methodology and data sample used in the empirical study. The "Results" section then presents and discusses the empirical findings in detail. The paper closes with the "Conclusion" section, summarizing the key findings and their implications.

Theoretical framework and literature review

Geographical diversification, along with other forms of diversification, presents potential benefits that may enhance the firm value. These benefits include the reduction in the volatility of its returns, debt co-insurance and access to an internal capital market. Such benefits can be achieved as long as the different geographical markets provide the firm with imperfectly correlated cash flows (i.e. the benefits of diversification hinge on the imperfect correlation between the performance of these markets). For elaboration, when a firm diversifies its assets across imperfectly correlated markets the volatility of its total returns decreases which in turn reduces the firm's risk exposure, increasing its value ([Markowitz, 1952](#)). Additionally, obtaining cash flows from multiple geographical divisions that exhibit imperfectly correlated performance can co-insure the debt service of the firm, where the cash flow from one division

can subsidize another. Such cross-subsidization can reduce the firm's credit risk and increase its debt capacity and value (Lewellen, 1971). Moreover, the firm can benefit from the excess return of one division to finance another which alleviates the firm's dependence on external capital markets and thus increases its financial flexibility and value (Stein, 1997). All these benefits can be expected to extend to a geographically diversified real estate firm if the underlying real estate markets are imperfectly correlated.

However, at the same time, geographical diversification exposes a firm to agency problems that can reduce its value. Aggarwal and Samwick (2003) argue that managers may pursue diversification for personal gain rather than to enhance firm value, as diversification can increase their power and compensation. Moreover, managers of larger divisions within diversified firms may influence capital budgeting in their favor, leading to inefficient resource allocation (Scharfstein and Stein, 2000; Wulf, 2009). Managers within a diversified firm are also prone to misallocating capital due to valuation errors, which can result in poor internal cross-subsidization and investment decisions (e.g. Rajan *et al.*, 2000; Scharfstein and Stein, 2000; Ozbas and Scharfstein, 2010). Whether arising from agency–principal misalignment of interests or internal valuation errors, these agency problems can lead to operational inefficiencies decreasing the firm value. Considering the private and decentralized nature of real estate markets (Broxterman and Zhou, 2023), real estate firms can also be expected to be prone to such agency problems.

Accordingly, geographical diversification encompasses both value-enhancing and value-reducing channels for a real estate firm. The overall impact of diversification on firm value is determined by the net balance between these channels. Therefore, understanding the net effect of diversification on value requires empirical investigation. Existing studies in the real estate domain, have primarily focused on domestic diversification within the USA and have not examined international diversification. These studies consistently find that domestic diversification within the USA has a negative net effect on firm value (Capozza and Seguin, 1999; Feng *et al.*, 2021; Hartzell *et al.*, 2014).

While domestic and international diversification fall under the geographical diversification umbrella, international diversification may yield a different net effect on firm value. Compared to domestic diversification, international diversification can be more effective in enhancing firm value due to the expected lower correlation between the performance of real estate markets of different countries (e.g. Eichholtz *et al.*, 1998; Eichholtz, 1996). This reduced correlation may enable international diversification to offset or even outweigh the negative effects typically associated with diversification. Nonetheless, firms engaged in international diversification, and, hence, typically operating in foreign countries, face various challenges in effectively monitoring their overseas operations and implementing adequate corporate governance practices. These challenges arise from factors such as cultural differences, language barriers and timing issues, which can impede a firm's ability to exercise control over foreign managers and address agency problems (Reeb *et al.*, 1998). Moreover, in the context of the real estate industry, operating in foreign countries can place the firm at an informational disadvantage due to the local nature of the real estate markets (Van Nieuwerburgh and Veldkamp, 2009). This informational disadvantage extends to differences in regulations, tax treatments and increased political risks (Burgman, 1996). Consequently, it can directly impact the operating efficiency of real estate firms (Capozza and Seguin, 1999; Eichholtz *et al.*, 2016; Ling *et al.*, 2018). For example, Eichholtz *et al.* (2016) argue that informational disadvantage increases with the distance between the property and the owner, and their study examining the impact of this distance on rental income using US market data reveals a significant decrease in rental cash flow as the distance between the property and the owner increases. In the same vein, Ling *et al.* (2018) find that distant investors pay a price premium in property acquisitions, primarily due to increased search costs and anchoring bias. Similarly, Capozza and Seguin (1999) argue that valuing distant

properties becomes challenging due to a lack of transparency, leading to increased risks of asset misvaluations.

Considering the aforementioned factors, the effect of geographical diversification on real estate firm value can materialize through operating efficiency. However, there is limited literature addressing the impact of geographical diversification on real estate firms' operating efficiency, and existing studies also primarily focus on domestic diversification within the USA. For instance, [Capozza and Seguin \(1999\)](#) observe a positive correlation between diversification across US regions and real estate investment trust (REIT) operating expenses, suggesting that diversifying within the country may increase operating costs. [Ambrose *et al.* \(2000\)](#) find that concentration within a US Metropolitan Statistical Area (MSA), on average, does not have a significant impact on the rental income growth rate. More recently, [Feng *et al.* \(2021\)](#) have demonstrated that diversifying across US states enhances REIT's operating efficiency by improving revenue generation capabilities.

Again, it is important to note that the impact of international diversification may differ from domestic diversification. Operating in foreign countries poses unique challenges that can potentially hinder operating efficiency. As previously mentioned, these challenges, including language barriers and limited knowledge of local real estate markets, can significantly complicate property management and have a detrimental impact on operating efficiency ([Reeb *et al.*, 1998](#)). Furthermore, international diversification can exacerbate the negative effects of distance between the owner and the property, which can lead to a deterioration in the effective rental income (through higher costs and/or lower income) ([Eichholtz *et al.*, 2016](#)) and capital gains ([Capozza and Seguin, 1999](#); [Ling *et al.*, 2018](#)) or both. As a result, international diversification has the potential to reduce a real estate firm's efficiency in generating operating earnings.

Given the limited scope of the existing geographical diversification literature, which primarily focuses on domestic diversification, and the scarcity of research examining the impact of geographical diversification on operating efficiency, particularly with regard to the potential disparities between domestic and international diversification, it becomes salient to conduct further investigations. In this study, we aim to develop an understanding of how international diversification influences a real estate firm's value and operating efficiency.

Empirical strategy and sample data

To investigate the net effect of international diversification on a firm's value and, furthermore, its operating efficiency, we adopt the following empirical setting.

We construct our sample by focusing on European real estate firms. The study of the European context provides two main advantages. First, European real estate firms are likely to diversify across countries to achieve geographical diversification (e.g. [Falkenbach, 2010](#); [Worzala and Newell, 1997](#)) more than for example US firms that have an almost continent-wide country to geographically diversify across. Even though European countries have integrated in some forms (e.g. EU, EMU), they still maintain their language, culture, legislation, and sometimes, local currency. Accordingly, understanding international diversification for European real estate firms can be more relevant and important. Second, these firms typically adhere to fair value accounting practices (for more details, see [Muller *et al.*, 2011](#)). Therefore, the ratios we calculate based on the total book value of assets are expected to provide reliable representations of the market value of the assets. We specifically sample firms listed in the FTSE EPRA/NAREIT Developed Europe Index. Listing in this index demonstrates the firm's commitment to transparency while also ensuring its ability to maintain sufficient liquidity and public ownership. Moreover, the selected firms primarily engage in real estate activities, aligning with the focus of our research.

To gather the necessary data for our study, we utilize S&P Capital IQ. We collect both portfolio-level and firm-level information. At the portfolio level, we observe the number of properties held by each firm and the countries in which these properties are located. Additionally, we obtain the acquisition and sale dates of properties, which allow us to determine the portfolio structure and measure the level of diversification of each firm in a given year. To ensure the accuracy and quality of our diversification measure, we only include firms for which at least 90% of their properties' acquisition and sale dates can be identified within a specific year, as in [Demirci et al. \(2020\)](#) [2].

We measure diversification using the Herfindahl-Hirschman Index (HHI), which is widely utilized in the real estate literature (e.g. [Hartzell et al., 2014](#); [Demirci et al., 2020](#)) [3]. The HHI is a concentration measure. In order to capture the level of diversification, we take the negative of the HHI (International diversification). The extent of diversification across countries is quantified using [Equation \(1\)](#), where w_{lft} is the weight of country l in the portfolio of firm f at time t , in which the number of properties is used for weighting [4]. As secondary measures of diversification, we count the total number of countries that constitute the real estate portfolio of a firm (Number of countries) as well as construct a binary variable that indicates whether a firm owns properties outside its country of domicile (Cross-border investment).

$$\text{International diversification } (-HHI)_{ft} = - \sum_{l=1}^L (w_{lft})^2, l = n \quad (1)$$

$$w_{lft} = \frac{\text{Total number of properties in country } l_{ft}}{\text{Total number of properties}_{ft}}$$

We measure firm value using Tobin's Q, as suggested by [Lang \(1994\)](#) and also commonly used in the real estate literature (e.g. [Hartzell et al., 2014](#); [Feng et al., 2021](#)). Tobin's Q is the ratio of the market value of common equity plus the total assets minus the book value of common equity, scaled by the total assets. This measure indicates how the market values the total assets of a firm relative to its book value (relative firm value). To assess the association between international diversification and firm value, we regress Tobin's Q on the diversification measure, in a panel fixed effects regression model [5], adding a set of control variables. The regression model is specified by [Equation \(2\)](#). We control for size (the natural logarithm of total market capitalization), leverage (the ratio of book value of debt to total assets), and the total number of properties in the portfolio. Additionally, we add a dummy variable that indicates whether the firm is a REIT. In the European listed real estate markets, there are real estate operating companies (REOCs) as well as REITs, contrary to the US market, in which REITs are predominant. REIT status can impact a firm's investment strategy and its cash flow distribution. We control for several fixed effects. We add year-fixed effects to control for market cycles, as well as firm-country and property-country fixed effects to control for country-specific risk premia (e.g. [Edelstein et al., 2011](#)) and property markets of different betas (e.g. [Zhu and Lizieri, 2022](#)). Year-fixed effects indicate the fiscal year for which the data is reported. Firm-country fixed effects indicate the country in which the firm is incorporated, while property-country fixed effects indicate the country in which the largest number of properties are located for a given firm in a given year, as in [Demirci et al. \(2020\)](#). In an alternative specification, we also add property-type yearly fixed effects. These are dummy variables that indicate the property type (out of eight property types, namely, apartment, health care, hotel, industrial, office, retail, self-storage, and "others") that represents the largest share in the firm's portfolio for a given year, interacted with a year indicator. Since an internationally diversified firm can focus on certain property types, this specification will allow us to control for such a property-type focus, with its time-varying growth opportunities [6]. We acknowledge that currency risk is involved in international

diversification and thus relevant to our empirical strategy (e.g. Worzala, 1995), but unfortunately we cannot observe the firms' currency hedging strategy. However, we expect our year-, property-country- and firm-country-fixed effects to partially cater to the currency effects [7].

In all our specifications, we cluster the standard errors at the firm level to account for the heteroscedasticity of the error term and the possible serial correlation between observations of the same firm. In addition, all continuous explanatory regressors are standardized to have a mean of zero and unit variance. These standardized variables are perfectly correlated with their raw counterparts but will facilitate a straightforward comparison across variables. The interpretation of the coefficient estimates is now the predicted change in the dependent variable per one standard deviation change in the continuous explanatory variable.

$$\begin{aligned} \text{Tobin's } Q_{it} = & \beta_0 + \beta_1 \text{International diversification measure}_{it} + \sum \beta_2 \text{controls}_{it} \\ & + \sum \text{fixed effects} + \varepsilon_{it} \end{aligned} \quad (2)$$

To examine the impact of international diversification on operating efficiency, we use Equation (3) as our regression model. This equation retains the same independent variables as Equation (2) but includes a dependent variable representing a measure of operating efficiency.

We first examine the correlation between international diversification and the overall operating efficiency measure. Operating efficiency is measured via the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA), scaled by the total assets (assets). This ratio (EBITDA/assets) provides an assessment of a firm's efficiency in generating operating earnings from its assets.

We then delve deeper into the components of operating efficiency by examining the efficiency in generating rental income and capital gains, which are the main sources of operating earnings for real estate firms. The efficiency in generating rental income is measured via the ratio of rental net operating income to the total assets (rental income/assets). We then break down rental income into rental revenue (rental revenue) and rental operating expenses (rental expenses), both scaled by the total assets. To assess efficiency in generating capital gains, we calculate the ratio of the sum of net gains from property valuations and net profits from property disposals to total assets (capital gains/assets). Additionally, we analyze these capital gains separately by distinguishing between unrealized capital gains from property re-valuations (net valuation gains) and realized capital gains from property disposals (net disposal profits).

By examining these individual components, we can assess whether the cumulative effects of diversification result in an overall enhancement or counterbalance in terms of generating rental income and capital gains. This analysis allows us to gain a better understanding of how diversification impacts operating efficiency.

$$\begin{aligned} \text{Operating efficiency}_{it} = & \beta_0 + \beta_1 \text{International diversification measure}_{it} + \sum \beta_2 \text{controls}_{it} \\ & + \sum \text{fixed effects} + \varepsilon_{it} \end{aligned} \quad (3)$$

Summary statistics

Our sample [8] comprises 573 annual observations over the 2002–2021 period. Table 1 presents the summary statistics. The mean level of diversification, measured by –HHI, is –0.81 (–HHI is bounded by 0, perfectly diversified, and –1, perfectly concentrated). The

	<i>N</i>	Mean	<i>SD</i>	p25	p75
International diversification	573	−0.814	0.273	−1	−0.607
Number of countries	573	3.094	3.598	1	4
Cross-border investment	573	0.499	0.5	0	1
Tobin's <i>Q</i>	573	0.929	0.149	0.852	1.003
EBITDA/assets	573	0.072	0.065	0.044	0.1
Rental income/assets	573	0.05	0.017	0.039	0.059
Rental revenue/assets	573	0.065	0.023	0.049	0.078
Rental expenses/assets	573	0.015	0.011	0.006	0.02
Capital gains/assets	573	0.024	0.058	0	0.05
Net valuation gains/assets	573	0.022	0.057	0	0.047
Net disposal profits/assets	573	0.002	0.007	0	0.003
Size (\$ billion)	573	4.07	4.396	1.559	4.312
Leverage	573	0.407	0.126	0.339	0.483
Number of properties	573	141.571	148.621	43	183
REIT	573	0.562	0.497	0	1

Note(s): This table presents the summary statistics for annual observations of European-listed real estate firms from 2002 to 2021. *International diversification* is the diversification across countries, measured by the negative of the Herfindahl-Hirschman Index (−HHI). *Number of countries* is a discrete variable that indicates the number of countries that constitute the property portfolio of a firm. *Cross-border investment* is a binary variable that takes the value of 1 if the firm owns properties outside its country of domicile and 0 otherwise. *Tobin's Q* is the ratio of the market value of common equity plus the total assets minus the book value of common equity to total assets, as of the end of the fiscal year. *EBITDA/assets* is the ratio of earnings before interest, taxes, depreciation and amortization to prior fiscal year's total assets. *Rental income/assets* is the ratio of net rental operating income to prior fiscal year's total assets. *Rental revenue/assets* is the ratio of the rental revenue to prior fiscal year's total assets. *Rental expenses/assets* is the ratio of rental operating expenses to prior fiscal year's total assets. *Capital gains/assets* is the ratio of the sum of net gains from property valuations and net profits from property disposals to prior fiscal year's total assets. *Net valuation gains/assets* is the ratio of net gains from property valuations to prior fiscal year's total assets. *Net disposal profits/assets* is the ratio of net profits from property disposals to prior fiscal year's total assets. *Size* is the total market capitalization. *Leverage* is the ratio of the book value of debt to total assets. *Number of properties* is the total number of properties in a firm's portfolio. *REIT* is an indicator variable that takes the value of 1 if the firm has REIT status and 0 otherwise

Source(s): Authors' own creation

Table 1.
Summary statistics

average firm in our sample diversifies across three countries, and approximately 50% of the observations belong to internationally diversified firms.

In terms of firm performance, the mean Tobin's *Q* ratio is 0.93, and EBITDA/assets is 7.2%. The average firm generates a net rental operating income of 5.0%, which is the net of 6.5% rental revenue and 1.5% rental expenses. Additionally, the average firm generates 2.4% in capital gains, with 2.2% attributed to net valuation gains and 0.2% to net disposal profits. The mean market capitalization (*Size*) of the firms in our sample is USD 4.1 (EUR 3.7) billion, with an average number of 141 properties in their portfolio and a leverage ratio of 40%. 56% of the firms have REIT status [Table 1 near here].

Results

International diversification and firm value

We begin by examining the impact of international diversification on firm value. The results are presented in Table 2. In Column (1), we regress *Tobin's Q* on our measure of diversification based on −HHI (*International diversification*), adding the control variables. The results indicate a statistically significant (at the 1% level) negative association between *International diversification* and *Tobin's Q*. On average, a one-standard-deviation increase in

Dependent variable: Tobin's Q	Firm value and operating efficiency			
	Negative of Herfindahl-Hirschman Index		Alternative measures of diversification	
	(1)	(2)	(3)	(4)
International diversification	−0.077*** (−2.74)	−0.082** (−2.70)	−0.018* (−1.76)	
Number of countries				−0.053* (2.02)
Cross-border investment				0.010 (0.75)
Size	0.031** (2.46)	0.034*** (3.06)	0.030*** (2.87)	0.033** (2.39)
Leverage	0.025** (2.28)	0.031** (2.58)	0.037*** (3.28)	0.010 (1.02)
Number of properties	−0.006 (−0.37)	0.003 (0.32)	0.007 (0.66)	0.031 (0.49)
REIT	0.043 (1.00)	0.043 (0.70)	0.072 (1.22)	0.879*** (23.17)
Constant	0.905*** (43.49)	0.901*** (28.12)	0.940*** (18.59)	
Ppty-type Yearly FE	No	Yes	Yes	Yes
Ppty-country FE	Yes	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	573	551	551	551
Adjusted R-squared	0.264	0.367	0.352	0.297

Note(s): This table reports the results of the estimations of Equation (2). The estimations are conducted using panel fixed effects regressions. All variables are as defined in Table 1 and have been standardized to have means of zero and unit variance. *Ppty-Type Yearly FE* is a set of dummy variables that indicate the property type (out of eight property types, namely, apartment, health care, hotel, industrial, office, retail, self-storage and “others”) representing the largest number of properties in a firm’s portfolio at a given year, interacted with a year indicator. *Ppty-country FE* is a set of dummy variables that indicate the country with the largest number of properties in a firm’s portfolio in a given year. *Firm-country FE* is a set of dummy variables that indicate the country in which the firm is incorporated. *Year FE* is a set of dummy variables that indicate the fiscal year of the observation. The *t*-statistics for each coefficient are in parentheses, where standard errors have been corrected for clustering within firms over time. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source(s): Authors’ own creation

Table 2.
International
diversification and
firm value

International diversification is associated with a 7.7% reduction in *Tobin's Q*, all else equal. The effect is also economically significant. All else equal, a one-standard-deviation increase in the level of diversification translates to nearly USD 337 (EUR 309) million loss in market value for the average firm in our sample. The coefficients on our control variables suggest that the relative firm values are increasing in size and leverage which is consistent with economies of scale and implies efficiency in using debt. They also suggest that the number of properties and REIT status *per se* are not significantly correlated with the relative firm value, after controlling for the size and leverage.

To address the possible confounding effect between international diversification and property-type focus, we include property-type yearly fixed effects in Column (2) [9]. The re-estimated results confirm the robustness of the negative association between *International diversification* and *Tobin's Q*, which remains statistically significant at the 5% level. The findings suggest that a one-standard-deviation increase in *International diversification* leads, on average, to an 8.2% reduction in *Tobin's Q*. These results highlight the potential negative impact of international diversification on firm value, even after accounting for property-type focus [10], [11].

To examine whether our results are sensitive to the measure of diversification, we examine the impact of diversification using alternative measures: *Number of countries* and *Cross-border investment*. The results are presented in Columns (3) and (4). In Column (3), we regress *Tobin's Q* on *Number of countries* while controlling for the same set of variables and property-type yearly fixed effects. The findings align with our previous results, indicating

that international diversification is associated with a reduction in firm value. Specifically, expanding to one additional country is, on average, associated with a 1.8% decrease in Tobin's Q. In Column (4), we regress *Tobin's Q* on *Cross-border investment*, which captures whether a firm owns properties outside its country of domicile. The results demonstrate that *Cross-border investment* also exerts a negative impact on *Tobin's Q*. On average, owning properties outside the country of domicile decreases Tobin's Q by 5.3%. These results further support our earlier finding that international diversification has a reducing effect on firm value, regardless of the measure of diversification.

Thus, our results consistently demonstrate that expanding into multiple countries or engaging in cross-border investment negatively affects firm value. This empirical evidence suggests that the potential benefits of geographical diversification are, on average, outweighed by the value-reducing effects when a real estate firm diversifies its portfolio internationally. The effect of international diversification on firm value is thus similar to that of domestic diversification (within the USA) (e.g. [Feng et al., 2021](#); [Hartzell et al., 2014](#)) [12]. These results provide further confirmation of the long-standing literature that empirically shows that diversification has the potential to decrease firm value (see, e.g. [Martin and Sayrak, 2003](#); [Erdorf et al., 2013](#)) [Table 2 near here].

International diversification and operating efficiency

One potential reason for the potential value reduction observed for internationally diversified firms is a decrease in operating efficiency resulting from diversification. In other words, diversification may lead to a decrease in a firm's ability to generate operating earnings from its assets. To examine this relationship, we investigate the association between international diversification and operating efficiency in Table 3. For brevity, we present the results using our main measure of diversification (HHI) while controlling for property-type yearly fixed effects. Although not reported, we also conducted estimations using our secondary measures of diversification and obtained similar findings.

We start by regressing *International diversification* on *EBITDA/assets* in Column (1). The results reveal a statistically significant (at the 1% level) negative association between *International diversification* and *EBITDA/assets*. A one-standard-deviation increase in diversification, on average, reduces *EBITDA/assets* by 2.1% [13]. This result suggests that the percentage of earnings before interests, taxes, depreciation and amortization can go down from 7.2% to 5.1% (nearly a 30% reduction) for the average firm in our sample for a one-standard-deviation increase in diversification. Thus, the results indicate that international diversification potentially reduces operating efficiency. This result is consistent with the existing literature that highlights the potential for diversification to lead to valuation errors and resource misallocation ([Ozbas and Scharfstein, 2010](#); [Rajan et al., 2000](#); [Scharfstein and Stein, 2000](#)). Additionally, it aligns with the findings of [Capozza and Seguin \(1999\)](#), who demonstrate that geographical diversification can increase operating expenses. Furthermore, the results support the literature that suggests that an increased distance between the firm and its assets, an expected consequence of international diversification, can result in reduced rental revenue ([Eichholtz et al., 2016](#)) or higher costs in property acquisitions ([Ling et al., 2018](#)). The coefficients on our control variables suggest that larger firms on average have higher operating efficiency, which is again consistent with economies of scale. They, also show that leverage, number of properties and REIT status are not statistically significantly correlated with the operating efficiency of the firm.

To obtain a deeper understanding of the relationship between international diversification and operating efficiency, we analyze the association between international diversification and efficiency in generating rental income (Rental income/assets). Additionally, we examine the relationship between international diversification and the components of rental income:

	EBITDA /assets (1)	Rental income /assets (2)	Rental revenue /assets (3)	Rental expenses /assets (4)	Capital gains /assets (5)	Net valuation gains /assets (6)	Net disposal profits /assets (7)
International diversification Size	-0.021*** (-3.89) 0.020*** (3.73)	-0.002 (-1.01) -0.003** (-2.48)	-0.004 (-1.44) -0.005*** (-2.73)	-0.002 (-1.10) -0.001 (-1.21)	-0.014** (-2.47) 0.020*** (4.12)	-0.012** (-2.25) 0.020*** (4.17)	-0.002*** (-2.99) 0.000 (0.40)
Leverage	-0.001 (-0.19)	0.004*** (3.03)	0.006*** (3.75)	0.002*** (3.04)	-0.003 (-0.56)	-0.004 (-0.69)	0.001* (1.76)
Number of properties	-0.008 (-1.44)	0.000 (0.01)	-0.001 (-0.60)	-0.001 (-1.31)	-0.008 (-1.52)	-0.009* (-1.69)	0.001 (1.67)
REIT	0.005 (0.56)	0.017*** (4.53)	0.023*** (5.46)	0.006*** (3.39)	-0.003 (-0.28)	-0.002 (-0.16)	-0.001 (-1.21)
Constant	0.068*** (16.09)	0.042*** (18.81)	0.053*** (22.77)	0.012*** (14.03)	0.025*** (4.42)	0.023*** (4.28)	0.003*** (4.52)
Ppty-type yearly FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ppty-country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	551	551	551	551	551	551	551
Adjusted R-squared	0.346	0.550	0.630	0.593	0.386	0.390	0.077

Note(s): This table reports the results of the estimations of Equation (3). The estimations are conducted using panel fixed effects regressions. All variables are as defined in Table 1 and have been standardized to have means of zero and unit variance. *Ppty-type yearly FE* is a set of dummy variables that indicate the property type (out of eight property types, namely, apartment, health care, hotel, industrial office, retail, self-storage and "others") representing the largest number of properties in a firm's portfolio for a given year, interacted with a year indicator. *Ppty-country FE* is a set of dummy variables that indicate the country with the largest number of properties in a firm's portfolio in a given year. *Firm-country FE* is a set of dummy variables that indicate the country in which the firm is incorporated. *Year FE* is a set of dummy variables that indicate the fiscal year of the observation. The *t*-statistics for each coefficient are in parentheses, where standard errors have been corrected for clustering within firms over time. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source(s): Authors' own creation

Table 3.
International
diversification and
operating efficiency

rental revenue (Rental revenue/assets) and rental expenses (Rental expenses/assets). The results are presented in Columns (2) to (4), respectively. The results reveal that the association of *International diversification* with *Rental income/assets*, *Rental revenue/assets* and *Rental expenses/assets* is not statistically significant. These results suggest that when it comes to efficiency in generating rental income, internationally diversified real estate firms are on par with their domestic counterparts. In other words, there is no significant difference in the efficiency of rental income generation between firms that operate solely within their domestic market and those that have expanded internationally. The results also show that the efficiency in generating rental income is decreasing in size and increasing in leverage and REIT status. REITs are often required to focus on rental-generating properties, explaining the positive association between the REIT status and higher rental income generation. One possible explanation for the positive association between leverage and rental income generation is that debt mainly finances properties that aim to generate rental income, all else equal. Another explanation can be that highly leveraged firms are more operationally efficient due to higher monitoring from debt holders.

We further investigate the association between international diversification and efficiency in generating capital gains (Capital gains/assets) as well as its individual components: Net valuation gains/assets and Net disposal profits/assets. The results are presented in Columns (5) to (7), respectively. The results demonstrate that *International diversification* is significantly correlated with a reduction in *Capital gains/assets*, as indicated in Column (5). On average, a one-standard-deviation increase in *International diversification* is associated with a 1.4% decrease in *Capital gains/assets*, thus for our average firm the capital gains can go down from 2.4% to only 1% [14]. Additionally, *International diversification* is negatively associated with *Net valuation gains/assets* and *Net disposal profits/assets*. These associations are statistically significant at the 5% and 1% levels, respectively, as presented in Columns (6) and (7). A one-standard-deviation increase in *International diversification*, on average, leads to a 1.2% reduction in *Net valuation gains/assets* and a 0.2% decrease in *Net disposal profits/assets*. Again, the capital gains relative to assets are increasing in size.

These results indicate that internationally diversified firms exhibit lower efficiency in generating capital gains. This inefficiency may be attributed to valuation errors and suboptimal investment decisions (Capozza and Seguin, 1999; Ozbas and Scharfstein, 2010; Rajan *et al.*, 2000; Scharfstein and Stein, 2000), a consistent price premium paid to acquire distant properties (Ling *et al.*, 2018), or both. The results suggest that both factors can possibly contribute to a reduction in capital gains. Consequently, they highlight capital gains as a channel through which international diversification can diminish operating efficiency and ultimately reduce firm value, all else being equal [Table 3 near here].

Conclusion

European real estate firms often engage in international diversification. This study focuses on analyzing the influence of international diversification on the value of European-listed real estate firms. Furthermore, it explores the impact of international diversification on the operating efficiency of these firms. We distinguish between efficiency in generating rental income and capital gains, which are the primary sources of operating earnings for real estate firms.

Based on our results, we find consistent evidence that international diversification has a negative impact on the firm value (as measured by Tobin's Q) of European-listed real estate firms. We observe this after controlling for various firm characteristics and fixed effects. This negative association holds true regardless of whether the measure used to capture diversification is the negative of the Herfindahl-Hirschman Index (–HHI), the number of countries where properties are located, or a dummy variable indicating ownership of

properties outside the firm's country of domicile. For example, our results indicate that a one-standard-deviation increase in diversification (as measured by $-HHI$) is significantly associated with a 7.7% decrease in the relative firm value.

In addition to the negative impact on firm value, our findings also suggest that international diversification adversely affects the operating efficiency of European-listed real estate firms. Specifically, we observe a decrease in the efficiency of generating earnings before interest, taxes, depreciation and amortization relative to total assets (EBITDA/assets). Our analysis indicates that on average, a one-standard-deviation increase in diversification is associated with a 2.1% reduction in EBITDA/assets.

Furthermore, our investigation reveals that this decrease in operating efficiency is primarily driven by weaker efficiency in generating capital gains rather than rental income. International diversification negatively impacts both components of capital gains: unrealized capital gains resulting from property valuation and realized capital gains from property disposals.

Accordingly, international diversification or expansion into multiple countries can potentially lower the overall value of European real estate firms. It can impair a firm's operating efficiency and hamper its ability to generate capital gains. These findings suggest for managers that, in general, geographical focus can be a better investment strategy with respect to operating efficiency and the relative firm value, which in turn can increase the equity value of the shareholders. However, it is worth mentioning that these findings do not particularly imply that every real estate firm that diversifies internationally can lose value and suffer from operating inefficiency. We are only observing the mean effect. The effect of international diversification can depend on the firm's ability to mitigate the negative implications while maintaining the value-increasing effects. For example, [Hartzell et al. \(2014\)](#) find that highly monitored firms do not suffer from value reduction as they can mitigate agency risks of geographical diversification. Also, [Feng et al. \(2021\)](#) find that the level of transparency can moderate the effect of geographical diversification on operating efficiency. In addition, it may be expected that firms that can acquire the local knowledge of the markets across which they diversify through local offices or agents can experience a different effect. Unfortunately, we could not obtain consistent and timely data to investigate these conditional effects.

Also, the results do not imply that operating efficiency is the only empirical channel through which international diversification can affect the firm value, other channels can exist. Recent real estate literature shows that geographical focus can reduce finance costs (e.g. [Demirci et al., 2020](#); [Ibrahim and Falkenbach, 2023](#)) which in turn can enhance the firm value, *ceteris paribus*.

This study, however, contributes to the existing literature on the relationship between geographical diversification and firm value. While previous research has primarily focused on domestic diversification, this paper extends the literature by investigating the effects of international diversification for European real estate firms. As European real estate firms tend to diversify across countries, the study empirically presents the effect of cross-border diversification on the firm value and operating performance. The findings of this study underline for the real estate market participant, the local nature of real estate investment (e.g. [Van Nieuwerburgh and Veldkamp, 2009](#)) and for shareholders and managers the potential impact of agency and information costs (e.g. [Hartzell et al., 2014](#)), which may offset the perceived benefits of geographical diversification.

Notes

1. There is literature, however, that compared the stock return performance of international property companies with local property companies using mean-variance analysis. For example, [Eichholtz](#)

et al. (2001) find that international property companies underperform local property companies for the period 1984–1995. However, *Eichholtz et al.* (2011) find this underperformance to disappear for later periods (2000–2007) due to an increase in global real estate market transparency. Furthermore, an early literature review by *Sirmans and Worzala* (2003) show some evidence that an international direct real estate portfolio can outperform a domestic one.

2. The authors recognize that this rule could introduce a selection bias, however the authors expect it to be exogenous to the estimation model. To alleviate such a concern, the authors re-estimate the results for firms with at least 95% and 85% of their property's acquisition and sale dates can be identified and the authors obtain similar findings.
3. To ensure that the findings are not driven by the choice of the diversification measure and its possible limitations (e.g. *Jacquemin and Berry*, 1979), the authors also construct an entropy index as another measure of diversification. In unreported results, the authors obtain qualitatively similar results using the entropy index.
4. The authors acknowledge that while property count allows the authors to build the sample, it does not capture relative value differences of properties within and between international markets. Thus, to the extent that valuations differ in the geographical cross-section of property portfolios, the use of property count does not perfectly reflect the relative weights of allocation. To ensure the robustness of the findings, the authors, hence, also use secondary measures of diversification that would not be affected by the weighing effect.
5. The authors rely on Hausman test to confirm that Fixed-Effects model is more appropriate than Random-Effects model. For all the models' estimations, the authors can reject the null hypothesis (that Random-effect is more appropriate) at the 1% level.
6. International diversification can also be correlated with the firm's property-type diversification strategy, if so, the measure of international diversification can be confounded by property-type diversification. To account for this possibility, the authors, in unreported estimations, include property-type diversification (measured by the negative of the HHI) as a control variable. This does not change the findings.
7. The authors estimate the model using US dollars, but the authors, also, re-estimate it using Euros, and local currencies and obtain similar findings.
8. As firms enter and leave the market over time, the sample is an unbalanced panel. Hence also, the authors do not expect the results to significantly suffer from survivorship bias.
9. The sample is reduced regarding this specification due to the existence of some singleton observations.
10. *Feng et al.* (2021) find the value-impact of regional diversification to vary for firms that focus on either apartment, industrial, office or retail. Thus, in an unreported result, the authors restricted the sample to firms that focus on these types and re-estimated the model. The authors still found that international diversification was significantly negatively associated with firm value.
11. The authors also check whether the results differ across time. *Eichholtz et al.* (2011) argue that over time, real estate institutions become more transparent, thereby alleviating the impact of the informational disadvantage on international investors. Thus, the authors re-estimate the results for the first and second halves of the sample period (2002–2011 and 2012 onward) separately. The authors find the same value-reducing effect of international diversification for the two periods.
12. The authors acknowledge that these prior studies focused on REITs, thus the authors restricted the sample to include only REITs and re-estimate the model. The authors find similar results; international diversification is negatively associated with the REIT's value.
13. In the literature related to the US real estate market, operating efficiency is commonly measured by funds from operations to total assets (FFO/assets) (see, e.g. *Feng et al.*, 2021). European real estate firms do not typically report FFO. For comparability, the authors calculated FFO and re-estimated the results using FFO/assets instead of EBITDA/assets and found the same effect; international diversification reduced the ratio of FFO/assets.

14. The authors recognize that a firm that diversifies internationally could vary from a firm that focuses domestically in terms of the weight of investments it allocates to developing properties. This might, in turn, correlate with the capital gains realized by the firm. Accordingly, the authors re-estimate the effect of international diversification on capital gains after controlling for capital expenditure. However, the authors still find that international diversification is significantly negatively associated with capital gains.

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