

# The SOCIMIs in Spain. An investment opportunity in the real estate sector

## Las SOCIMIs en España. Una oportunidad de inversión en el sector inmobiliario

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### **Abstract:**

*The purpose of the present work is to analyze the SOCIMIs (Real estate listed investment trusts in Spain), its performance and its potential as a diversification asset between June 2014 and December 2017. The tax advantages they offer, the main incentive for the creation of these types of companies, are bringing about an increase in development of real estate investment in Spain, which is behind other developed markets where they are generally called REITs (Real Estate Investment Trusts). First, the characteristics, operation, evolution in the market, portfolios and shareholders' composition are studied. Next, the analysis shows high performance levels measured by the modified Sharpe Ratio and the Jensen's Alpha for the main SOCIMIs on the market as well as a high portfolio diversification potential demonstrated by the Markowitz Efficient Frontier Model. SOCIMIs are characterized by being less risky investments than the market in general. Compared to traditional Real estate listed companies on the continuous market, SOCIMIs show better performance and lower levels of risk and, in general, all the companies studied –SOCIMIs and traditional Real estate listed companies- can be defined as defensive investments, less risky than the market.*

### **Keywords:**

*SOCIMIs, modified Sharpe Ratio, Jensen's alpha, performance, diversification.*

### **Resumen:**

*El objetivo del presente trabajo es analizar las SOCIMIs, Sociedades Cotizadas de Inversión Inmobiliaria, su performance y su potencial como activo diversificador para el período desde junio de 2014 a diciembre de 2017. Las ventajas fiscales que ofrecen, principal incentivo a la hora de la creación de este tipo de sociedades, están permitiendo impulsar el desarrollo de la inversión colectiva inmobiliaria en España, no sin retraso con respecto a otros mercados desarrollados en donde en general son denominadas REITs (Real Estate Investment*

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*Trusts). Una vez estudiadas sus características, funcionamiento, evolución en el mercado, composición de sus carteras y accionariado, el análisis pone de manifiesto niveles de performance elevados medidos mediante la Ratio de Sharpe modificada y el Alfa de Jensen para las principales SOCIMIs del mercado. Se caracterizan por ser inversiones menos arriesgadas que el mercado en general, con un elevado potencial diversificador del riesgo en carteras, demostrado mediante el estudio de Fronteras eficientes propuesto por Markowitz, en comparación con empresas Inmobiliarias tradicionales cotizadas en el mercado continuo. Respecto a estas últimas, presentan mejor performance y menores niveles de riesgo, aunque en general todas las empresas estudiadas se pueden encuadrar en inversiones defensivas, menos arriesgadas que el mercado.*

**Palabras clave:**

*SOCIMIs, Ratio de Sharpe modificado, Alfa de Jensen, performance, diversificación.*

## **1. INTRODUCTION**

The Great Recession which was experienced by the world's economies from 2008 onwards, known as the "developed countries' crisis" led to a profound financial crisis which ended up as a debt crisis, evolving differently in each economy. In Spain, the increase in unemployment stood out and the construction sector was one of the most badly affected due to the real estate bubble. As a result, both the real estate sector as well as construction were considerably weakened and society blamed them for the recession experienced, creating a certain mistrust towards them.

In Spain, up until now, the main body of collective real estate investment was the Real Estate Investment Funds (Fondos de Inversión Inmobiliaria, FII). These funds, managed by the great Spanish financial entities, were surrounded by the grave real estate crisis, which, along with the difficult situation which has characterized this kind of collective investment from its beginnings (the end of 1994) led to the suspension of payments and even their dissolution, leaving only three funds at the moment, still in dissolution (Maside-Sanfiz et al. 2016). The Real Estate Investment Societies (Sociedades de Inversión Inmobiliaria, SII) are scarce in the market, at present there being only 4 entities registered on the CNMV, one of them in liquidation (Comisión Nacional del Mercado de Valores, CNMV).

In 2009, the Spanish government regulated a new investment vehicle called SOCIMI (Sociedades Anónimas Cotizadas de Inversión Inmobiliaria) following the example of the REITS (Real Estate Investment Trust) which are quite successful in other economies.

The SOCIMIs, like the REITs, are quoted investment companies, more transparent than the FII, and enjoy a special tax regime which offers investors the chance to acquire real estate assets, maintaining a professionalized management. It was the need to boost the real estate market which facilitated the creation of the SOCIMIs, which, from 2014 have been enjoying intense development in the market.

Recently, the real estate market in general, and especially the real estate company sector, have become of great interest to the investors. This is due to the low profitability of other types of assets, the reasonable risk profile of the underlying business and the recent recovery of Spain's economy.

Profitability and liquidity are basic aspects to be taken into account for any kind of investment as well as real estate investment, which, along with their potential as a diversifying asset makes SOCIMIs important assets when constituting portfolios.

The aim of the paper is to analyze the SOCIMIs sector in Spain, the performance of these entities compared to traditional investment in quoted Real estate companies and their possibilities as a diversifying asset in portfolios. For this reason, this study was organized as follows, in the second section, the antecedents are developed which gave rise to the SOCIMIs in Spain, legal aspects and taxation, to be immediately followed by looking at the sector as a whole, analyzing aspects such as capitalization, the launch onto the market, shareholders and investment value. In the next section, the sample used and the methodology followed are described. The results obtained regarding performance and diversification are explained in the last section, ending with the conclusions.

## 2. SOCIMIs IN SPAIN

### 2.1. Antecedents and regulation

The SOCIMIs arose from the so-called REITs, a real estate investment vehicle extended worldwide. The REITs were created in the US during 60's, later experiencing a time of some growth, until the boom of the 90's when they were adopted by many other countries such as Australia and the UK.

The SOCIMIs began to be regulated with the passing of Law 11/2009 on 26<sup>th</sup> October 2009<sup>3</sup>, which established the main aim as boosting the urban market as well as stating special taxation for this type of societies. With this law, the government endeavoured to re-activate the real estate market in Spain by channeling investment into it, as well as helping citizens to access real estate investment.

The Law defines the SOCIMIs as listed limited companies for real estate investment whose main activity is to acquire, promote and restore urban assets for renting, either directly or through shares in other SOCIMIs' capital. The SOCIMIs belong to the equity REITs category as they can only invest in pure real estate assets (Table 1).

Table 1

#### REITs categories

Equity REITs	Main investment is in real estate to obtain rent by their renting. These profits are divided among the shareholders as dividends. Worldwide they are the most common REITs.
Mortgage REITs	Focused on acquiring mortgage portfolios, as well as securitization. Income derives from periodical interest payments by the borrowers.
Hybrid REITs	Share characteristics from both previous groups by investing in both real estate and mortgage loans or mortgage-backed securities.

Source: Authors.

No SOCIMI was created in the following four years in the market which lead to a revision of the said Law at the end of 2012. Law 16/2012, 27<sup>th</sup> December<sup>4</sup> permitted the SOCIMIs greater flexibility in likeness to the REITs.

The main modifications focused on their taxation, making the SOCIMIs tax free (Corporate Tax at 0%) and their shareholders passive subjects.

Another fundamental aspect in the changes was the SOCIMIs' obligation to pay out at least 80% of the profits for rents, as well as having a minimum of 80% of their asset value invested in urban real estate for rent.

The minimum social capital was also reduced, from 15 million down to 5 million euros, permitting investment in only one property and completely eliminating debt limits.

The requisites of the new Law are summarized in Table 2.

<sup>3</sup> BOE n° 259 Tuesday 27th October 2009.

<sup>4</sup> BOE n° 312 28th December 2012.

Table 2

**SOCIMIs legal requirements**

Minimal Social Capital	5.000.000 Euros
Asset composition	At least 80% in real estate for rent, on land to promote property with these characteristics (to start within 3 years) and in shares in the capital or equity of other SOCIMIs.
Number of property rented	At least 8 properties
Length of renting contract	At least 3 years
Composition of the incomes	At least 80% should come from renting properties or dividends or shares in profits from shares in other entities.
Result distribution	<ul style="list-style-type: none"> <li>• Total benefits from dividends or shares from other SOCIMIs.</li> <li>• At least 50% of the profits from the transfer of property and shares from other SOCIMIs.</li> <li>• At least 80% of the remaining profit.</li> </ul>
Special tax regime in corporation tax	<ul style="list-style-type: none"> <li>• Type of tax (if it complies with the requisites): 0% from profit from property rent.</li> <li>• Type of tax (if it does not fulfil requisites): 30% of profits obtained from property rent.</li> <li>• Type of tax: 19% on the part of the tax base corresponding to dividends or profit sharing distributed to the partners.</li> </ul>
Other taxes	<ul style="list-style-type: none"> <li>• Exemption of corporate transactions in constitution, capital increase and non-monetary contributions.</li> <li>• 95% tax relief on the acquisition of housing for rent and land for promotion (ITPYAJD).</li> </ul>

Source: Adapted from Fernández and Romero (2016, p. 62).

The new regulation, like the previous one, obliges SOCIMIs to join in any multilateral trading system. This latest Law allows listing on alternative markets, the most usual being the Mercado Alternativo Bursátil (MAB) in the Spanish case.

Regarding minimum requirements for distribution, the SOCIMIs can count on more advantageous ones than the REITs<sup>5</sup>, as they do not need to include a minimum number of shareholders. However they demand that 25% of the capital (or an estimated market value of 2 million euros) should be in the hands of shareholders with less than 5%. Similarly, their taxation is more advantageous than for other similar investment vehicles such as FII, SII, Limited Companies and Renting Entities.

5 The REITs should have, from the second year on, a minimum of 100 shareholders and 50% of its capital cannot belong to five or fewer people for half the tax year.

It is important to establish that these entities have two years of transition to fulfil the criteria which this type of vehicle demands, the SOCIMIs being able to be set up in the same way.

## **2.2. The SOCIMIs sector in Spain**

At the end of 2013, the MAB opened up an area of negotiation for the SOCIMIs with two inclusions, Entrecampos Cuatro and Promorent. The next addition, Mercal Inmuebles, occurred about half way through 2014. In later years, the number of SOCIMIs increased, 8 in 2015 and in 2016 the number reached 30, with 52 in 2017. As of April 2018, there were 56 entities of this type on the Spanish stock exchange (BME 2015, 2016, 2017; BME web).

On the Spanish continuous market there are four SOCIMIs listed. Lar and Hispania joined about the same time, March 2014, and Merlin and Axiare in June of the same year. With effect from 1<sup>st</sup> January 2017, Inmobiliaria Colonial became a SOCIMI, listed on the continuous market and became the second SOCIMI in the Ibex-35, after Merlin. At the end of 2017, Inmobiliaria Colonial launched a takeover bid for all the Axiare shares and the latter disappeared from the market.

The huge increase and good perspectives in the SOCIMIs sector lead to the creation of a new sector index in the Financial Services and Real Estate Sector in January 2015. The SOCIMIs index groups the Real estate investment companies on the Madrid continuous market. On December 31<sup>st</sup> 2014 the index calculation was based on 1.000 points.

Recently, the continuous market SOCIMIs have been concentrating on capturing assets which make their projects feasible. Foreign interest is essential to achieving their goals; at the beginning of December 2016 the declared significant holdings belonging to foreign investors in these societies was 10% for Merlin, 45% Axiare, 58% Lar and 73% Hispania. A year later, December 2017, foreign investor' holdings varied, from 7% Merlin, 14% Axiare, 59% Lar, 75% Hispania and 23% Colonial.

Figure 1 shows the evolution of the prices for entities on the continuous market. The SOCIMIs' sector shows a slight upward movement on the market until 2016, some entities, such as Lar and even Merlin show a lateral tendency. During 2017, a stable upward tendency has intensified with Axiare, Hispania and Colonial (Figure 1). Real trading volume has gone from 3.345 million euros in 2014, to nearly 7.350 million euros in 2016 and to more than 10.000 million euros in December 2017.

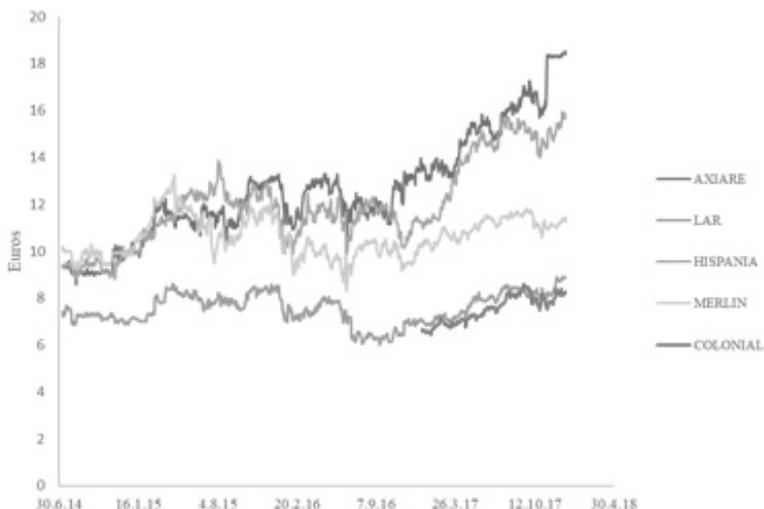
When talking about listed companies, a basic aspect is their market capitalization (Table A1 in Annex). A great increase has been seen in SOCIMIs on the continuous market, going from 8.246 million euros in 2015, to 9.527 euros in 2016 and finally 12.907 in 2017. This demonstrates the intensity with which these entities are joining the markets, which, in spite of not being around for long, are becoming prominent when any investor's portfolio is being formed.

Analyzing the importance of the great entities on the continuous market, in terms of market capitalization and absolute values, supposes around 13.000 million euros as opposed to the 20.000 million of the SOCIMIs in total. It is true that their relative importance has declined somewhat (62% in 2017, 70% in 2015) but in absolute terms, the capitalization of the big SOCIMIs has increased considerably, although very far from the increase of the rest. This is basically due to the large number of incorporations in these last three

years. The two biggest SOCIMIs on the market, Merlin and Colonial, which belong to the Ibex 35, supposed 42% of the total capitalization of all the SOCIMIs at the end of 2017 (Table A1 Annex).

Figure 1

**Trends of SOCIMIs' stock prices**



Source: Authors, data from Infobolsa.

In Figure 2, the percentage of real estate investments is shown at the end of the financial year for the large SOCIMIs regarding the total investment of all those registered on the markets<sup>6</sup>. As may be seen, between 2014 and 2015, there was a concentration of real estate investment for the four big SOCIMIs. The investments of Lar España stand out (it goes from having less than 1% of total investment to 5% in 2015) as does Merlin, which goes from 7% in 2014 to 21% in 2015. These increases are at the cost of the relative diminishing of the rest of the SOCIMIs which, at present, are listed on the Spanish markets, which go from 54% of the total asset value to 40% in 2015. In 2016, Merlin's growth stands out as it possesses 36% of real estate investment of the total Spanish SOCIMIs. During 2017, the percentage of real estate investments continues to decrease for the rest of the SOCIMIs.

Despite the weight of the rest of SOCIMIs diminishing in 2016, their real estate investment increased by 15%, which was much lower than 125% obtained from the four main companies on the continuous market.

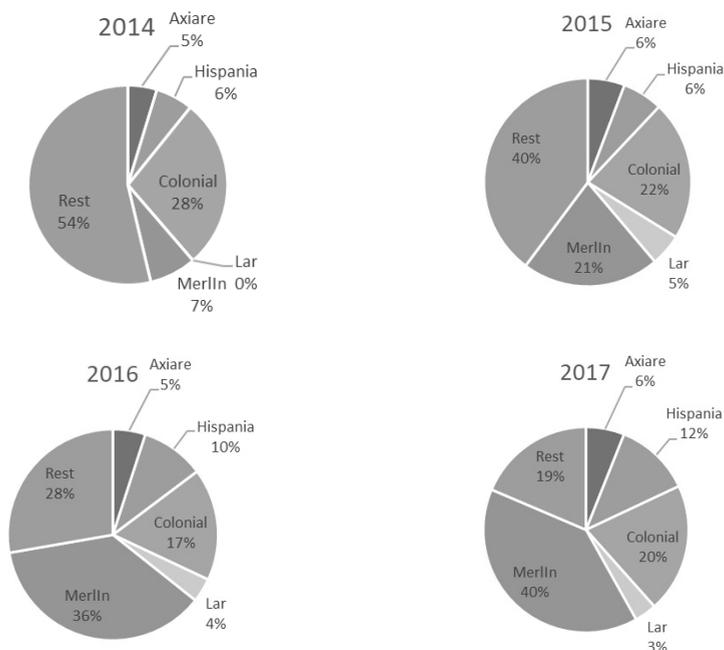
The value of total real estate investment of this type of societies closed 2015 to the value of 13,040 millones euros as opposed to the 20,521 million euros which were registered

<sup>6</sup> Colonial was included in these entities for its size and because in December 2017 it became a SOCIMI as of 1st January. Axiare was included because in spite of its disappearing after Colonial's takeover of it, it was active from 2014 to December 2017, when it was merged.

in 2016, that is 73% more. In 2017, all the SOCIMIs together invested 20,300 million euros, and the distribution among the most important entities is similar to that of 2016.

Figure 2

**Percentage of real estate investment in the hands of the large SOCIMIs out of the total real estate investment of the group of SOCIMIs, 2014-2017**



Source: Authors' own, data Sabi.

As regards the make-up of the SOCIMIs portfolios, in Figure 3, housing, offices, shopping malls and business premises are the most usual types of real estate in the societies studied.

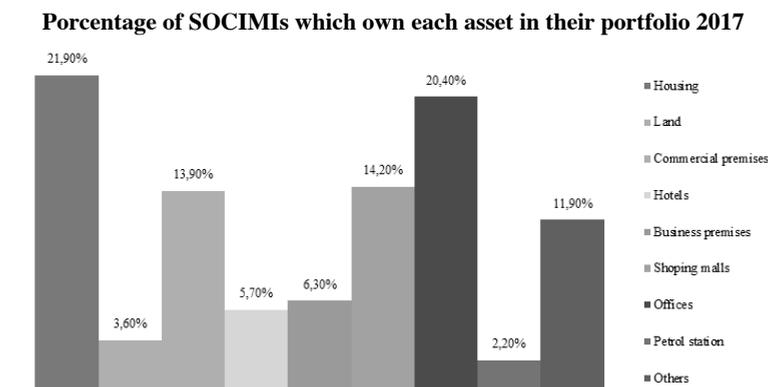
Concentrating on the societies on the continuous market, these are their portfolio assets at the end of 2017:

- Axiare: its portfolio mainly comprises of high level office buildings (70%), also including logistic and commercial areas (30%), mainly in Madrid and Barcelona.
- Hispania: in 2017 it became the top hotel owner in Spain (46 hotels with more than 13.100 rooms), it also has office and residential areas situated mainly in Madrid and Barcelona<sup>7</sup>. At market price, for area of business, its GAV (Gross Asset Value) was: Hotels 66%, Office Blocks 24% and residential areas 10%.

<sup>7</sup> In July 2018, Blackston acquired Hispania, which made this fund the largest hotel owner in Spain. One of the aims of the fund was to exclude Hispania from the Stock Exchange.

- Lar: it has almost thirty assets of which 19% are malls, 3 office blocks, 6 logistic complexes and 14.075 housing units. Its presence stands out in the Spanish capital, as well as México and Perú.
- Merlin: the largest SOCIMI on the market specializes in the most stable business in real estate, renting. Its portfolio comprises offices (37%), shopping malls (14%), business premises (32%) and hotels (7,5%). Business premises are mainly featured, it possesses 990, followed by 139 offices and 18 malls as well as 41 logistic warehouses. As regards its presence, its assets are to be found throughout the península, including Portugal. Although almost 11% of its total assets are to be found in Catalonia.

Figure 3



Source: Authors' own, data company websites.

Talking about entities in the real estate sector, it is necessary to refer to the Net Asset Value (NAV) as a way to assess a Real estate company. It deals with voluntary accounting information which companies are not required to divulge and represents the market value of the company's assets minus the total value of the liabilities, which helps determine the net book value which corresponds to each of the societies shares (Roig Hernando and Soriano Llobera 2015).

In regard to this aspect, it is worth highlighting that the larger companies quoted below (discounted) the NAV, except for Axiare<sup>8</sup> (Table 3). This situation demonstrates that, in spite of the increase in housing prices, the share price continues below the book asset value, a characteristic which might make Spanish SOCIMIs attractive for any investor.

<sup>8</sup> It must be remembered the price of Axiare, at the end of 2017, was moving strongly upwards due to the takeover bid by Colonial.

Table 3

**SOCIMIs' NAV and quotes**

		31/12/2014	31/12/2015	31/12/2016	31/12/2017
Axiare	NAV by share		11,60	13,60	
	Quote	10,38	13,20	13,82	18,42
Lar	NAV by share			9,20	10,27
	Quote	7,17	8,28	7,03	8,89
Hispania	NAV by share		11,80	13,72	15,93
	Quote	10,01	12,10	11,19	15,70
Merlin	NAV by share	10,49	9,85	11,23	13,25
	Quote	7,84	11,39	10,33	11,30
Colonial	NAV by share				8,60
	Quote				8,28

Source: Author's own, data Company webs and Infobolsa.

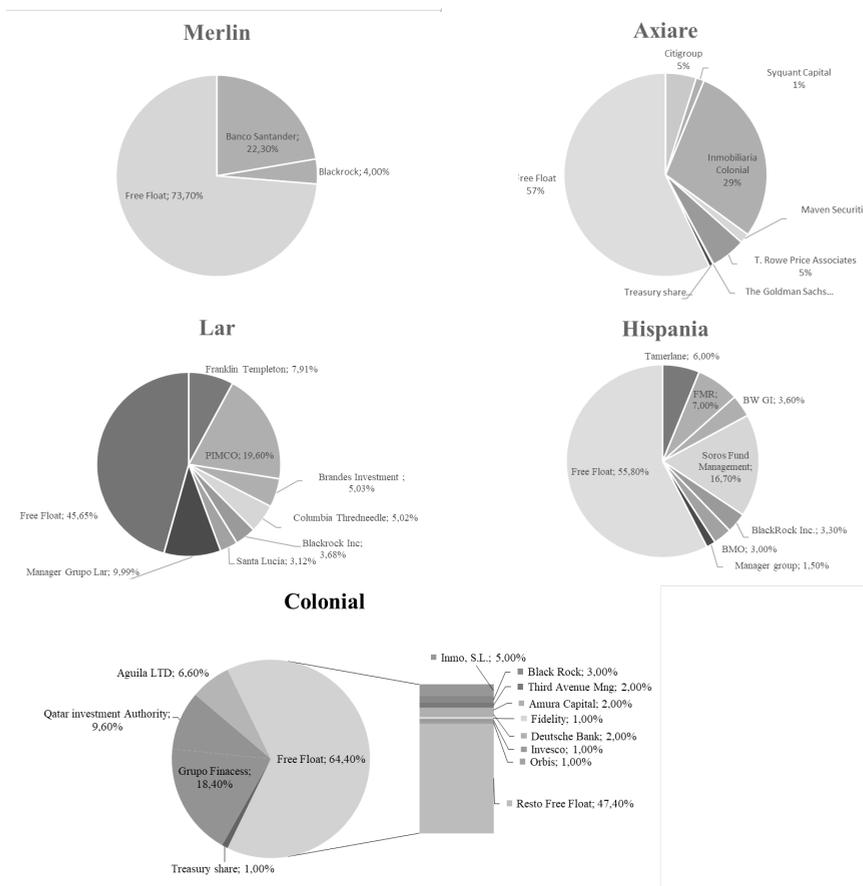
As regards the shareholding of the entities on the continuous market (see Figure 4), the free float which they all possess, except Lar, which exceeds 50% of its social capital can be highlighted. Lar's capital is very widespread, the Pimco fund accounts for 19% of the shares, followed by Grupo Lar (only 10%) and other funds such as Franklin Templeton, BlackRock and Columbia Threadneedle. Therefore, they are companies with relatively disperse shareholding. The 22% of the Banco Santander of Merlin's capital is outstanding. Similarly, several investment funds, the majority international, have portfolios with significant parts of the SOCIMIs. This is the case for the US giant BlackRock which is present in the capital of them all.

In spite of the surge which the creation of new societies in the SOCIMI group are enjoying, one out of five is listed at the same initial price. This is evidenced mainly in the MAB and, in many cases, is down to the lack of investor confidence in this type of alternative market. Also the need to be listed to be constituted as a SOCIMI and so obtain the corresponding taxation advantages, obliges many of them to count on limited minority shareholders and, as a result, hardly any movement on the market. Of the 47 SOCIMIs, the MAB closed with in 2017, 11 showed no movement at all throughout the year and another 19 had a trading volume of less than 1% of their capitalization; 10 had 5% above. Altogether, 67.3 million euros traded for 7,912.9 million euros of capitalization, i. e. 0,85%. The ones which trade the most are the companies which are listed on the continuous market and Entrecampos Cuatro on the MAB (the first SOCIMI to be listed) (BME 2017).

In 2017, in terms of dividends, 27 SOCIMIs shared out 423,35 million euros, 56% of the total amount shared out from 2013 to 2016. Besides, this figure represents 1.61% of the total dividends paid by all those listed on the Spanish stock exchange during the exercise (BME 2017).

Figure 4

**Composition shareholding December 2017, SOCIMIs on the continuous market**



Source: Authors' own, data company websites.

### 3. PROPOSED METHODOLOGY

The main aim of the paper is to study SOCIMIs performance as well as their diversifier portfolio potential. To extend the analysis, the SOCIMIs' results will be compared to those obtained by Real estate businesses (Limited Companies) which are, at present, included in the Real estate sector on the continuous market.

#### 3.1. Sample selection and data

In order to carry out this research it was necessary to find the closing prices of the listed shares and indeces. The period under study is from June 2014 to December 2017.

Regarding the SOCIMIs, the four companies which were listed on the continuous market were considered, Axiare Patrimonio SOCIMI, S.A.; Lar España Real Estate SOCIMI, S.A.; Hispania, S.A. and Merlin Properties, S.A. The companies listed on the MAB do not have sufficient liquidity<sup>9</sup>.

When selecting the entities which would make up our sample of Real estate companies, they were chosen according to importance and data availability: Colonial, Inmobiliaria del Sur, Montebalito, Realia and Renta Corporación. In Tables A1 and A2 in the Annex, all the SOCIMIs and Real estate companies appear, along with their ISIN code, their listed market, their market capitalization and the weight of each in the sector.

To represent the market, the following indeces were used:

1. Ibex 35, Spanish continuous market index.
2. The continuous market real estate index belonging to the group of the General Index of the Madrid Stock Exchange (IGBM Inmo).

As a risk-free asset the one year Spanish Treasury bond was used. The data were obtained from the Infobolsa web page, as well as from Yahoo Finance, the Banco de España and the Sabi Database, all of them monthly. In Table A3 of the Annex, the descriptive statistics of the series used are summarized.

### 3.2. Methodology

Methodology is developed in two stages. Firstly, the risk adjusted performance is studied. Performance is the return of a financial investment and the level of risk it bears. As indicators of performance, the Sharpe ratio (SR) and the Jensen's alpha will be used, and they will be completed with dividend yield ratios, Return on Assets (ROA), Return on Equities (ROE), solvency and leverage ratios. Secondly, the Markowitz Mean-Variance Model will be used to determine efficient frontiers (Markowitz 1952).

The SR measures the excess return (or risk premium) per unit of deviation in an investment asset or portfolio.

$$SR_p = \frac{\bar{R}_p - \bar{R}_f}{\sigma_p} \quad (1)$$

The numerator is the expected value of the excess of the asset return over the risk-free asset and the denominator is the variability of the asset return.

Breakdown of SR:

$\bar{R}_p$  = Monthly expected return of the asset p.

$\bar{R}_f$  = Monthly expected return of the risk-free asset.

$\sigma_p$  = Standard deviation of the asset excess return.

<sup>9</sup> Colonial has not been inserted as a SOCIMI because in December 2017 it had just reconverted to SOCIMI. On the contrary, Axiare was included because it disappeared in December 2017, but had data for all the period studied.

The SR characterizes how well the return of an asset compensates the investor for the risk taken. The greater the ratio, the more interesting the portfolio for the investor. However, if the excess of the asset return is negative, the SR may cause a wrong sorting, for example, two investments which reach the same excess of return negative but with different standard deviations, in this case the SR would indicate that the portfolio with the greater standard deviation is the best, in spite of reaching the same negative return with greater risk. Several authors propose alternative indices to get the adequate sorting of the investments with negative excess returns (Israelsen 2003, 2005; Ferruz and Sarto 2004). As indicated by Israelsen (2003, 2005), the modified SR (mSR) which is described as follows is applied.

$$mSR = \begin{cases} \frac{\bar{R}_p - \bar{R}_f}{\sigma_p}, & \text{if } \bar{R}_p \geq \bar{R}_f \\ \frac{\bar{R}_p - \bar{R}_f}{\sigma_p \left( \frac{(\bar{R}_p - \bar{R}_f)}{\text{abs}(\bar{R}_p - \bar{R}_f)} \right)}, & \text{if } \bar{R}_p < \bar{R}_f \end{cases} \quad (2)$$

As a second tool to assess the performance of the assets studied, the Jensen's alpha is employed. This indicator analyzes the good/bad management of a portfolio, as it facilitates the comparison between obtained return and the theoretic amount which, according to the Capital Asset Pricing Model (CAPM), it corresponds to. The CAPM formula determines the fair value of a stock according to the stock's beta and the market risk premium.

Thus, Jensen's alpha provides information about the excess (or lack) of return which the manager is able to obtain (to beat or not the market) over the theoretical expected return. The beta coefficient is a measure of the portfolio systematic risk of the SOCIMI in our case, and, ultimately, also of the strategy followed.

The model to be estimated is the following:

$$R_{it} - R_{ft} = \alpha + \beta_1(R_{Mt} - R_{ft}) + \varepsilon_{it} \quad (3)$$

$R_{Mt}$  = Monthly expected return on Ibex 35 or IGBM Index in t.

$R_{ft}$  = Monthly expected return of the risk free asset in period t  
(one year Spanish Treasury bond)

$R_{it}$  = Monthly expected return of asset i in period t.

$\varepsilon_{it}$  = Random error for asset i in period t.

Thus, a positive alpha implies that the portfolio studied obtains a higher return than one which replicates the market's, thus following a passive strategy. A negative alpha implies a lower return to that estimated by the CAPM, that which corresponds to the level of assumed risk.

Therefore, by means of the two previously exposed indicators, a detailed comparison of the varying SOCIMIs and Real estate companies can be assessed and carry out.

Regarding the analysis of the risk diversification, the portfolio management proposed by Markowitz (1952) will be followed, it represents efficient frontiers and assessments of the potential of risk diversification.

As input for the model expected returns, standard deviations and covariances between the pairs of assets are required. The approach is as follows:

$$\text{Minimize } \sigma_p = \left[ \sum_{i=1}^N x_i^2 \sigma_i^2 + \sum_{i=1}^N \sum_{j=1, i \neq j}^N x_i x_j \sigma_{ij} \right]^{1/2} \quad (4)$$

$$\text{Subject to: } (1) \sum_{i=1}^N x_i = 1$$

$$(2) \sum_{i=1}^N x_i \bar{R}_i = \bar{R}_p$$

Being:

$\sigma_p$  = Standard deviation of the return of the portfolio p.

$x_i$  = Proportion which portfolio p invests in asset i.

$\sigma_i^2$  = Variance of asset i.

$\sigma_{ij}$  = Covariance between assets i and j.

$\bar{R}_i$  = Expected return of asset i.

$\bar{R}_p$  = Expected return of the portfolio.

The approach consists of minimizing the risk of all the possible combinations of assets at each level of given return allowing short sales. The software used was Excel (Microsoft Office 2016) and the complements of Solver and Solver Table were availed to minimize the previous approach and repeat it. Then the efficient portfolios obtained are represented to analyze the diversifying power of each SOCIMI, and ultimately, their portfolios.

## 4. RESULTS

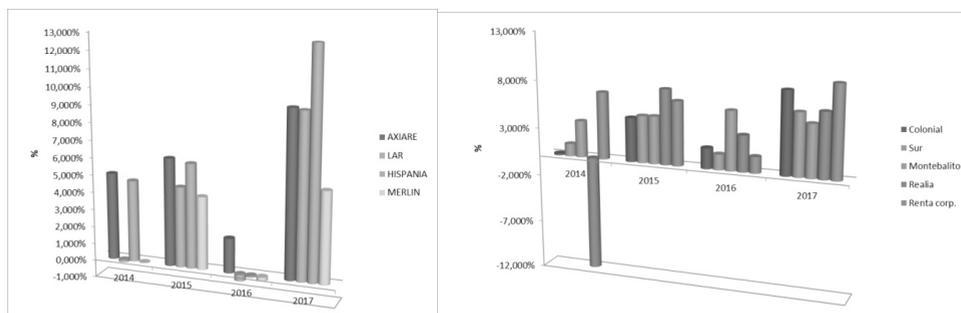
Following, outcomes are discussed. Firstly, the results of the performance analysis using mSR and Jensen's alpha. The information about dividend yields, ROA and ROE, and solvency and leverage ratios has been included. Secondly, the diversifying effect using Markowitz' Mean-Variance Model will be analyzed.

### 4.1. Measurement of SOCIMIs and Real estate performance

In Table 4 and Figure 5, the mSR, ROA, ROE, solvency ratio, leverage and dividend yield can be seen for the SOCIMIs and Real estate companies. The mSR was increased for the years studied (2014 to 2017) as much for the reduction in return of the one year Spanish Treasury bond as for the increase in returns. In some periods, for some companies, the spread was negative, and in those cases, instead of dividing by the standard deviation, it was multiplied, as indicated in equation (2). Table 4 contains the value of the mSR for each year and entity. The year 2017 was extraordinarily good for the SOCIMIs, they all saw improvements in their mSR. Colonial, which appears in Figure 5 in the Real estate group, in 2017, after becoming a SOCIMI also saw its mSR increase noticeably.

Figure 5

**Modified Sharpe Ratio evolution SOCIMIs and Real estate companies**



Source: Authors, data from Infobosa.

In Table 4, it may be observed that dividend yield is much greater for the SOCIMIs than for the Real estate companies, which in many cases do not share dividends. ROA and ROE of the SOCIMIs have undergone a constant improvement and their solvency and leverage ratios reflect a good situation, which, moreover, is fairly similar for all the entities. Real estate company ratios generally show a worse financial-economic situation, with less profitability, solvency and greater leverage, although with greater diversity than for the SOCIMIs group.

Table 4

**Modified Sharpe Ratio, ROA, ROE, solvency, leverage and dividend yield for SOCIMIs and Real estate companies**

		2014	2015	2016	2017
<i>Axiare</i>	mRS (montly)	5,03%	6,21%	1,99%	9,55%
	ROA	4,27%	7,54%	9,48%	11,31%
	ROE	5,26%	10,32%	15,02%	17,68%
	Solvency Ratio	0,22	11,19	9,92	3,62
	Leverage	20,19%	34,95%	57,05%	55,18%
	Dividend yield	0,39%		1,16%	0,76%
<i>Lar</i>	mRS (monthly)	-0,13%	4,63%	-0,38%	9,45%
	ROA	0,79%	4,77%	6,96%	8,72%
	ROE	0,89%	7,63%	11,26%	14,77%
	Solvency Ratio	11,79	3,54	2,85	2,1
	Leverage	11,03%	57,75%	58,30%	58,50%
	Dividend yield		0,91%	0,54%	5,06%

<i>Hispania</i>	mRS (montly)	4,72%	6,03%	-0,09%	13,01%
	ROA	2,7	4,89%	15,34%	9,61%
	ROE	3,13	8,26%	23,42%	15,42%
	Solvency Ratio	15,52	3,51	3,76	1,10
	Leverage	14,56	64,12%	49,13%	51,27%
	Dividend yield			2,81%	2,63%
<i>Merlin</i>	mRS (monthly)	-0,04%	4,21%	-0,22%	5,25%
	ROA	2,10%	0,83%	5,43%	9,28%
	ROE	3,88%	1,96%	12,24%	19,45%
	Solvency Ratio	4,51	0,4	4,03	2,24
	Leverage	82,05%	118,38%	122,00%	107,47%
	Dividend yield		1,61%	3,93%	4,08%
<i>Colonial</i>	mRS (monthly)	0,20%	4,56%	2,14%	8,50%
	ROA	2,10%	0,83%	5,43%	9,28%
	ROE	3,88%	1,96%	12,24%	19,45%
	Solvency Ratio	4,51	0,40	4,03	2,24
	Leverage	82,05%	118,38%	122,00%	107,47%
	Dividend yield		1,61%	3,93%	4,08%
<i>Sur</i>	mRS (monthly)	1,30%	4,86%	1,61%	6,45%
	ROA	2,31%	2,20%	1,53%	1,64%
	ROE	9,32%	8,78%	6,45%	6,17%
	Solvency Ratio	1,47	1,44	1,31	1,29
	Leverage	273,85%	258,12%	261,29%	220,03%
	Dividend yield	1,36%	1,42%	1,14%	0,88%
<i>Montebalito</i>	mRS (montly)	3,80%	4,90%	6,08%	5,42%
	ROA	7,96%	-1,15%	3,71%	0,72%
	ROE	13,61%	-1,49%	4,56%	0,94%
	Solvency Ratio	1,88	6,09	9,66	5,34
	Leverage	33,44%	21,29%	19,34%	24,54%
	Dividend yield				
<i>Realia</i>	mRS (monthly)	-11,84%	7,74%	3,73%	6,68%
	ROA	-0,67%	1,74%	7,08%	2,72%
	ROE	-4,77%	5,26%	14,45%	5,24%
	Solvency Ratio	3,10	1,21	0,70	2,09

	Leverage	528,23%	138,03%	92,42%	89,81%
	Dividend yield				
<i>Renta Corporación</i>	mRS (monthly)	6,96%	6,63%	1,68%	9,47%
	ROA	98,05%	-8,72%	4,65%	10,63%
	ROE	251,20%	-20,24%	9,82%	21,59%
	Solvency Ratio	3,21	3,10	4,01	2,56
	Leverage	125,30%	113,45%	97,90%	79,44%
	Dividend yield				

Source: Authors, data from Infobolsa and SABI.

It was necessary to estimate the parameters of the equation (3) to determine the Jensen's alpha for each SOCIMI and Real estate company. This was done for each index representing the market, in other words the estimations for each entity and the Ibex 35, and for the IGBM Inmo were carried out. Table 5 contains the main results of the estimations achieved.

As regards Ibex 35, Hispania, Colonial and Montebalito present significant positive alphas, which indicates the share obtained a higher return than the passive portfolio which would replicate the Ibex 35. These are values with alphas close to 0.1% monthly, a remarkable profitability premium. These entities manage to beat the market.

As regards the R<sup>2</sup>, Hispania comes to the fore with a high value, which indicates that about 43% of the changes in SOCIMI return may be explained by changes in the market, as seen in the Ibex 35. Colonial comes next, also with a high determination coefficient (0.375).

Table 5

#### Regression results, Ibex35 and IGBM Inmo

	$\alpha$	Beta IBEX35	Beta IGBM Inmo	R <sup>2</sup>	N° OBS
<i>Axiare</i>	0,001 (1,839)	0,609 (2,891)***		0,173	42
	0,001 (1,650)*		0,651 (3,177)***	0,202	42
<i>Lar</i>	0,000 (0,793)	0,510 (3,174)***		0,201	42
	0,0002 (0,617)		0,464 (2,988859)**	0,213	42
<i>Hispania</i>	0,001 (2,379)*	0,848 (5,474)***		0,428	42
	0,001 (2,008)*		0,814 (5,187)**	0,402	42
<i>Merlin</i>	0,000 (1,594)	0,527 (4,300)***		0,194	42

	$\alpha$	Beta IBEX35	Beta IGBM Inmo	R <sup>2</sup>	N° OBS
	0,000 (0,379)*		0,565 (3,429)***	0,227	42
<i>Colonial</i>	0,001 (1,993)*	0,609 (4,896)***		0,375	42
	0,001 (2,219)**		0,851 (10,794)***	0,744	42
<i>Sur</i>	0,001 (0,965)	0,454 (1,063)		0,027	42
	0,001 (0,845)		0,650 (1,560)	0,057	42
<i>Montebalito</i>	0,001 (1,970)*	1,045 (3,039)**		0,188	42
	0,001 (2,068)**		0,928 (2,600)	0,145	42
<i>Realia</i>	0,000 (0,104)	0,378 (0,795)		0,016	42
	-0,000 (0,293)		1,487 (3,608)***	0,246	42
<i>Renta Corporación</i>	0,003 (1,642)	0,076 (0,093)		0,000	42
	0,004 (1,552)		0,594 (0,736)	0,013	42

\*\*\*, \*\* and \* indicate significance for levels of 1%, 5% and 10% respectively.

Source: Authors, data from Infobolsa.

Regarding the IGBM Inmo, the alphas of different SOCIMIs and Real estate companies (Axiare, Hispania, Merlin, Colonial, Montebalito and Renta Corporación), all present positive values, thus beating the market (IGBM Inmo), with fairly attractive returns.

As regards the goodness of fit of the titles mentioned in the previous paragraph, the quantity of the SOCIMIs and Colonial stand out. None of the R<sup>2</sup> are lower than 20%, especially Colonial with 74%, resulting from its superior weight on the continuous market in terms of market capitalization.

The betas as a measure of systematic risk are significant in all the estimates carried out for the SOCIMIs both with the Ibex 35 and the IGBM Inmo. In all cases their values are positive and less than one, therefore they are defensive titles, which move in the same direction as the market but less intensely. Only two of the Real estate companies present significant betas with regard to the Ibex 35, Colonial and Montebalito, and another two with regard to the IGBM Inmo, Colonial and Realia. Colonial may be considered a defensive title since its beta is below one for both indexes. Montebalito is seen to be a slightly riskier value than the Ibex35; when the index varies around one unit, its value is a slightly higher percentage (1,045). Realia is the one which shows the most aggressive behaviour of them all with a beta of 1,487 with the IGBM Inmo.

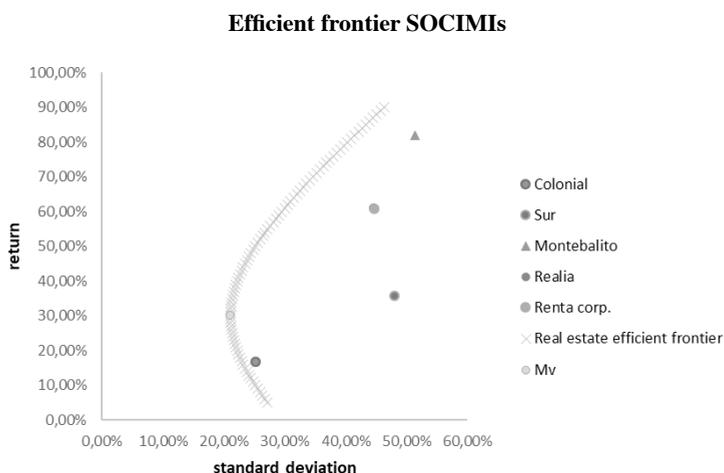
Generally it can be concluded that the SOCIMIs have a greater return than the market while supposing less risk. Some Real estate companies manage to beat the market, as they present interesting positive Jensen's alpha, although they assume higher risk than the SOCIMIs.

#### 4.2. Study of the SOCIMIs risk diversification

Following Markowitz's Model to determine efficient frontiers and choosing the approach to minimize risk for different returns, Solver and Solver Table are used for expected returns, standard deviations and covariances for both the SOCIMIs and Real estate companies.

Firstly the four SOCIMIs are introduced in the analysis. Figure 6 contains the results. It can be seen how the efficient frontier wraps the SOCIMIs offering dominant portfolios with less risk for the same return or greater return for a determined level of risk.

Figure 6



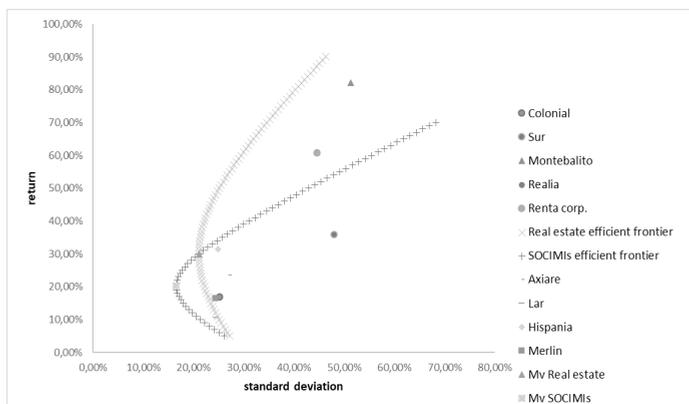
Source: Authors, data from Infobolsa.

Concentrating on the efficient line (from the portfolio with the minimum variance -Mv- to the higher area of the frontier), an important increase in return can be observed when combining different assets, compared with the one reached by investing in any title individually. The portfolio with minimum variance (Mv) implies 16,58% risk and offers 20,18% annual return, which would be obtained by investing 29,03% in Axiare, 16,81% in Lar, 43,36% in Hispania and 10,81% in Merlin.

Next the same analysis for Real estate companies will be carried out. Figure 7 shows the efficient frontier obtained.

Figure 7

**Efficient frontier Real estate companies**



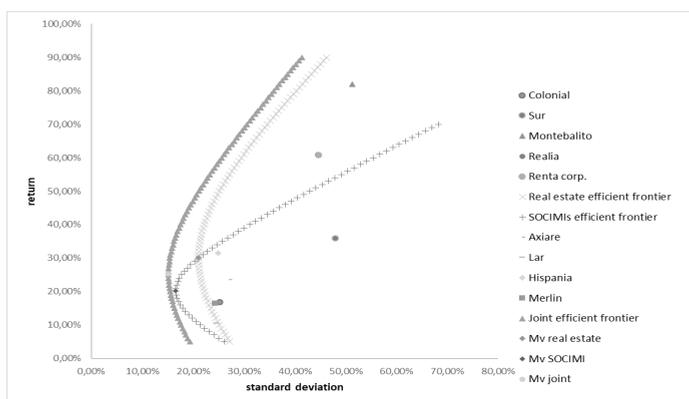
Source: Authors, data from Infobolsa.

In the previous figure great potential for diversification can be seen for Real estate companies. Working with a risk level of around 50%, as in the case of Inmobiliaria del Sur, which obtains 37% return, by combining all the Real estate companies, a portfolio can be obtained that for the same risk, offers 85% annual return.

Consequently two previous efficient frontiers have been joined in Figure 8. A change in the dominance of the frontiers according to the level of risk analyzed can be seen. Up to risk levels of 25%, the efficient part of the SOCIMs' curve dominates the Real estate companies one, which changes above the risk level previously mentioned.

Figure 8

**SOCIMs and Real estate companies efficient frontiers**



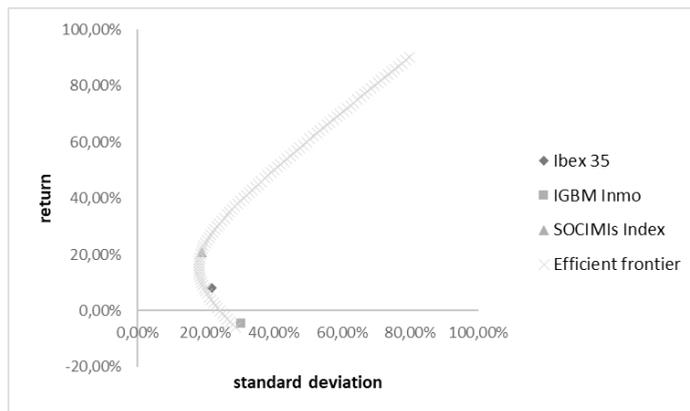
Source: Authors, data from Infobolsa.

The SOCIMIs run much less risk than the Real estate companies, and so are much more to the left in individual terms, which makes their combinations as well as the minimum variance portfolio further to the left than in the case of the Real estate companies.

Now the joint efficient frontier is determined i. e. using the SOCIMIs and Real estate companies as the asset universe. The results are shown in Figure 9.

Figure 9

**Efficient frontier of SOCIMIs, Real estate companies and together**



Source: Authors, data from Infobolsa.

It must be pointed out that the diversifying potential of these two investment vehicles has clearly increased. As can be seen, the green line (joint efficient frontier) clearly dominates the individual frontiers, as well as the isolated titles.

Finally (Figure 10), to look more deeply into the diversifying of this type of real estate investment, the efficient frontier combined between the following three indices: Ibex 35, SOCIMIs index (author’s compilation) and IGBM Inmo. This type of investment strategy through indices is easily replicable nowadays is shown.

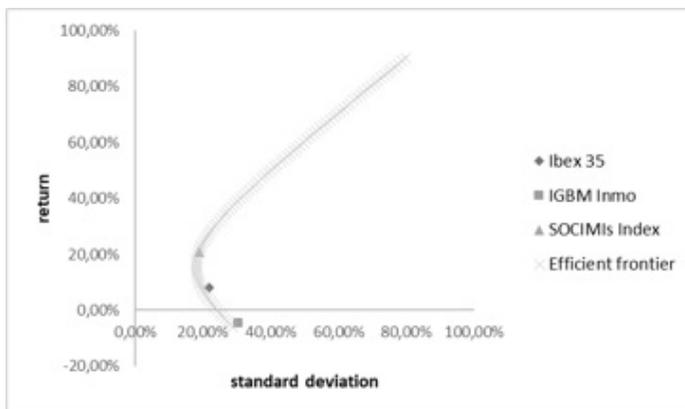
To elaborate the SOCIMI index, a weighted average of the monthly profitability of the four SOCIMIs has been calculated, weighted by the market capitalization of each one with respect to the total at present. The following formula was used:

$$\text{SOCIMIs Index}_t = \sum_{i=1}^4 r_{it} \times \frac{P_{it} \times q_{it}}{\sum_{i=1}^4 P_{it} \times q_{it}} \quad (5)$$

In Figure 10, the position of the SOCIMIs index individually can be highlighted, which manages to individually dominate the rest, as it offers the greatest return, subject to a smaller risk. Looking at the efficient line of the curve, it can be emphasized that by joining the three indices, a small diversifying effect is obtained in our portfolio, considering as such the one which represents the SOCIMIs Index. Indices, being compiled by different titles, are, by nature, diversified, which leads to a small diversifying effect when they are combined.

Figure 10

**Efficient frontier indeces**

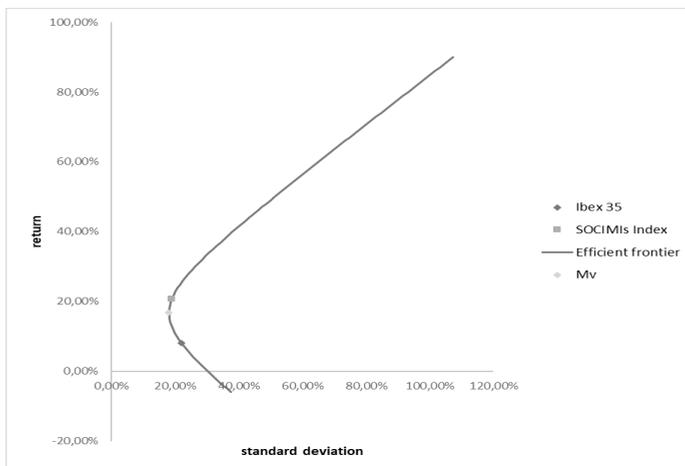


Source: Authors, data from Infobolsa.

Joining only the Ibex 35 and the SOCIMIs Index, another efficient frontier is produced (Figure 11). In this case the minimum variance portfolio carries a risk of 18,07% for a 16,76% return and 30,87% should be invested on the Ibex and the rest in the SOCIMIs Index.

Figure 11

**Ibex35 – SOCIMIs index efficient frontier**



Source: Authors, data from Infobolsa.

In Figure 11, net purchases has a small stretch, from the Ibex 35 to the SOCIMIs Index since the greater part of the curve would correspond to short sales for the Ibex 35. This

result is logical as the SOCIMIs Index dominates the Ibex 35 one. The aforementioned spot efficient frontier would be found between the Mv portfolio and the SOCIMIs Index.

## 5. CONCLUSIONS

After the crisis suffered by the real estate sector and the great distrust which it caused, in recent years, considering indications such as volume of investment in land, rate of sales and price level, it leads us to think of recovery and good perspectives for the future. This situation is enhanced by the popularity of the SOCIMIs on the markets, which, thanks to their higher incentives, their professional management and the high level of dividends offered, they manage to inject greater liquidity into a market historically dominated by scarcity.

In order to widen the knowledge of the SOCIMIs in Spain, their performance and potential for diversification, were analyzed, mainly concentrating on the four entities on the continuous market, which were then compared to the traditional Real estate companies. As regards performance, analyzed using Modified Sharpe Ratio and Jensen's alpha, both the SOCIMIs as well as the Real estate companies, achieved very poor results in 2014. Greater return of the one year Spanish Treasury bond, as well as the low return offered by the titles themselves, dragged down the sector which hardly saw the light after the major crisis it experienced. 2015 onwards, with the lowering of bond interest and increase in the return from the real estate sector, saw the increase in the ratio and in 2017 it rose sharply.

Jensen's alpha shows similar results, the SOCIMIs enjoy a higher yield than the market with smaller risk than the market itself. Some Real estate companies also manage to beat the market with interesting positive Jensen's alphas, although generally implying greater risk than the SOCIMIs. This improved SOCIMIs' situation is also confirmed by analysing the dividend yield, ROE, ROA, solvency and leverage ratios.

As regards the diversifying effect, by using the efficient frontiers it can be emphasized that both the SOCIMIs and the Real estate companies offer combinations, portfolios, which are very appealing to any investor. By making a comparison between both frontiers, the domination of the SOCIMIs in relatively low risk values can be seen, leaving the traditional Real estate companies for investors with less risk aversion. This aspect clearly demonstrates the lower risk presented by the SOCIMIs we mentioned at the beginning.

Lastly an index has been made up with the four SOCIMIs on the continuous market. This index has been combined with the Ibex 35 and with the IGBM Inmo, where the domination over the other two is perfectly clear. This fact corroborates the importance of the diversifying effect which can be achieved with the SOCIMIs, and ultimately with real estate investment through these vehicles.

At present it is simple for any investor to follow a passive strategy of indexing or replication of an index. This is a common policy in our times for the majority of investors. The present study leads us to believe that, in the short and medium term, the SOCIMIs will maintain a steady growth and will easily attract investment assets with great potential for diversifying portfolios.

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## 7. APPENDIX

Table A1  
**SOCIMIs quoted in Spain. Name, ISIN, capitalization 2015 to 2017 (I)**

Name	Abrev.	ISIN	Market	Capitalization 2017 (€)	%Capitalization 2017	Capitalization 2016 (€)	%Capitalization 2016	Capitalization 2015 (€)	%Capitalization 2015
ALBIRANA PROPERTIES SOCIMI, S.A.U.	YAPS	ES0105236006	MAB	168.000.000	0,81%	-	0,00%	-	0,00%
AM LOCALES PROPERTY SOCIMI, S.A.	YAML	ES0105272001	MAB	97.141.000	0,47%	-	0,00%	-	0,00%
AP67 SOCIMI, S.A.	YAP67	ES0105325007	MAB	-	0,00%	-	0,00%	-	0,00%
ASGARD INVESTMENT HOTELS SOCIMI, S.A.	YOSO	ES0105074001	MAB	5.579.000	0,03%	5.513.000	0,04%	9.923.000	0,08%
ASTURIAS RETAIL & LEISURE SOCIMI, S.A.U.	YAST	ES0105127007	MAB	115.000.000	0,55%	96.750.000	0,64%	-	0,00%
AUTONOMY SPAIN REAL ESTATE SOCIMI, S.A.	YARE	ES0105090007	MAB	86.271.000	0,41%	85.006.000	0,56%	86.018.000	0,73%
AXIARE PATRIMONIO SOCIMI, S.A.	AXIA	ES0105026001	MC	1.456.331.000	6,99%	993.312.000	6,54%	948.750.000	8,09%
AZARIA RENTAL SOCIMI, S.A.	YAZR	ES0105373007	MAB	-	0,00%	-	0,00%	-	0,00%
BARCINO PROPERTY SOCIMI, S.A.	YBAR	ES0105284006	MAB	19.122.000	0,09%	-	0,00%	-	0,00%
BAY HOTELS & LEISURE SOCIMI, S.A.	YBAY	ES0105267001	MAB	503.345.000	2,42%	-	0,00%	-	0,00%
CASTELLANA PROPERTIES SOCIMI, S.A.	YCPS	ES0105360004	MAB	-	0,00%	-	0,00%	-	0,00%
COLON VIVIENDAS SOCIMI, S.A.	YCOL	ES0119462002	MAB	19.170.000	0,09%	-	0,00%	-	0,00%
CORONA PATRIMONIAL SOCIMI, S.A.U.	YCOR	ES0105119004	MAB	102.095.000	0,49%	109.136.000	0,72%	-	0,00%

CORPIN CAPITAL PRIME RETAIL II, SOCIMI, S.A.	YPR2	ES0105091005	MAB	23.577.000	0,11%	22.559.000	0,15%	23.286.000	0,20%
CORPIN CAPITAL PRIME RETAIL III SOCIMI, S.A.	YPR3	ES0105111001	MAB	15.535.000	0,07%	15.243.000	0,10%	-	0,00%
DOMO ACTIVOS SOCIMI, S.A.	YDOM	ES0105283008	MAB	7.774.000	0,04%	-	0,00%	-	0,00%
ELAIA INVESTMENT SPAIN SOCIMI, S.A.	YEIS	ES0105281002	MAB	119.135.000	0,57%	-	0,00%	-	0,00%
ELIX VINTAGE RESIDENCIAL SOCIMI, S.A.	YVRS	ES0105356002	MAB	-	0,00%	-	0,00%	-	0,00%
ENTRECAMPOS CUATRO, SOCIMI, S.A.	YENT	ES0131172001	MAB	98.404.000	0,47%	101.684.000	0,67%	108.791.000	0,93%
EURO CERVANTES SOCIMI, S.A.	YEUR	ES0105175006	MAB	155.000.000	0,74%	155.000.000	1,02%	-	0,00%
EXCEM CAPITAL PARTNERS S.I.R. SOCIMI S.A.	YEXR	ES0105367009	MAB	-	0,00%	-	0,00%	-	0,00%
FIDERE PATRIMONIO SOCIMI, S.A.U.	YFID	ES0105071007	MAB	255.586.000	1,23%	193.427.000	1,27%	212.266.000	1,81%
GALIL CAPITAL RE SPAIN, SOCIMI, S.A.	YGCS	ES0105290003	MAB	-	0,00%	-	0,00%	-	0,00%
GMP PROPERTY SOCIMI, S.A	YGMP	ES0105134011	MAB	843.572.000	4,05%	819.475.000	5,39%	-	0,00%
GO MADRID BENZ SOCIMI, S.A.	YGOB	ES0105354007	MAB	-	0,00%	-	0,00%	-	0,00%
GORE SPAIN HOLDINGS SOCIMI I. S.A.	YGRE	ES0105212007	MAB	30.919.000	0,15%	-	0,00%	-	0,00%
GRAL. DE GALERIAS COMERCIALES SOCIMI S.A.	YGGC	ES0105195004	MAB	2.836.340.000	13,62%	-	0,00%	-	0,00%
GRUPO ORTIZ PROPERTIES SOCIMI, S.A.	YGOP	ES0105273009	MAB	75.339.000	0,36%	-	0,00%	-	0,00%
HADLEY INVESTMENTS SOCIMI, S.A.	YHLY	ES0105126009	MAB	56.000.000	0,27%	27.350.000	0,18%	-	0,00%
HEREF HABANERAS SOCIMI, S.A.U.	YHAB	ES0105103008	MAB	23.731.000	0,11%	22.112.000	0,15%	-	0,00%
HISPANIA ACTIVOS INMOBIL. SOCIMI, S.A.	HIS	ES0105019006	MC	1.713.962.000	8,23%	1.213.146.000	7,98%	1.081.929.000	9,23%
INMOBILIARIA COLONIAL SOCIMI, S.A.	COL	ES0139140174	MC	3.605.734.000	17,31%	2.348.968.000	15,46%	2.047.246.000	17,46%
INMOFAM 99 SOCIMI, S.A.	YINM	ES0105178000	MAB	39.385.000	0,19%	38.834.000	0,26%	-	0,00%

INVERSIONES DOALCA, SOCIMI, S.A	YDOA	ES0105120002	MAB	154.562.000	0,74%	157.783.000	1,04%	-	0,00%
ISC FRESH WATER INVESTMENT SOCI-MI, S.A.	YISC	ES0105153003	MAB	155.413.000	0,75%	173.106.000	1,14%	-	0,00%
JABA I INVERSIONES INMOBILIARIAS, SOCIMI, S.A	YABA	ES0105098000	MAB	19.408.000	0,09%	19.042.000	0,13%	-	0,00%
KINBOOK INVERSIONES SOCIMI, S.A.U. (no cotiza)	YKIB	ES0105266003	MAB	45.544.000	0,22%	-	0,00%	-	0,00%
LAR ESPAÑA REAL ESTATE, SOCIMI, S.A.	LRE	ES0105015012	MC	823.428.000	3,95%	636.500.000	4,19%	567.579.000	4,84%
MERCAL INMUEBLES SOCIMI, S.A.	YMEI	ES0105030003	MAB	29.802.000	0,14%	31.475.000	0,21%	30.669.000	0,26%
MERIDIA REAL ESTATE III SOCIMI, S.A.	YMRE	ES0105313003	MAB	81.640.000	0,39%	-	0,00%	-	0,00%
MERLIN PROPERTIES, SOCIMI, S.A.	MRL	ES0105025003	MC	5.308.409.000	25,49%	4.852.732.000	31,94%	3.729.381.000	31,81%
MISTRAL PATRIMONIO INMOBIL. SOCIMI, S.A.	YMPI	ES0105372009	MAB	-	0,00%	-	0,00%	-	0,00%
NUMULAE GESTION DE SERVICIOS SOCIMI, S.A.	YNUM	ES0105265005	MAB	10.457.000	0,05%	-	0,00%	-	0,00%
OLIMPO REAL ESTATE, S.A.	YORE	ES0105224002	MAB	198.662.000	0,95%	-	0,00%	-	0,00%
OPTIMUM III VALUE-AD RESIDENTIAL, SOCIMI, S.A.	YOVA	ES0105219002	MAB	54.570.000	0,26%	-	0,00%	-	0,00%
OPTIMUM RE SPAIN SOCIMI, S.A.	YORS	ES0105174009	MAB	59.900.000	0,29%	57.750.000	0,38%	-	0,00%
P3 SPAIN LOGISTIC PARKS SOCIMI, S.A.	YP3L	ES0105282000	MAB	30.273.000	0,15%	-	0,00%	-	0,00%
PREVISION SANITARIA NACIONAL GEST. S.A.	YPSN	ES0170756037	MAB	28.108.000	0,13%	-	0,00%	-	0,00%
PROMOCIONES RENTA Y MANTEN. SOCIMI, S.A.	YPMR	ES0171613005	MAB	3.749.000	0,02%	3.749.000	0,02%	4.482.000	0,04%
QUID PRO QUO ALQUILER SEG. SOCI-MI, S.A.	YQPQ	ES0105357000	MAB	-	0,00%	-	0,00%	-	0,00%
QUONIA SOCIMI, S.A.	YQUO	ES0105150009	MAB	44.265.000	0,21%	42.230.000	0,28%	-	0,00%
RREF II ALBRECK SOCIMI, S.A.	YALB	ES0105211009	MAB	27.149.000	0,13%	28.803.000	0,19%	-	0,00%

SERRANO 61 DESARROLLO SOCIMI, S.A.	YSRR	ES0105317004	MAB	-	0,00%	-	0,00%	-	0,00%
SILVERCODE INVESTMENTS SOCIMI, S.A.U.	YSCI	ES0105133005	MAB	81.693.000	0,39%	81.693.000	0,54%	-	0,00%
STUDENT PROPERTIES SPAIN SOCIMI, S.A.	YSPS	ES0105294005	MAB	12.870.000	0,06%	-	0,00%	-	0,00%
TANDER INVERSIONES SOCIMI, S.A.	YTAN	ES0105314001	MAB	-	0,00%	-	0,00%	-	0,00%
TARJAR XAIRO SOCIMI, S.A.	YTAR	ES0105226007	MAB	9.035.000	0,04%	-	0,00%	-	0,00%
TEMPORE PROPERTIES SOCIMI, S.A.	YTEM	ES0105323002	MAB	-	0,00%	-	0,00%	-	0,00%
TESTA RESIDENCIAL SOCIMI, S.A.	YTST	ES0105210019	MAB	-	0,00%	-	0,00%	-	0,00%
TESTA INMUEBLES EN RENTA, SOCIMI, S.A. (no quoted)	TST	ES0170885018	MC	-	0,00%	1.832.216.000	12,06%	1.918.438.000	16,36%
TORBEL INVESTMENTS 2015 SOCIMI, S.A.	YTOR	ES0105358008	MAB	-	0,00%	-	0,00%	-	0,00%
TRAJANO IBERIA SOCIMI, S.A.	YTRA	ES0105077004	MAB	159.734.000	0,77%	149.350.000	0,98%	97.850.000	0,83%
UNICA REAL-ESTATE SOCIMI, S.A.	YURE	ES0105327003	MAB	-	0,00%	-	0,00%	-	0,00%
URO PROPERTY HOLDINGS SOCIMI, S.A.	YURO	ES0105059002	MAB	183.864.000	0,88%	192.052.000	1,26%	218.028.000	1,86%
VBARE IBERIAN PROPERTIES SOCIMI, S.A.	YVBA	ES0105196002	MAB	28.971.000	0,14%	20.673.000	0,14%	-	0,00%
VERACRUZ PROPERTIES SOCIMI, S.A.	YVCP	ES0105330007	MAB	-	0,00%	-	0,00%	-	0,00%
VITRUVIO REAL ESTATE SOCIMI S.A	YVIT	ES0105139002	MAB	68.203.000	0,33%	40.289.000	0,27%	-	0,00%
ZAMBAL SPAIN SOCIMI, S.A.	YZBL	ES0105080008	MAB	633.927.000	3,04%	559.000.000	3,68%	572.524.000	4,88%
ZARAGOZA PROPERTIES SOCIMI, S.A.U	YZPS	ES0105084000	MAB	101.200.000	0,49%	67.399.000	0,44%	67.399.000	0,57%
			Total	20.826.883.000	100,00%	15.193.357.000	100,00%	11.724.559.000	100,00%
			MC	12.907.864.000	61,98%	9.527.906.000	78,17%	8.246.077.000	87,79%
			MAB	7.919.019.000	38,02%	5.665.451.000	21,83%	3.478.482.000	12,21%

Source: Authors from data of Sabi, Expansión, Bolsa Madrid, MAB, Infocif and companies web pages.

Table A2  
**Real estate companies quoted in Spain. Name, ISIN, capitalization 2015 to 2017**

Name	Abrev.	ISIN	Market	Capitaliza- tion 2017 (€)	%Capitaliza- tion 2017	Capitaliza- tion 2016 (€)	%Capitaliza- tion to 2016	Capitaliza- tion 2015 (€)	%Capitaliza- tion to 2015
AEDAS HOMES, S.A.	AEDAS	ES0105287009	CM	1.467.778.000	33,63%	0	0,00%	0	0,00%
AYCO GRUPO INMOBILIARIO, S.A.	AYC	ES0152960045	Parqué	28.621.000	0,66%	26.342.000	2,58%	24.787.000	3,09%
ESPAÑOLA DE VIVIENDAS EN ALQUILER, S.A.	CEV	ES0132955008	Parqué	102.549.000	2,35%	216.260.000	21,15%	151.150.000	18,83%
INMOBILIARIA DEL SUR, S.A.	ISUR	ES0154653911	CM	172.943.000	3,96%	134.247.000	13,13%	134.926.000	16,81%
LIBERTAS 7, S.A.	LIB	ES0137998A12	Parqué	0	0,00%	0	0,00%	0	0,00%
METROVACESA, S.A.	MVC	ES0105122024	CM	0	0,00%	0	0,00%	0	0,00%
MONTEBALITO, S.A.	MTB	ES0116494016	CM	68.550.000	1,57%	24.750.000	2,42%	19.350.000	2,41%
NEINOR HOMES, S.A.	HOME	ES0105251005	CM	1.445.792.000	33,13%	0	0,00%	0	0,00%
NYESA VALORES CORPORACIÓN, S.A.	NYE	ES0150480111	CM	27.596.000	0,63%	27.596.000	2,70%	27.596.000	3,44%
QUABIT INMOBILIARIA, S.A.	QBT	ES0110944172	CM	207.992.000	4,77%	102.370.000	10,01%	125.318.000	15,61%
REALIA BUSINESS, S.A.	RLIA	ES0173908015	CM	709.289.000	16,25%	396.246.000	38,76%	233.602.000	29,10%
RENTA CORPORACION REAL ESTATE, S.A.	REN	ES0173365018	CM	96.199.000	2,20%	60.350.000	5,90%	57.555.000	7,17%
URBAS GRUPO FINANCIERO, S.A.	UBS	ES0182280018	CM	37.079.000	0,85%	34.227.000	3,35%	28.522.000	3,55%
			Total	4.364.388.000	100,00%	1.022.388.000	100,00%	802.806.000	100,00%

Source: Authors from Bolsa de Madrid Data

Table A3

**Descriptive statistics of daily return series**

	<i>Axiare</i>	<i>Hispania</i>	<i>Lar</i>	<i>Merlin</i>	<i>Ibex35</i>	<i>Ind. Inm.</i>
Mean	0,09%	0,07%	0,03%	0,03%	0,00%	0,03%
Typical error	0,06%	0,05%	0,05%	0,05%	0,04%	0,04%
Median	0,00%	0,00%	0,00%	0,05%	0,05%	0,07%
Mode	0,00%	0,00%	0,00%	0,00%	-	0,00%
Standard deviation	1,67%	1,50%	1,48%	1,53%	1,31%	1,27%
Variance	0,03%	0,02%	0,02%	0,02%	0,02%	0,02%
Curtosis	6,56	11,22	6,58	16,97	956,68%	991,24%
Asymmetry coefficient	0,63	-0,90	-0,14	-1,94	-105,84%	-100,40%
Range	20,35%	21,15%	20,05%	20,74%	16,23%	16,40%
Minimum	-7,95%	-14,53%	-11,28%	-14,91%	-12,35%	-11,99%
Maximum	12,41%	6,61%	8,77%	5,83%	3,87%	4,41%
Sum	79,46%	63,82%	27,71%	22,43%	0,89%	28,51%
Accoent	891	891	891	891	891	891
Confidence level(95,0%)	0,11%	0,10%	0,10%	0,10%	0,09%	0,08%

	Colonial	Inmobiliaria del Sur	Realia	Renta Corporación	Monteбалito
Mean	0,06%	0,10%	0,03%	0,29%	0,16%
Typical error	0,05%	0,10%	0,09%	0,20%	0,11%
Median	0,00%	0,00%	0,00%	0,00%	0,00%
Mode	0,00%	0,00%	0,00%	0,00%	0,00%
Standard deviation	1,58%	2,87%	2,70%	5,83%	3,18%
Variance	0,02%	0,08%	0,07%	0,34%	0,10%
Curtosis	4,19	14,76	17,11	548,05	17,92
Asymmetry coefficient	-0,36	1,59	0,06	20,79	2,51
Range	18,25%	42,45%	44,91%	170,90%	42,67%
Minimum	-11,05%	-13,42%	-25,18%	-16,51%	-14,93%
Maximum	7,20%	29,03%	19,73%	154,39%	27,74%
Sum	52,62%	86,92%	25,59%	256,93%	142,71%
Accoent	891	891	891	891	891
Confidence level(95,0%)	0,10%	0,19%	0,18%	0,38%	0,21%

Source: Authors from Bolsa de Madrid Data