Crowd funding REITs: a new asset class for the real estate industry?

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CROWD FUNDING REITS:
A NEW ASSET CLASS FOR THE REAL ESTATE INDUSTRY?

Abstract

Purpose
The paper aims to study the performance of crowdfunding REITs with respect to other equity
REITs in order to evaluate the differences in the risk-return profile and their usefulness for a
diversification strategy within the indirect real estate investments.

Design / Methodology / Approach
The paper considers the crowdfunding REITs incorporated in the United States after the
introduction of the Jumpstart Our Business Startups Act and evaluate their performance and risk
during the time period 2016-2018.
Performance achieved by crowdfunding REITs is compared with other equity REITs in order to
evaluate their usefulness for constructing an optimal portfolio strategy based on a standard mean
variance approach.

Findings
Results show that the performance of crowdfunding REITs is more stable over time with respect
to other equity REITs and the lack of correlation with other equity REITs may be exploited for
constructing a more efficient diversified portfolio of indirect real estate investments.

Practical implications
Crowdfunding REITs have different performance with respect to other equity REITs and, especially individual investors, may benefit from including this new investment opportunity in their portfolio.

Originality / Value
The paper is the first study on the performance of the crowdfunding REITs and, additionally, to evaluate their usefulness for a diversification strategy within the real estate sector.

1. Introduction

Fundraising for new investment projects has changed due to the innovations introduced by the availability of internet based financing solutions that allow increasing the number of investors that may support the development of business ideas. In the real estate industry, crowdfunding has started by exploring the opportunities of offering loans for real estate projects to borrowers that cannot easily access the standard lending market (Gibilaro and Mattarocci, 2018). The success of the peer-to-peer lending experience has boosted the interest into raising funds through equity crowdfunding in the real estate sector; in light of the average size of real estate investments and considering the limited number of accredited investors in the US market (Scarpfs, 2015), an enabling factor for the diffusion of equity crowdfunding has been the relaxing of regulatory investment constraints introduced with the Jumpstart Our Business Startups Act (hereinafter, JOBS act) (Schweizer and Zhou, 2017). The opportunity offered by the JOBS Act was explored by some players in the real estate industry to increase the number of small and unsophisticated investors (Vogel and Moll, 2014) by leveraging technological developments and federal regulation to maximize the return and giving investors direct access to a diversified real estate portfolio (Tran, 2018) contributing to the democratization of finance (Roig and Soriano, 2015) in the real estate sector through the conversion of properties in investment assets (Roig Hernando, 2017). Starting from the introduction of the JOBS Act (2012), the industry of the real estate equity crowdfunding has grown year-by-year with more than a double digit rate for the first four years, beating all the expectations of the role of new investment tool in the indirect real estate market (Morri and Ravetta, 2016) and deploying the features of a disruptive innovation with platforms acting like true market places for real estate capital (Montgomery, Squires and Syed, 2018).

Crowdfunding REITs (hereinafter, CW-REITs) have unique features both with respect to the crowdfunding industry and the REITs sector. Within the crowdfunding industry, the size of each investment in the equity real estate is bigger than the average exposure for each other project financed in order to be profitable (Mueller, 1998), the information asymmetry plays an important
role (An, Hardin and Wu, 2012) and the time horizon necessary for payback the initial investment is higher (Chaundhry, Maheshwari and Webb, 2004). Among REITs, CW-REITs enlarge the spectrum of the types of potential investors in addition to high net worth individuals due to higher transparency and eradicated investment costs (Cohen, 2016) and, in light of the declining benefits of REITs to portfolio diversification after the Great Financial Crisis (Hass et al., 2013), they offer new opportunities (Hu, 2017). Nonetheless the relevant peculiarities of CW-REITs, limited empirical evidence is available on the comparison between such unique instruments of capital raising for the real estate sector with respect to other REITs and, additionally, the potential role in a diversification strategy of real estate portfolio has not been explored yet.

The paper analyses CW REITs in the US market in order to compare their performance and their investment strategy with those of other REITs to find out potential similarities and differences between the two types of indirect real estate investment opportunities. Results show that CW-REITs outperform other types of real estate investment vehicles and their performance is negatively correlated with some REITs’ sectors. The diversification advantages of including CW REITs in a portfolio is clearly independent with respect to the risk attitude of the investor but also a solo investment portfolio on CW-REITs offers a better risk return trade-off with respect to other solo portfolios.

The paper contribution covers different streams of existing literature. Firstly, the analysis on the performance of REITs provides new knowledge on the topic of returns of equity crowdfunding investments that has been little explored and, moreover, it allows such analysis even though CW-REITs are not listed and without performing a SEO (e.g. Vismara and Signori, 2016). Secondly, the paper extends the knowledge on the financial performance in the REITs sector (Chan, Hendershott and Sanders, 1990) by contributing to the literature on diversification of portfolios of REITs (Chaundry, Maheshwari and Webb, 2004) by identifying new opportunities, despite the pool of available projects for the investments of CW-REITs is still scarce (Morri, 2016). Lastly, the paper contributes to the literature on the democratization of finance (Roig and Soriano, 2015) in the real estate sector through the conversion of properties in investment assets (Roig Hernando, 2017).

The paper reviews the literature on the role and risks related to crowdfunding opportunities in the real estate sector (section 2) and presents an empirical analysis on the performance achieved by
comparing CW-REITs with other equity REITs (section 3). The last section summarizes conclusions and policy implication for the real estate industry.

2. Literature review

Equity crowdfunding is a solution, currently available in different countries, that could be exploited for financing risky projects by selling equity type securities to an high number of different investors (Hornuf and Schwienbacher, 2018), even though not all the projects have a risk and return profile that could be acceptable for the crowd. In the open market solicitation, the more successful capital raising is related to firms that are not in the seed stage and so have already developed the product or the service they will offer in the market (Mamonov and Malaga, 2018).

Literature has shown that the performance of equity crowdfunded firms is different with respect to those that raise new money by using the standard financial markets (Walthhoff-Borm, Vanacker and Collewaert, 2018). The remuneration offered to subscribers has to be proportional to the risk assumed because crowd-investors will become shareholder of a new firm and are fully exposed to its default risk (Tomczak and Brem, 2013). Due to the high risk associated to the equity exposure in such type of investments, the number of subscribers in a crowdfunding campaign is significantly affected by the selling price and riskier projects are those that may be fully sold only at a high discount (Ralcheva and Rooenboom, 2016).

Target investors in a crowdfunding campaign may be both institutional and retail investors and the type of assets selected for the investment strategy has to be selected in order to satisfy the needs of investors with different financial skills. The lower is the average experience of the investor the higher has to be the attention in selecting investment opportunities and disclosing the asset characteristics for increasing the probability of success of the capital raising (Ahlers et al., 2015). Empirical evidence on the expertise and the financial skills of equity crowdfunding investors shows that, on average, they have already experience in investing in the financial markets and they have already entrepreneurial and business skills in the same sector in which they invest (Vismara, 2016).

The average investment size is lower than the amount normally subscribed in similar capital raising solution due to the higher risk perceived for each euro invested in the crowdfunding opportunity and the higher expected advantages related to not concentrating the exposure in few projects.
financed (Shepard, 2019). For the same size of capital raising, the success of a crowdfunding campaign requires an higher number of subscribers with respect to the standard financial markets (Bellaflamme, Lambert and Schwienbacher, 2014).

Location matters in the crowdfunding campaigns because due to the high risk of the investment there is normally a higher interest of investing money in the new projects by individuals with respect to institutional investors that know directly the project and the headquarters of the firms. Even though crowdfunding contributes to a more geographically balanced allocation of resources (Garcia-Teruel, 2019), the distance from the financed entity seems to matter independently with respect to the skills and knowledge of investors and only international investors seems to be not interested by the location of the targets in a crowdfunding campaign (Guenther, Johan, and Schweizer, 2018). The main difference between crowdfunding campaigns and standard capital issuing is normally ascribed to the possibility to collect more equity investments from people not living in the main financial centers of the country due to the easier access to the trading platform (Vulkan, Astebro and Sierra, 2016).

Focusing on the real estate sector, real estate is the fastest growing crowdfunding segment worldwide accompanied by the expectation to reach 300 billion of dollars by 2025 (Valuates, 2019); the most important market is represented by the United States, today accounting for more than 12 billion of dollars showing a higher concentration of the operating platforms compared with other regions (Gruppo Bertoldi and Politecnico di Milano, 2019) due to aggregation trends indicating the entering of the maturity phase already (Shahrokhi and Parhizgari, 2019). On closer inspection, considered that the size of the REIT sector exceeds 1 trillion dollars in United States (Nareit, 2002), CW-REITs must still grow to reinforce the contribution to the overall sector. Even though in many countries the regulatory framework still represents a constraint for the development of crowdfunding (Pope, 2011), since the first solicitation of money from the crowd for the construction of the base of the Statue of Liberty in 1876 (Best and Neiss, 2014), the U.S. market of real estate crowdfunding experienced a strong development after the enactment of the JOBS Act aiming to promote the growth of start-up companies by facilitating the access to the capital markets (Audretsch et al., 2015). One of the main innovation introduced by the JOBS Act is related to lighter requirements for small capital issuing (up to 1 mln US$) through on-line platforms and the possibility for small investors to subscribe equity financial instrument proportionally to their wealth and income (Stemler, 2013). A further regulatory relaxing has been
introduced with the Regulation A+, exempting the registration with SEC for offering not exceeding 50 million of US dollars yearly (Knyazeva, 2016), and Rule 106, allowing issuers to raise capital without any limit by accredited investors (Shahrokhi and Parhizgari, 2019). The most common scheme in U.S. real estate crowdfunding is the equity one, involving usually three players: the promoter of the project to acquire or renovate a building; the investing crowd; the platform collecting the money from the crowd publishing the developer’s project and giving mandatory information to investors including checking the viability of the project (Baker, 2016). By adopting the platform the role of asset manager to collect and canalize capitals (IPF, 2016), CW-REITs emerged from the empowerment of the indirect real estate investment model by information technology like online, public, non-traded REITs gathering the projects and sold directly to investors receiving shares (Cinelli, 2020). With respect to other REITs, CW-REITs assume the following distinctive features: lower transaction fees due to the web-based distribution and irrelevant upfront and agent fees; improved market volatility through the economic cycle due to the possibility for investors to compare the market sentiment with the official values of chartered surveyors; a new business model based on the autonomy of investors in choosing the investment determining a remarkable increase of distribution efficiency; higher transparency allowing the investors to act timely due to the smaller size of real estate portfolios involving a less complex evaluation process (Hu, 2017). More than the opportunities introduced by CW-REITs, there are some drawbacks with respect to other REITs referred to: higher illiquidity, due to the investment of capital in properties exclusively (Baum, 2017) while other REITs can hold other publicly traded assets; early redemption of shares before the maturity established by the crowdfunding platform is conditioned upon acceptance and, additionally, impaired by penalties (Baum, 2020).

The most disparate properties are object to CW-REITs. The only condition is that properties must provide a rent from the tenants, that may be private citizens as well as commercial companies or other institutions: looking at the geographical distribution of investments, CW-REITs result concentrated by macro-areas and the prevailing type of the property is represented by Multifamily properties. The type of the property affects investment risk (Schweizer and Zhou, 2017) and the selection of the projects proposed to the crowd and their integration in a specific fund are the result of a thoughtful analysis according to the following investment strategies: income strategy based

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1 It reflects the segmentation of the CW-REITs offered by Fundraise, the most important player of the U.S. market, at the end of 2018 (https://fundrise.com/offerings?cta=Diversification).
on pursuing cash flows; growth strategy, based on the appreciation of the properties; regional strategy, not covering the whole national territory, rather the projects are selected according to their location (Shahrokhi and Parhizgari, 2019).

Following the regulatory classification, investors in CW-REITs are represented by not accredited investors and, upon subjective decision of the platform to extend the investor base, non-accredited investors. Even though the web based investment allows to overcome geographical borders, local investors can unlocks opportunities in areas that otherwise would be out of reach. Indeed, the active interest in a project by locals may help rallying supplementary local support, getting a better knowledge of the area, improving the project with suggestions and/or additional contacts (Vogel, 2014). As a matter of fact, distance is not found to affect investments, while what matters is the social location, because the more a crowdfunder’s area of living is socially friendly, the larger is the amount invested and, additionally, investments are sensitive to the gender and the age of the investor (Hervè et al., 2016).

Looking at the performance, CW-REITs allow to assess it even if they are not listed and they do not perform a SEO (e.g. Vismara and Signori, 2016) because it can be measured by considering the Net Asset Value disclosed quarterly and the dividend paid to the shareholders. In light of the exponential progress of real estate crowdfunding, the financial return is expected higher compared with other indirect real estate investment solutions (Shahrokhi and Parhizgari, 2019) and even though the risk of the real estate crowdfunding is perceived as high (Lowies, Viljonen and McGreal, 2017), the percentage of failures in the equity real estate projects is significantly lower than other sectors (Massolution, 2015).

Surprisingly, the comparison of the performance of the crowdfunding equity investments with similar standard financial instruments is still limited due to the difference in the liquidity and the price definition in a crowdfunding campaign. Available empirical evidence supports the hypothesis that equity crowdfunding behaves similarly to stocks and every shock in the financial markets has an effect also on the ongoing crowdfunding campaigns (Hornus and Neuenkirch, 2017). The possibility to consider crowdfunding and equity investments substitutes is still controversial and results are significantly different on the basis of the time horizon and the sector considered.

3. Empirical analysis
3.1 Sample

In light of the flexibility of the issuing process consistent with the use of the amended regulation as a capital raising on-ramp (Knyazeva, 2016), the sample selected includes all the real estate investment trusts that applied for the regulation A+ with the Security Exchange Commission independently with respect to the incorporation date at the end of 2018 (Table 1).

[INSERT TABLE 1]

The market is still in its early stage because the older REIT was incorporated in 2015 and nowadays there are only 26 CW-REITs and the 46% of them has less than one year of history. The main solution adopted for raising new capital is web-based (18 of 26 CW-REITs) while there are still few players using brokers for identifying potential new investors.

The CW-REITs sample is compared with a representative set of Equity REITs listed in the US market selected among those that were listed from January 1st, 2016 to December 31st, 2018 and diversified on the basis of the incorporation date and the sector specialization. The final sample constructed is presented in the following table (Table 2).

[INSERT TABLE 2]

3.2 Methodology

CW-REITs are not listed on regulated markets and the analysis of the performance achieved by investors has to be analyzed by considering the reports disclosed on the basis of the SEC regulation. The database constructed collects all the data related to dividend payments and changes in the NAV on monthly basis and it allows to measure the performance of this new type of indirect real estate investment opportunity. The performance is computed as following:

\[ R_{it} = \frac{NAV_{it} - NAV_{it-1} + DIV_{it}}{NAV_{t-1}} \]  (1)
where the return is computed with monthly frequency by considering the growth of the NAV \( \frac{NAV_{it} - NAV_{it-1}}{NAV_{it-1}} \) and a proxy that measures the dividend yield for unlisted REITs \( \frac{DIV_{it}}{NAV_{it-1}} \). REITs’ data are used in order to construct an index by sector as weighted average of the returns of all REITs in the same sector. In formulas:

\[
IR_S^t = \sum_{i=1}^{n_S} \frac{MV_{it}}{MV_S^t} R_{it}
\]

where for each s-sector (Diversified, Residential, Health Care, Retail, Hotel & Resort, Specialized, Industrial, Office, and Crowdfunding) the index value is computed as value weighted average of the performance achieved using weights constructed on the basis of the relative market value of each REIT \( \frac{MV_{it}}{MV^t} \) with respect to all other \( n_S \) REITs of the same sector. The indices are analyzed in order to identify differences in the performance trend and the degree of correlation of the CW-REITs with respect to other types of investment opportunities.

The analysis of the role of CW-REITs in a standard portfolio diversification strategy is tested by using the approach proposed by the Market Portfolio Theory (Markowitz, 1952) for constructing yearly efficient frontiers for each of the four years considered (2015-2018). For the optimization procedure we follow the standard MPT approach and we apply the constraint of no short selling opportunities available. In formulas:

\[
R_{p,t} = \sum_{i=1}^{n_S} x_{it} IR_{it}
\]

\[
\sigma_{p,t}^2 = \sum_{i=1}^{n_S} \sum_{j=1}^{n_S} x_{it} x_{jt} \sigma(IR_{it}, IR_{jt})
\]

In order to study the degree of efficiency of CW-REITs respect to optimal investment portfolios, we compute the distance of all solo portfolios with respect to the efficient frontier and we pointed out the differences of the landmark portfolio with respect to all the other specialized portfolios.
The distance is defined as the minimum distance with respect to all the portfolios on the efficient frontier. In formulas:

\[
\text{Distance}_{st} = \min \left\{ \sqrt{(E(I_RS_{st}) - E(I_RS_{t}))^2 + (\sigma(I_RS_{st}) - \sigma(I_RS_{t}))^2} \right\}
\]

where, for each year \((t\) varies from 2015 to 2018\) and for each \(s\) REIT’s type, we compute 100 \((n)\) distance measures of the solo portfolios with respect to the efficient portfolios. The distance computed is a standard Euclidean measure that computes the square root of the square of the horizontal \((\sigma(I_RS_{st}) - \sigma(I_RS_{t}))\) and vertical \((E(I_RS_{st}) - E(I_RS_{t}))\) linear distances between the solo and the efficient portfolios.

In order to study the role of the CW-REITs in a diversification strategy, we consider also the composition of the portfolios on the efficient frontier and we evaluate the role of different REITs’ types on the basis of the risk-return profile of the efficient portfolios. Some summary statistics on the portfolio composition for different level of risk and return are presented for each year.

### 3.3 Results

Summary statistics on the average performance achieved by different types of REITs and the correlation matrix show significant differences of CW-REITs with respect to traditional.

A preliminary analysis, comparing the return achieved by different types of specialized real estate investment vehicles, it allows to identify some interesting differences in the return achieved by CW-REITs with respect to other traditional REIT (Table 3).

[INSERT TABLE 3]

On the three year time horizon (2016-2018), CW-REITs have always registered an average positive performance in each quarter and the rate of change quarter by quarter of the performance is the lowest with respect to any other REIT type. Looking at the overall performance for the full time horizon, their performance is on average below the market average and the standard deviation
is the lowest after the hotel & resort REITs. The results can be explained in light of the reduced size of the real estate projects due to the regulatory limitations to the maximum amount of the investment and to the need for sponsors to offer appealing returns to attract investors toward new financial instruments (Schweizer and Zhou, 2017), even though investors in CW-REITs do not select alternative investment platforms in anticipation of super-normal investment returns (Lowies, Whait, Viljonen and McGreal, 2017).

A correlation analysis of the return achieved over the three year time horizon shows some negative correlation scenarios that may be useful for diversification purposes for investors that want to invest in multiple types of REITs (Table 4).

Excluding specialized REITs, CW-REITs are always negative correlated with other type of types of REITs and the higher benefits related to diversification may be exploited by investors that are focused on health-care, retail, and residential REITs. CW-REITs are the asset class that is more characterized by negative correlation with other types or REITs and the only other alternatives (in the time period considered) to exploit the advantages of diversification are related to invest jointly in offices and hotel or in specialized and healthcare.

The existence of a negative correlation among different types of REITs offers the opportunity to exploit the advantages related to a within-asset diversification for investors interested to do not invest their money in only one type of asset (e.g. Seiler, Webb and Myer, 1999). The analysis of the diversification strategy shows that CW-REITs are frequently included in the efficient portfolios in order to achieve the optimal risk-return trade-off (Table 5).

Independently with respect to the year considered, the asset class that on average is more relevant in the low risk efficient portfolios are the CW-REITS while for the other sectors the average role will change more year by year. Moreover in a market characterized by low performance (2017), the role of the CW-REITs could be relevant also for riskier portfolios and none of the efficient portfolio could be constructed without investing in crowdfunding REITs.
Investment strategy focused only on the REITs available shows a different average distance with respect to efficient portfolios for different types of real estate investment vehicles (Table 6).

[INSERT TABLE 6]

Crowdfunding REITs are the solo investment opportunities that are nearer to the efficient frontier and results are consistent independently with respect to the year considered. The solo portfolios that have a similar capability to be near to the frontier are the Diversified, Office, and Industrial sectors, but their average minimum distance with respect to the efficient frontier is more than twenty times higher than the CW-REITs and it changes significantly year by year.

4. Conclusion

CW-REITs are a new solution for collecting resources for investing in the equity real estate industry by using the opportunities offered by the internet crowdfunding. Crowd-investors have different skills and expectations for investing in the real estate with respect to traditional investors but the new regulation introduced in countries, like US, is increasing the number of potential subscribers of the new security. CW-REITs are not traded in regulated market and they have normally a different investment strategy (investment size, location choices, etc…) with respect to traditional real estate investment vehicles that may affect the risk-return profile for the investors. Empirical evidence shows that the performance achieved by the new real estate investment vehicle is different with respect to traditional REITs and there are some diversification opportunities that could be exploited in a portfolio that combines CW-REITs and other traditional REITs. The role of the new asset class increases with the risk profile for the investor but a minimum investment in this asset class could be useful for low risk portfolio. Even solo portfolios that are focused only on CW-REITs may offer an almost efficient risk-return profile and investors that want to buy only one type of asset will achieve a better performance by buying CW-REITs with respect to solo portfolios that are focused on the other traditional REIT types.

The new security seems to represent a new type of the indirect real estate industry that allows achieving performance and risks that are different with respect to traditional REITs and it may be considered as in investment opportunity independently with respect to risk-return profile of the
investor. CW-REITs are expected to be more interesting to individual investors instead of institutional ones because literature shows that their investment strategy is mainly focused on larger and liquid REITs instead of small and unlisted ones (e.g. Ciochetti, Craft, and Shilling, 2002).

The paper suffers from the lack of data for the new financial instrument that does not allow performing a long term horizon analysis in order to test if the current positive performance is only a consequence of the initial success of a new financial instrument traded in the market. Other countries are currently introducing equity crowdfunding platforms specialized in the real estate sector and an analysis of the main features and differences among countries may allow to test if results holds independently with respect to the real estate market considered.

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### Table 1. Sample description

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Source: SEC data processed by the authors
Table 2. Sample description by REITs’ type

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Source: Thompson Reuters data processed by author.
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</tr>
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<td></td>
<td>Hotel &amp; Resort</td>
<td>-10.31%</td>
<td>24.92%</td>
</tr>
<tr>
<td></td>
<td>Industrial</td>
<td>3.68%</td>
<td>0.56%</td>
</tr>
<tr>
<td></td>
<td>Office</td>
<td>5.05%</td>
<td>0.86%</td>
</tr>
<tr>
<td></td>
<td>Residential</td>
<td>-2.20%</td>
<td>8.07%</td>
</tr>
<tr>
<td></td>
<td>Retail</td>
<td>0.03%</td>
<td>2.65%</td>
</tr>
<tr>
<td></td>
<td>Specialized</td>
<td>2.00%</td>
<td>0.03%</td>
</tr>
</tbody>
</table>

Source: Thompson Reuters data processed by authors

Table 3. Performance of REITs classified by type
### Table 4. Correlation matrix of the performance by REIT type

<table>
<thead>
<tr>
<th>REIT Type</th>
<th>Diversified</th>
<th>Healthcare</th>
<th>Hotel &amp; Resort</th>
<th>Industrial</th>
<th>Office</th>
<th>Residential</th>
<th>Retail</th>
<th>Specialized</th>
<th>Crowdfunding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diversified</strong></td>
<td>100%</td>
<td>1.59%</td>
<td>-11.70%</td>
<td>4.70%</td>
<td>-1.82%</td>
<td>-3.73%</td>
<td>-2.17%</td>
<td>3.85%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Healthcare</strong></td>
<td>18.35%</td>
<td>3.18%</td>
<td>18.35%</td>
<td>4.70%</td>
<td>3.18%</td>
<td>18.35%</td>
<td>4.70%</td>
<td>3.18%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Hotel &amp; Resort</strong></td>
<td>36.50%</td>
<td>13.23%</td>
<td>13.23%</td>
<td>4.70%</td>
<td>13.23%</td>
<td>13.23%</td>
<td>4.70%</td>
<td>13.23%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Industrial</strong></td>
<td>38.94%</td>
<td>12.53%</td>
<td>12.53%</td>
<td>4.70%</td>
<td>12.53%</td>
<td>12.53%</td>
<td>4.70%</td>
<td>12.53%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Office</strong></td>
<td>30.91%</td>
<td>53.76%</td>
<td>53.76%</td>
<td>4.70%</td>
<td>53.76%</td>
<td>53.76%</td>
<td>4.70%</td>
<td>53.76%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Residential</strong></td>
<td>40.31%</td>
<td>24.69%</td>
<td>24.69%</td>
<td>4.70%</td>
<td>24.69%</td>
<td>24.69%</td>
<td>4.70%</td>
<td>24.69%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Retail</strong></td>
<td>38.63%</td>
<td>18.35%</td>
<td>18.35%</td>
<td>4.70%</td>
<td>18.35%</td>
<td>18.35%</td>
<td>4.70%</td>
<td>18.35%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Specialized</strong></td>
<td>41.66%</td>
<td>-7.97%</td>
<td>-7.97%</td>
<td>4.70%</td>
<td>-7.97%</td>
<td>-7.97%</td>
<td>4.70%</td>
<td>-7.97%</td>
<td>-3.79%</td>
</tr>
<tr>
<td><strong>Crowdfunding</strong></td>
<td>-37.92%</td>
<td>-21.75%</td>
<td>-21.75%</td>
<td>4.70%</td>
<td>-21.75%</td>
<td>-21.75%</td>
<td>4.70%</td>
<td>-21.75%</td>
<td>-3.79%</td>
</tr>
</tbody>
</table>

**Notes:** Correlation coefficient statistical significant at 99% level.
**Source:** Thompson Reuters data processed by authors.
Table 6: Composition of efficient portfolios classified for the risk percentile

Notes: The plot presents the average portfolio composition of efficient portfolios classified on the basis of the risk level into ten percentiles.

Source: Thompson Reuters data processed by authors.
Table 7. Average minimum distance of solo portfolios with respect to the efficient frontier

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowdfunding</td>
<td>0.0002</td>
<td>0.0044</td>
<td>0.0000</td>
<td>0.0002</td>
</tr>
<tr>
<td>Specialized</td>
<td>0.0824</td>
<td>0.0426</td>
<td>0.0087</td>
<td>0.0523</td>
</tr>
<tr>
<td>Retail</td>
<td>0.0100</td>
<td>0.0148</td>
<td>0.0216</td>
<td>0.0255</td>
</tr>
<tr>
<td>Residential</td>
<td>0.0035</td>
<td>0.0345</td>
<td>0.0149</td>
<td>0.0288</td>
</tr>
<tr>
<td>Office</td>
<td>0.0623</td>
<td>0.0806</td>
<td>0.0330</td>
<td>0.0481</td>
</tr>
<tr>
<td>Hospitality</td>
<td>0.0937</td>
<td>0.0374</td>
<td>0.0090</td>
<td>0.0113</td>
</tr>
<tr>
<td>Healthcare</td>
<td>0.1331</td>
<td>0.1138</td>
<td>0.0094</td>
<td>0.0133</td>
</tr>
<tr>
<td>Industrial</td>
<td>0.0149</td>
<td>0.0437</td>
<td>0.0100</td>
<td>0.0201</td>
</tr>
<tr>
<td>Diversified</td>
<td>0.0422</td>
<td>0.0278</td>
<td>0.0042</td>
<td>0.0217</td>
</tr>
</tbody>
</table>

Source: Thompson Reuters data processed by authors