



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

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3 The paper is the first study on the performance of the crowdfunding REITs and, additionally, to
4 evaluate their usefulness for a diversification strategy within the real estate sector.
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10 **1. Introduction**

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13 Fundraising for new investment projects has changed due to the innovations introduced by the
14 availability of internet based financing solutions that allow increasing the number of investors that
15 may support the development of business ideas. In the real estate industry, crowdfunding has
16 started by exploring the opportunities of offering loans for real estate projects to borrowers that
17 cannot easily access the standard lending market (Gibilario and Mattarocci, 2018). The success of
18 the peer-to-peer lending experience has boosted the interest into raising funds through equity
19 crowdfunding in the real estate sector; in light of the average size of real estate investments and
20 considering the limited number of accredited investors in the US market (Scarpfs, 2015), an
21 enabling factor for the diffusion of equity crowdfunding has been the relaxing of regulatory
22 investment constraints introduced with the Jumpstart Our Business Startups Act (hereinafter, JOBS
23 act) (Schweizer and Zhou, 2017). The opportunity offered by the JOBS Act was explored by some
24 players in the real estate industry to increase the number of small and unsophisticated investors
25 (Vogel and Moll, 2014) by leveraging technological developments and federal regulation to
26 maximize the return and giving investors direct access to a diversified real estate portfolio (Tran,
27 2018) contributing to the democratization of finance (Roig and Soriano, 2015) in the real estate
28 sector through the conversion of properties in investment assets (Roig Hernando, 2017). Starting
29 from the introduction of the JOBS Act (2012), the industry of the real estate equity crowdfunding
30 has grown year-by-year with more than a double digit rate for the first four years, beating all the
31 expectations of the role of new investment tool in the indirect real estate market (Morri and
32 Ravetta, 2016) and deploying the features of a disruptive innovation with platforms acting like true
33 market places for real estate capital (Montgomery, Squires and Syed, 2018).
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50 Crowdfunding REITs (hereinafter, CW-REITs) have unique features both with respect to the
51 crowdfunding industry and the REITs sector. Within the crowdfunding industry, the size of each
52 investment in the equity real estate is bigger than the average exposure for each other project
53 financed in order to be profitable (Mueller, 1998), the information asymmetry plays an important
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3 role (An, Hardin and Wu, 2012) and the time horizon necessary for payback the initial investment
4 is higher (Chaundhry, Maheshwari and Webb, 2004). Among REITs, CW-REITs enlarge the
5 spectrum of the types of potential investors in addition to high net worth individuals due to higher
6 transparency and eradicated investment costs (Cohen, 2016) and, in light of the declining benefits
7 of REITs to portfolio diversification after the Great Financial Crisis (Hass et al., 2013), they offer
8 new opportunities (Hu, 2017). Nonetheless the relevant peculiarities of CW-REITs, limited
9 empirical evidence is available on the comparison between such unique instruments of capital
10 raising for the real estate sector with respect to other REITs and, additionally, the potential role in
11 a diversification strategy of real estate portfolio has not been explored yet.

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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

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3 comparing CW-REITs with other equity REITs (section 3). The last section summarizes
4 conclusions and policy implication for the real estate industry.
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8 **2. Literature review**

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11 Equity crowdfunding is a solution, currently available in different countries, that could be
12 exploited for financing risky projects by selling equity type securities to an high number of
13 different investors (Hornuf and Schwenbacher, 2018), even though not all the projects have a risk
14 and return profile that could be acceptable for the crowd. In the open market solicitation, the more
15 successful capital raising is related to firms that are not in the seed stage and so have already
16 developed the product or the service they will offer in the market (Mamonov and Malaga, 2018).
17 Literature has shown that the performance of equity crowdfunded firms is different with respect
18 to those that raise new money by using the standard financial markets (Walthhoff-Born, Vanacker
19 and Collewaert, 2018). The remuneration offered to subscribers has to be proportional to the risk
20 assumed because crowd-investors will become shareholder of a new firm and are fully exposed to
21 its default risk (Tomczak and Brem, 2013). Due to the high risk associated to the equity exposure
22 in such type of investments, the number of subscribers in a crowdfunding campaign is significantly
23 affected by the selling price and riskier projects are those that may be fully sold only at a high
24 discount (Ralcheva and Rooenboom, 2016).
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36 Target investors in a crowdfunding campaign may be both institutional and retail investors and the
37 type of assets selected for the investment strategy has to be selected in order to satisfy the needs
38 of investors with different financial skills. The lower is the average experience of the investor the
39 higher has to be the attention in selecting investment opportunities and disclosing the asset
40 characteristics for increasing the probability of success of the capital raising (Ahlers et al., 2015).
41 Empirical evidence on the expertise and the financial skills of equity crowdfunding investors
42 shows that, on average, they have already experience in investing in the financial markets and they
43 have already entrepreneurial and business skills in the same sector in which they invest (Vismara,
44 2016).
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51 The average investment size is lower than the amount normally subscribed in similar capital raising
52 solution due to the higher risk perceived for each euro invested in the crowdfunding opportunity
53 and the higher expected advantages related to not concentrating the exposure in few projects
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3 financed (Shepard, 2019). For the same size of capital raising, the success of a crowdfunding
4 campaign requires an higher number of subscribers with respect to the standard financial markets
5 (Bellaflamme, Lambert and Schwienbacher, 2014).
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8 Location matters in the crowdfunding campaigns because due to the high risk of the investment
9 there is normally a higher interest of investing money in the new projects by individuals with
10 respect to institutional investors that know directly the project and the headquarters of the firms.
11 Even though crowdfunding contributes to a more geographically balanced allocation of resources
12 (Garcia-Teruel, 2019), the distance from the financed entity seems to matter independently with
13 respect to the skills and knowledge of investors and only international investors seems to be not
14 interested by the location of the targets in a crowdfunding campaign (Guenther, Johan, and
15 Schweizer, 2018). The main difference between crowdfunding campaigns and standard capital
16 issuing is normally ascribed to the possibility to collect more equity investments from people not
17 living in the main financial centers of the country due to the easier access to the trading platform
18 (Vulkan, Astebro and Sierra, 2016).
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27 Focusing on the real estate sector, real estate is the fastest growing crowdfunding segment
28 worldwide accompanied by the expectation to reach 300 billion of dollars by 2025 (Valuates,
29 2019); the most important market is represented by the United States, today accounting for more
30 than 12 billion of dollars showing a higher concentration of the operating platforms compared
31 with other regions (Gruppo Bertoldi and Politecnico di Milano, 2019) due to aggregation trends
32 indicating the entering of the maturity phase already (Shahrokhi and Parhizgari, 2019). On closer
33 inspection, considered that the size of the REIT sector exceeds 1 trillion dollars in United States
34 (Nareit,2002), CW-REITs must still grow to reinforce the contribution to the overall sector .Even
35 though in many countries the regulatory framework still represents a constraint for the
36 development of crowdfunding (Pope, 2011), since the first solicitation of money from the crowd
37 for the construction of the base of the Statue of Liberty in 1876 (Best and Neiss, 2014), the U.S.
38 market of real estate crowdfunding experienced a strong development after the enactment of the
39 JOBS Act aiming to promote the growth of start-up companies by facilitating the access to the
40 capital markets (Audretsch et al., 2015). One of the main innovation introduced by the JOBS Act
41 is related to lighter requirements for small capital issuing (up to 1 mln US\$) through on-line
42 platforms and the possibility for small investors to subscribe equity financial instrument
43 proportionally to their wealth and income (Stemler, 2013). A further regulatory relaxing has been
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3 introduced with the Regulation A+, exempting the registration with SEC for offering not exceeding
4 50 million of US dollars yearly (Knyazeva, 2016), and Rule 106 , allowing issuers to raise capital
5 without any limit by accredited investors (Shahrokhi and Parhizgari, 2019). The most common
6 scheme in U.S. real estate crowdfunding is the equity one, involving usually three players: the
7 promoter of the project to acquire or renovate a building; the investing crowd; the platform
8 collecting the money from the crowd publishing the developer's project and giving mandatory
9 information to investors including checking the viability of the project (Baker, 2016). By adopting
10 the platform the role of asset manager to collect and canalize capitals (IPF, 2016), CW-REITs
11 emerged from the empowerment of the indirect real estate investment model by information
12 technology like online, public, non-traded REITs gathering the projects and sold directly to
13 investors receiving shares (Cinelli, 2020). With respect to other REITs, CW-REITs assume the
14 following distinctive features: lower transaction fees due to the web-based distribution and
15 irrelevant upfront and agent fees; improved market volatility through the economic cycle due to
16 the possibility for investors to compare the market sentiment with the official values of chartered
17 surveyors; a new business model based on the autonomy of investors in choosing the investment
18 determining a remarkable increase of distribution efficiency; higher transparency allowing the
19 investors to act timely due to the smaller size of real estate portfolios involving a less complex
20 evaluation process (Hu, 2017). More than the opportunities introduced by CW-REITs, there are
21 some drawbacks with respect to other REITs referred to: higher illiquidity, due to the investment
22 of capital in properties exclusively (Baum, 2017) while other REITs can hold other publicly traded
23 assets; early redemption of shares before the maturity established by the crowdfunding platform
24 is conditioned upon acceptance and, additionally, impaired by penalties (Baum, 2020).

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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
properties¹. 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

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>).

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3 on pursuing cash flows; growth strategy, based on the appreciation of the properties; regional
4 strategy, not covering the whole national territory, rather the projects are selected according to
5 their location (Shahroki and Parhizgari, 2019).
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8 Following the regulatory classification, investors in CW-REITs are represented by not accredited
9 investors and, upon subjective decision of the platform to extend the investor base, non-accredited
10 investors. Even though the web based investment allows to overcome geographical borders, local
11 investors can unlock opportunities in areas that otherwise would be out of reach. Indeed, the active
12 interest in a project by locals may help rallying supplementary local support, getting a better
13 knowledge of the area, improving the project with suggestions and/or additional contacts (Vogel,
14 2014). As a matter of fact, distance is not found to affect investments, while what matters is the
15 social location, because the more a crowdfunder's area of living is socially friendly, the larger is
16 the amount invested and, additionally, investments are sensitive to the gender and the age of the
17 investor (Hervè et al., 2016).
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20 Looking at the performance, CW- REITs allow to assess it even if they are not listed and they do
21 not perform a SEO (e.g. Vismara and Signori, 2016) because it can be measured by considering
22 the Net Asset Value disclosed quarterly and the dividend paid to the shareholders. In light of the
23 exponential progress of real estate crowdfunding, the financial return is expected higher compared
24 with other indirect real estate investment solutions (Shahroki and Parhizgari, 2019) and even
25 though the the risk of the real estate crowdfunding is perceived as high (Lowies, Viljonen and
26 McGreal, 2017), the percentage of failures in the equity real estate projects is significantly lower
27 than other sectors (Massolution,2015)
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30 Surprisingly, the comparison of the performance of the crowdfunding equity investments with
31 similar standard financial instruments is still limited due to the difference in the liquidity and the
32 price definition in a crowdfunding campaign. Available empirical evidence supports the
33 hypothesis that equity crowdfunding behaves similarly to stocks and every shock in the financial
34 markets has an effect also on the ongoing crowdfunding campaigns (Hornus and Neuenkirch,
35 2017). The possibility to consider crowdfunding and equity investments substitutes is still
36 controversial and results are significantly different on the basis of the time horizon and the sector
37 considered.
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40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 **3. Empirical analysis** 56 57 58 59 60

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:

$$R_{it} = \frac{NAV_{i,t} - NAV_{i,t-1} + DIV_{it}}{NAV_{t-1}} \quad (1)$$

where the return is computed with monthly frequency by considering the growth of the NAV $\left(\frac{NAV_{it} - NAV_{i,t-1}}{NAV_{t-1}}\right)$ and a proxy that measures the dividend yield for unlisted REITs $\left(\frac{DIV_{it}}{NAV_{t-1}}\right)$. 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:

$$IR_t^s = \sum_{i=1}^{n_s} \frac{MV_{it}}{MV_t^s} R_{it} \quad (2)$$

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 $\left(\frac{MV_{it}}{MV_t^s}\right)$ 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:

$$R_{p,t} = \sum_{i=1}^{n_s} x_{it} IR_{it} \quad (3a)$$

$$\sigma_{p,t}^2 = \sum_{i=1}^{n_s} \sum_{j=1}^{n_s} x_{it} x_{jt} \sigma(IR_{it}, IR_{jt}) \quad (3b)$$

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:

$$Distance_t^s = \min \left\{ \begin{array}{l} \sqrt{(E(IR_t^s) - E(IR_{t,1}^*))^2 + (\sigma(IR_t^s) - \sigma(IR_{t,1}^*))^2} \\ \dots \\ \sqrt{(E(IR_t^s) - E(IR_{t,100}^*))^2 + (\sigma(IR_t^s) - \sigma(IR_{t,100}^*))^2} \end{array} \right. \quad (4)$$

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 ($\sigma(IR_t^s) - \sigma(IR_{t,k}^*)$) and vertical ($E(IR_t^s) - E(IR_{t,k}^*)$) 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

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3 is the lowest after the hotel & resort REITs. The results can be explained in light of the reduced
4 size of the real estate projects due to the regulatory limitations to the maximum amount of the
5 investment and to the need for sponsors to offer appealing returns to attract investors toward new
6 financial instruments (Schweizer and Zhou, 2017), even though investors in CW-REITs do not
7 select alternative investment platforms in anticipation of super-normal investment returns (Lowies,
8 Whait, Viljonen and McGreal, 2017).

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

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20 [INSERT TABLE 4]
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24 Excluding specialized REITs, CW-REITs are always negative correlated with other type of types
25 of REITs and the higher benefits related to diversification may be exploited by investors that are
26 focused on health-care, retail, and residential REITs. CW-REITs are the asset class that is more
27 characterized by negative correlation with other types or REITs and the only other alternatives (in
28 the time period considered) to exploit the advantages of diversification are related to invest jointly
29 in offices and hotel or in specialized and healthcare.

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

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42 [INSERT TABLE 5]
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48 Independently with respect to the year considered, the asset class that on average is more relevant
49 in the low risk efficient portfolios are the CW-REITs while for the other sectors the average role
50 will change more year by year. Moreover in a market characterized by low performance (2017),
51 the role of the CW-REITs could be relevant also for riskier portfolios and none of the efficient
52 portfolio could be constructed without investing in crowdfunding REITs.
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3 Investment strategy focused only on the REITs available shows a different average distance with
4 respect to efficient portfolios for different types of real estate investment vehicles (Table 6).
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11 Crowdfunding REITs are the solo investment opportunities that are nearer to the efficient frontier
12 and results are consistent independently with respect to the year considered. The solo portfolios
13 that have a similar capability to be near to the frontier are the Diversified, Office, and Industrial
14 sectors, but their average minimum distance with respect to the efficient frontier is more than
15 twenty times higher than the CW-REITs and it changes significantly year by year.
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22 **4. Conclusion**

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25 CW-REITs are a new solution for collecting resources for investing in the equity real estate
26 industry by using the opportunities offered by the internet crowdfunding. Crowd-investors have
27 different skills and expectations for investing in the real estate with respect to traditional investors
28 but the new regulation introduced in countries, like US, is increasing the number of potential
29 subscribers of the new security. CW-REITs are not traded in regulated market and they have
30 normally a different investment strategy (investment size, location choices, etc...) with respect to
31 traditional real estate investment vehicles that may affect the risk-return profile for the investors.
32 Empirical evidence shows that the performance achieved by the new real estate investment vehicle
33 is different with respect to traditional REITs and there are some diversification opportunities that
34 could be exploited in a portfolio that combines CW-REITs and other traditional REITs. The role
35 of the new asset class increases with the risk profile for the investor but a minimum investment in
36 this asset class could be useful for low risk portfolio. Even solo portfolios that are focused only on
37 CW-REITs may offer an almost efficient risk-return profile and investors that want to buy only
38 one type of asset will achieve a better performance by buying CW-REITs with respect to solo
39 portfolios that are focused on the other traditional REIT types.
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51 The new security seems to represent a new type of the indirect real estate industry that allows
52 achieving performance and risks that are different with respect to traditional REITs and it may be
53 considered as an investment opportunity independently with respect to risk-return profile of the
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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

	Incorporation date	Trading
1st Streit Office Inc.	2017	Platform
Aspen Reit, Inc.	2018	Broker
Belpointe Reit, Inc	2018	Platform
Cottonwood Multifamily Opportunity Fund, Inc.	2017	Platform
Cottonwood Multifamily Reit I Inc	2016	Broker
Cottonwood Multifamily Reit II, Inc.	2017	Broker
Fundrise East Coast Opportunistic Reit, LLC	2016	Platform
Fundrise Equity Reit, LLC	2016	Platform
Fundrise Growth Ereit II, LLC	2018	Platform
Fundrise Growth Ereit III, LLC	2018	Broker
Fundrise Income Ereit II, LLC	2018	Platform
Fundrise Income Ereit III, LLC	2018	Platform
Fundrise Real Estate Investment Trust, LLC	2016	Platform
Fundrise West Coast Opportunistic Reit, LLC	2016	Platform
Hamilton National Income Trust, Inc.	2015	Broker
Happyne REIT, Inc.	2018	Platform
Impact Housing Reit, LLC	2017	Platform
Mogulreit I, LLC	2017	Broker
Mogulreit II, Inc.	2017	Platform
Platform Ventures Diversified Housing Reit, LLC	2018	Platform
Reitless Impact Income Strategies LLC	2018	Platform
Reliance Real Estate Trust, LLC	2018	Broker
Rise Companies Corp.	2018	Platform
Steward Realty Trust, Inc.	2017	Platform
Tulsa Real Estate Fund, LLC	2018	Platform
United Group Fund, Inc	2015	Broker

Source: SEC data processed by the authors

Table 2. Sample description by REITs' type

Type	n°	Type	n°
Diversified	17	Residential	22
Health Care	18	Retail	30
Hotel & Resort	20	Specialized	33
Industrial	13	Crowdfunding	26
Office	20	Overall	173

Source: Thompson Reuters data processed by autho

Table 3. Performance of REITs classified by type

	2016		2017		2018	
	Average	St.Dev	Average	St.Dev	Average	St.Dev
Diversified	3.59%	0.36%	-10.31%	24.92%	2.85%	0.23%
Health-Care	0.42%	16.16%	-3.22%	23.17%	-1.84%	10.70%
Hotel & Resort	2.83%	0.60%	-11.01%	32.77%	4.98%	0.26%
Industrial	3.68%	0.56%	1.04%	7.79%	-0.17%	10.95%
Office	0.03%	2.65%	-2.20%	8.07%	1.49%	2.17%
Residential	5.05%	0.86%	-3.97%	33.70%	-1.02%	4.50%
Retail	2.64%	6.53%	-6.80%	19.75%	4.41%	16.36%
Specialized	0.06%	11.80%	1.32%	6.88%	15.74%	23.65%
Crowdfunding	2.00%	0.03%	2.06%	0.02%	2.08%	0.03%

Source: Thompson Reuters data processed by authors

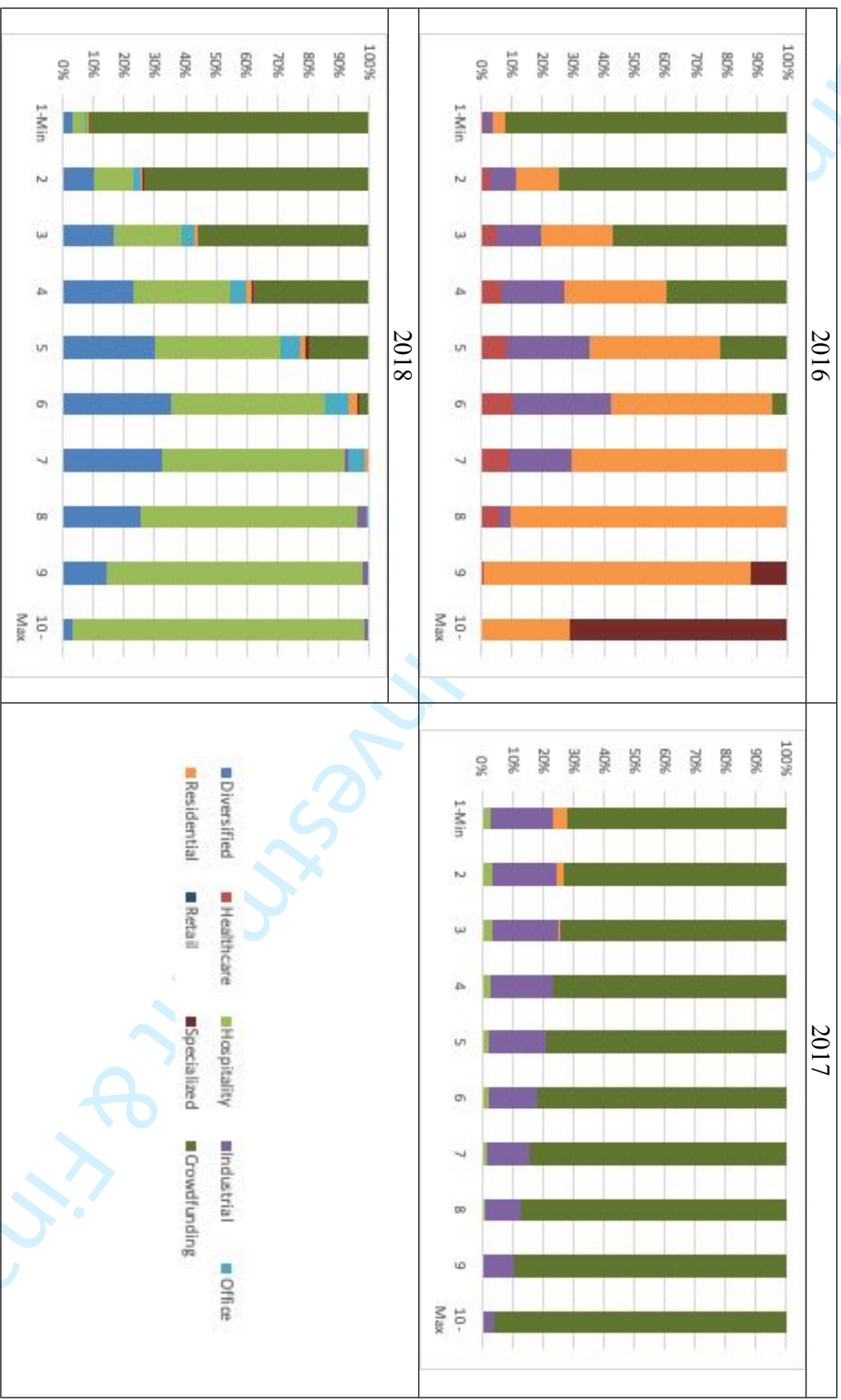
Table 4. Correlation matrix of the performance by REIT type

	Diversified	Healthcare	Hotel & Resort	Industrial	Office	Residential	Retail	Specialized	Crowdfunding
Diversified	100%								
Healthcare	18.35%*	100%							
Hotel Resort	36.50%*	13.23%	100%						
Industrial	38.94%*	12.53%**	8.09%	100%					
Office	30.91%*	53.76%*	-3.60%	21.71%	100%				
Residential	40.31%*	24.69%*	74.78%*	45.15%*	3.60%	100%			
Retail	38.63%*	18.35%*	43.28%*	21.54%	48.95%*	31.87%*	100%		
Specialized	41.66%	-7.97%	27.16%	35.74%*	1.56%	30.81%*	28.99%	100%	
Crowdfunding	-37.92%*	-21.75%**	-5.82%	-9.21%	-4.70%**	-6.17%	-11.70%*	1.59%	100.00%

Notes: * Correlation coefficient statistical significant at 90% level ** Correlation coefficient statistical significant at 95% 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 portfolio classified on the basis of the risk level into ten percentiles

Source: Thompson Reuters data processed by authors

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Table 7. Average minimum distance of solo portfolios with respect to the efficient frontier

	2016	2017	2018	Average
Diversified	0.0042	0.2778	0.0005	0.0942
Healthcare	0.0502	0.2372	0.1138	0.1337
Hospitality	0.0015	3.2793	0.0094	1.0967
Industrial	0.0029	0.0781	0.1073	0.0628
Office	0.0330	0.0908	0.0223	0.0487
Residential	0.0088	0.3419	0.0545	0.1351
Retail	0.0255	0.2160	0.1484	0.1300
Specialized	0.0528	0.0687	2.3526	0.8247
Crowdfunding	0.0000	0.0004	0.0001	0.0002

Source: Thompson Reuters data processed by authors

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