PROFESSIONAL BRIEFING

The GJ-STATIC securitization fund on property rentals.
An instrument to help struggling real estate and construction companies in Spain

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Abstract

As a result of the real estate crisis that recently hit Spain, there is a substantial stock of properties up for sale that fail to find a buyer. This is a serious problem for both developers and construction companies, as well as for financial entities that hold a large number of empty houses as assets, which they are unable to offload. This article proposes the creation of a Collective Investment Fund, called GJ-STATIC, for the securitization of the rentals of these properties. The main problem is that there is no reliable calculation system in Spain that can serve as a basis for estimating the price of these rents. Consequently, the GJ-STATIC Collective Investment Fund uses kriging means to calculate the average rental price, whereas Spanish institutions, valuation companies and real estate portals use simple averages to estimate those prices. Unlike simple averages, kriging means are unbiased, efficient and consistent, and therefore provide optimal estimates of the market price for the area where the property in question is located.

Keywords:

Securitization fund, Real estate rentals, Kriging-of-the-mean, Financial crisis, Spain.

JEL classification:

G23, L85, R1.

➥ **Please cite this article as:**

Pindado, G. and Álvarez, J.M. (2018). The GJ-STATIC securitization fund on property rentals. An instrument to help struggling real estate and construction companies in Spain, *AESTIMATIO, The IEB International Journal of Finance,* **16**, pp. 2-15.

doi: 10.5605/IEB.16.7

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El fondo de titulación de alquileres inmobiliarios GJ-STATIC. Un instrumento para ayudar a las empresas inmobiliarias y de la construcción en dificultades en España

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Resumen

Como consecuencia de la crisis inmobiliaria sufrida en España en los últimos años, existe un elevado stock de inmuebles puestos a la venta que no encuentran comprador. Esto es un grave problema tanto para promotoras, constructoras, así como para entidades financieras que cuentan entre sus activos con un gran número de viviendas vacías al cual no dan salida. En este artículo se propone el crear un Fondo de Inversión Colectivo de titulaciones de los alquileres de esos inmuebles denominado GJ-STATIC.
El problema principal es que no existe en España un sistema de cálculo fiable que sirva como base para estimar el precio de esos alquileres. Es por ello, que en el Fondo de Inversión Colectivo GJ-STATIC, para el cálculo del precio medio de alquiler y a diferencia de cómo se llevan a cabo las estimaciones de dichos precios medios por parte de las instituciones españolas, así como por parte de las sociedades de tasación y portales inmobiliarios, utiliza medias krigeadas, que, a diferencia de los meros promedios, son insesgadas, eficientes ,consistentes y constituyen, por tanto, estimadores óptimos del precio de mercado de la zona en la que se ubica el inmueble objeto de valoración

Palabras clave:

Fondo de titulización, alquileres de los bienes inmuebles, krigeado de la media, crisis financiera, España.

■ 1. Consequences of the financial crisis for Spanish real estate and construction companies

The subprime mortgage crisis that began in the US in the summer of 2007 spread to the international financial system and ended a golden decade in the Spanish residential market. The financial crunch precipitated the crisis in a sector that had been showing signs of slowing down since the end of 2006, a year that was marked by a historically high number of applications for housing starts: 865,000 units, according to the Spanish Ministry of Public Works.

When those properties were completed in 2008, they were met with potential buyers facing financing problems and falling demand due to the belief that prices were in decline. As can be seen in Figure 1, which shows the average price of housing in each Autonomous Community in 2009 and 2013, housing prices fell considerably, although not enough to offload all the real estate stock produced during the economic boom of the preceding years. The new-build houses that months before were being steadily sold off, could not find buyers: an important part of the new work was coming to stay.
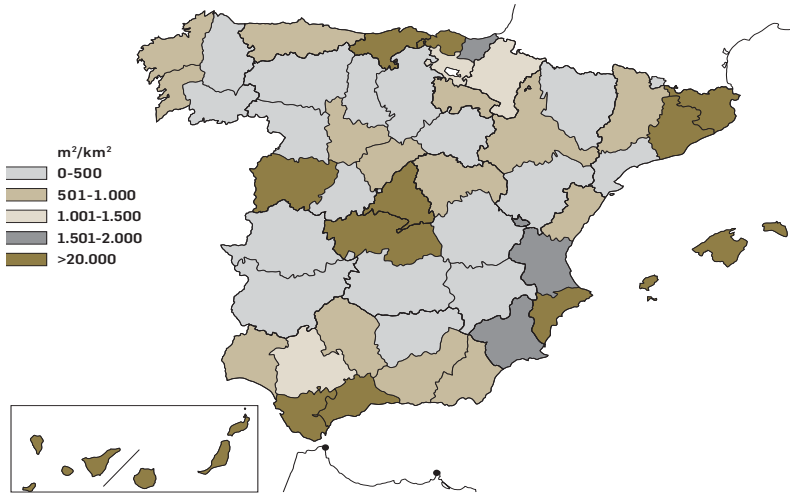
■ Figure 1. **Average price of housing in each Autonomous Community, 2009 and 2013**
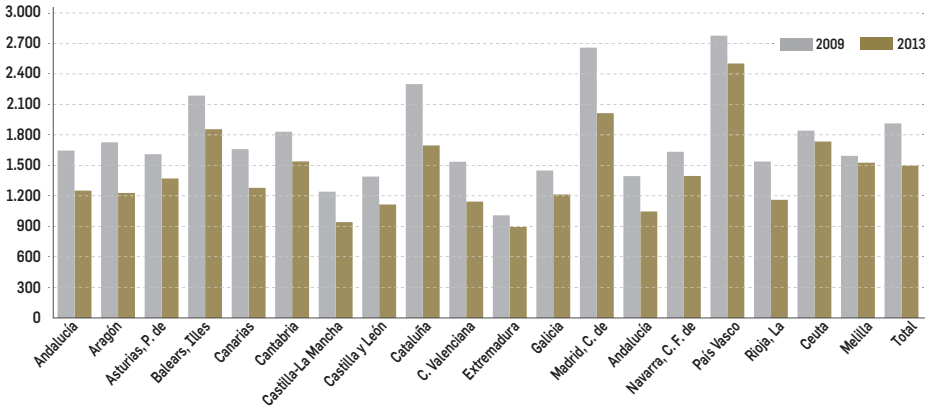
SOURCE: STATISTICS ON HOUSING PRICES. S. G. ECONOMIC STUDIES AND STATISTICS. MINISTRY OF DEVELOPMENT **(2015)**.

Although it slowed, construction did not stop altogether during the crisis. According to official data, in Spain, 1.56 million homes have been completed since 2008, a figure equivalent to 6.4% of the existing housing stock in the country. 80% of these new builds are concentrated in only 900 of the more than 8,000 municipalities in Spain. This distribution of occupation is not evenly spread among the different provincial capitals, with a higher concentration in the main provincial capitals and in the islands, as can be seen in Figure 2.

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In light of these circumstances, the situation of many construction companies and real estate developers become unsustainable: Their portfolios were composed of a significant amount of real estate stock that they were unable to offload and in most cases these buildings had significant credit charges, leading to significant losses in assets and insolvency situations.

This article proposes a financial instrument which could help solve the financial situation of the above-mentioned companies in Spain: Securitization funds on property rentals. Securitization is an operation or system whereby an asset or pool of assets is transferred to an entity that is separate from the originator and which has been created or is used for securitization. In this case, the GJ- STATIC fund is proposed.

After this brief introduction about the financial problems that some construction companies are suffering in Spain following the crisis, in Section 2 we define the proposed securitization fund for financial rentals. Section 3 describes how the fund estimates the rentals using recent geostatistical procedures. Section 4 details the main characteristics of the fund and, finally, Section 5 lists its risks and limitations.

■ 2. The securitization fund for property rentals, GJ-STATIC

As said in the introductory section, in light of the significant losses in assets and insolvency situations facing many construction companies and real estate developers, this article proposes the creation of an investment instrument (a securitized investment fund

on real estate rentals (GJ-STATIC) that attempts to make a profit by investing in exploitation rights of rents in residential real estate assets of first occupation.

The first phase consists of searching for and selecting real estate in areas with significant asset turnover and strong rental demand. For this study, the city of Madrid has been selected as it is the capital of Spain and has the largest real estate stock. Barcelona and Valencia are also chosen since they are the capitals of their respective provinces and have real estate dispersed along the Mediterranean coast, and thus a strong tourist sector and a marked seasonal component.

A key factor is the estimation of the rental price of a property in a specific area. In other words, it is essential to estimate the mean market price for rent in that area. Once it has been estimated (see the methodology in the next section), the next step would be to acquire the rental rights from promoters/builders or private individuals with a substantial portfolio of properties and associated property rights, at a discount rate that is reduced by between 25% and 40% depending on the city, type of property, location and average market price.

The raw data used to calculate the mean market price for rent are the data published by the real estate portal "idealista.com", since it is considered to have the most detailed database of the real estate market. Moreover, all the prices they publish reflect the latest updates made by the owners to their listings for the houses that they have advertised on "idealista.com" and therefore represent the most up-to-date market prices. (single-family houses are excluded because they distort the mean price in some areas). This allows a quantitative and qualitative analysis of trends in housing rents in Spain, although these results are also compared with other experts and sources.

It is true that idealista.com shows the asking prices, but there are no databases of sale prices available to researchers and agents involved in the financial markets.

Since real estate prices and rents have spatial effects (that is, space matters) and the usual arithmetic mean is not an optimal estimator of the mean of the rents in a specific area, the kriging of the mean of the rents of the houses and other equivalent real estate, in the sense of Fotheringham *et al.* (2002), is used to calculate the average rent of an area. In cases where no information is available, predictions can be made using the spatial models provided by geostatistics and spatial econometrics.

The second phase is marketing the product to investors seeking a transparent, safe and profitable investment for their savings. It would not be necessary to have large amounts of capital to make such an investment, since it would be very diversified and divided into shares.

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For the investor in the fund, it would be an indirect real estate investment involving the acquisition of its exploitation rights and its subsequent option to purchase. Indirect real estate investments include shares/units, derivatives and funds related to real estate.

Indirect real estate investments can have several advantages over direct investments, for example, lower transaction costs, shorter time frames, greater liquidity and transparency. It would be an investment modality that allows the small investor to access a diversified range of assets and invest with lower capital. The profitability of a real estate investment consists of two components: On the one hand, current income in the form of rental income (operating rights); and on the other, the possible revaluation of the property. Other advantages offered by real estate investments are that they are uncorrelated with the general state of the stock market and interest rates, and so can be very useful when it comes to diversifying portfolios.

The management entity would be responsible for the exploitation rights derived from real estate that may or may not be leased at the time of acquisition, so it may be necessary to find tenants, always under the applicable legal regulations[1].

The product would be guaranteed by taking out insurance against non-payment of rents, to offset the associated risk and thus ensure a safe and profitable management over time. These types of rental policies not only cover the investor after a loss has occurred (whether a default or other credit event), but also help to choose the right tenant by means of feasibility studies and consumer credit reports (from databases such as ASNEF[2]; RAI, etc. …)

The net asset value (NAV) is set at least monthly by the management company. It will be the result of dividing the assets of the fund among the number of units in circulation. The operation of the management entity will be supervised by the custodian, who will also be responsible for the securities or cash of the fund's assets, but not for the documents providing proof of ownership of the properties, which will be kept by the manager.

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1 Commission Regulation (EC) 24/2009 of the European Central Bank of 19 December 2008 concerning statistics on the assets and liabilities of instrumental companies engaged in securitization (ECB / 2008/30) (DOUE of 20 January 2009).
And the Guideline of the European Central Bank of 19 December 2008 amending Guideline ECB / 2007/9 on monetary and financial institutions and markets statistics (recast) (ECB / 2008/31) (2009 / 1 60 / EC) (DOUE of 26 February) "Securitization" means an operation or system whereby an asset or pool of assets is transferred to an entity which is separate from the originator and has been created or is used for securitization, or the credit risk of an asset or group of assets or part thereof, is transferred to investors in securities, units in securitization funds, other debt instruments or financial derivatives issued by an entity that is separate from the originator And has been created or is used for securitization.

2 National Association of Financial Institutions of Credit (ASNEF) is an Enterprise Organization governed by Law 19/1977 of April 1 on the regulation of the right of trade union association and as such is an indispensable link between credit institutions specialized in financing Consumers and public administrations, other Spanish and European professional associations and users of financial products, and through its work facilitates consumers', professionals' and entrepreneurs' access to consumer goods and production.

The value of the share must be calculated monthly and the appraisal of the real estate will be carried out at least once a year, as well as the possibility of subscription and reimbursement.

■ 3. Estimation of real estate prices

As shown in Montero and Fernandez-Avilés (2017), although the price of housing (and real estate in general) is one of the issues of greatest concern to Spanish citizens, there is a need for improvement in the available statistics on housing prices and rents in Spain, and they should include information on the spatial (or better yet, spatial-temporal) effects inherent in real estate prices. The Ministry of Public Works produces a quarterly report on the average price of housing assessed by a number of valuation organizations: The Spanish National Institute of Statistics (INE) produces the housing price index (IPV); The Spanish Registrars Association annually publishes the Repeat Sales Price Index (IPVVR) as part of its national Real Estate Registry Statistics; and The General Council of Notaries produces, at the level of the Autonomous Community, monthly series of the prices of private housing, subsidized housing and the relationship between the two. In addition, a number of appraisal companies, real estate agencies and real estate portals regularly report average prices based on their own records.

According to Montero and Fernández-Avilés (2017), the average house price as calculated by the Ministry of Development is simply the average price of around 300,000 appraisals that are carried out each year. Therefore, it does not average market prices but rather the prices estimated by appraisers. The maximum geographical breakdown for these prices corresponds to municipalities with more than 25,000 inhabitants. The price per square metre of the housing (whether private or subsidized) reported by the General Council of Notaries is also constructed as a simple arithmetic average of the individual prices in the operations collected by notaries. Valuation companies, real estate agencies and real estate portals also use a simple arithmetic mean as an estimator, which, as will be discussed below, does not provide accurate estimates in the presence of spatial dependence. The IPV produced by INE is based on the values and areas declared in the notarized deeds and therefore supposedly represents the market price per square metre of housing. However, the index is not produced directly from the averages of said relative prices at two moments in time, but rather is the result of a hedonic regression of the observed prices on a set of characteristics of the dwellings; This eliminates the changes in prices resulting from variations in the characteristics of the sampled housing. Unfortunately, in addition to being an aggregate index, it does not focus on the measurement of price levels but rather on the relative variation. The IPVVR released by the Spanish Registrars Association is constructed

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from records of those homes that have been sold at least twice within the study period. However, the Spanish housing market does not have the necessary depth for there to be enough repeat sales to ensure that the price estimates provided (or, better yet, trends in those prices) are representative.

However, as already pointed out in Montero Lorenzo (2004), although an average price for a provincial capital (or even a region) or the rate of change may be of interest in the context of a high-level of spatial aggregation, can it be considered realistic? In other words, is the methodology used to carry out such an estimate statistically correct? Unfortunately not, because none of the housing price indicators published in Spain takes into account either the Principle of Spatial Autocorrelation formulated by Tobler (1970) or the predictive consequences of the spatio-temporal extension of this principle.

There are certainly negative consequences of failing to account for such space or space-time dependencies. According to Montero *et al.* (2015), mean prices are an unbiased and consistent estimator of the average population price, but their variance is certainly underestimated and, therefore, the sample mean is no longer the minimum variance estimator. As a consequence of this underestimation, the confidence intervals are actually lower than expected and the power of the tests is less than that obtained under the assumption of independence.

As Wackernagel (2003) and Montero *et al.* (2015) point out, when using an average price as an indicator of the average of an area, the so-called kriging of the mean should be used.

That is why the GJ-STATIC Fund uses real estate prices in the area (for certain property characteristics) to value similar properties for which there is no price. Average prices are used, but unlike the average price estimates produced by Spanish institutions, appraisal companies and real estate portals, the Fund uses kriging means. In contrast with simple averages, kriging means are unbiased, efficient and consistent, and therefore constitute optimum estimates of the market price of the area in which the property under assessment is located. The method of constructing said kriging means is set out below, following Montero *et al.* (2015) and Montero and Fernández-Avilés (2017).

Let $X(\mathbf{s}_1), X(\mathbf{s}_2),..., X(\mathbf{s}_n)$ be the prices of real estate properties located in the locations $\mathbf{s}_1, \mathbf{s}_2,..., \mathbf{s}_n$ of a certain geographical area. When estimating the average price of this type of property (with certain characteristics) in a certain geographical area, the geostatistical paradigm follows the same logic as that used by economic agents, i.e. it is based on the observation and averaging of prices of similar properties in the vicinity.

However, in the averaging process, the weights will not be equal and so the kriging-of-the-mean estimator for an area with centroid $\mathbf{s}_0$ is thus established as follows:

$$X(\mathbf{s}_0) = \sum_{i=1}^{n} \lambda_i X(\mathbf{s}_i) \qquad (1)$$

The weights are obtained in such a way that the resulting estimator is optimal, in the sense of unbiasedness and minimum variance of the estimation error. This is done in a context in which the condition of independence of the prices of the properties under study does not apply, since, as previously mentioned, the positive spatial correlation of real estate prices is verified.

The above-mentioned weights are obtained from the solution system of kriging-of-the-mean equations (see details in Montero *et al.*, 2015):

$$\begin{cases} \sum_{j=1}^{n} \lambda_j \gamma(\mathbf{s}_i - \mathbf{s}_j) + \alpha = 0, \quad \forall i = 1, \ldots, n \\ \sum_{j=1}^{n} \lambda_j = 1 \end{cases}, \qquad (2)$$

which is expressed in terms of the semivariogram, $\gamma(\mathbf{s}_i - \mathbf{s}_j)$, which, in the stationary case, depends only on the distance between observations $\mathbf{s}_i - \mathbf{s}_j$, and not on the direction. The variance of the estimation error is given by α The theoretical semivariogram used in the system of kriging equations (2) is the one that best fits the semivariogram proposed in Cressie and Hawkins (1980), very robust in the presence of price outliers, given by the expression:

$$\gamma_{CH}^*(\mathbf{h}) = \frac{1}{2} \left[0{,}457 + \frac{0{,}494}{N(\mathbf{h})} \right]^{-1} \left[\frac{1}{N(\mathbf{h})} \sum_{i=1}^{N(\mathbf{h})} |X(\mathbf{s}_i + \mathbf{h}) - X(\mathbf{s}_i)|^{1/2} \right]^4 \qquad (3)$$

In (3) $X(\mathbf{s}_i)$ is the price of a dwelling at the location $\mathbf{s}_i$, $X(\mathbf{s}_i + \mathbf{h})$, is the price of a house at a distance h from $\mathbf{s}_i$ (in any direction, isotropy is assumed), and $N(h)$ is the number of pairs of dwellings separated by a distance h, in any direction. The empirical semivariogram constructed using the method-of-moments (Cressie, 1993) is also a widely-used option to serve as a basis for the determination of the theoretical semivariogram that best captures the spatial dependencies inherent in real estate prices.

■ 4. Project GJ-STATIC in Spain

The real estate securitization fund GJ-STATIC will adhere to the following investment rules:

a) At least 80 percent of the average annual monthly balances shall be invested in immovable property intended for lease.

b) A minimum liquidity ratio of 10 percent of the total assets of the previous month must be maintained.

Compliance shall be limited to the months in which unit-holders have a right to repayment and shall be calculated on the basis of the daily average of the ratio over the month. This ratio shall be expressed in cash, deposits, current accounts at a credit institution or in assets or fixed income instruments with maturity or remaining amortization of less than 18 months and purchase and sale with a repurchase agreement of public debt securities, provided they are traded on secondary markets.

c) The maximum concentration in a single building will be 35% of the total assets.

d) The properties from which the exploitation rights originate will be mainly residential, located in Spain and with financial charges.

e) The rights are acquired for a predetermined amount and expiration date, or until one of the following conditions occurs:
· Preset period: Maximum of 10 years.
· The purchase option is exercised or awarded by the creditor.

f) The exploitation rights are derived from properties that may or may not be rented at the time of purchase, and so it may be necessary to market and promote them. It is also necessary to take out rental default policies on rented properties to offset the risk of rent non-payment, thus ensuring safe, profitable management over time.

g) The manager will be in charge of marketing, maintenance of the buildings and managing the rents.

h) The fixed yield of the product is 5.00% per year and will be distributed among the participants through monthly coupons and another variable part that depends on a constant and increasing revaluation of the principal, which will be incorporated into the net asset value of the product.

i) Investment maximization ratios would be around 8.00% (annually) thanks to an active management strategy and a rigorous selection of real estate.

This monthly profitability is generated by rental income from real estate and the revaluation of the principal will occur a consequence of the revaluation of the properties in question.

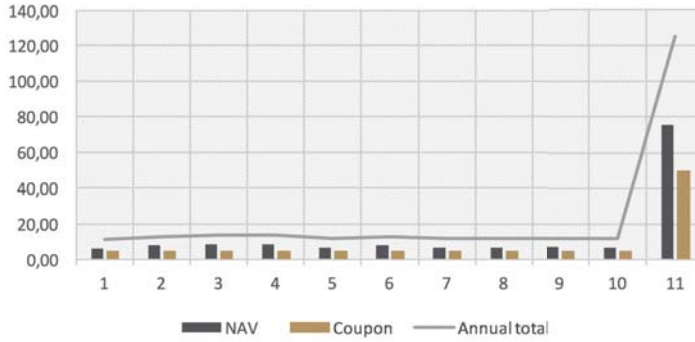■ Figure 3. **Expected trend in GJ-STATIC Fund**

Evolucion GJ Static

■ NAV   ■ Coupon   — Annual total

● Table 1. **Return history**

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Total
NAV	6.5	8	8.8	8.8	7	8.1	7	7	7.2	6.9	**75.3**
Coupon	5	5	5	5	5	5	5	5	5	5	**50**
Annual total	11.5	13	13.8	13.8	12	13.1	12	12	12.2	11.9	**125.3**
Accumulated total	11.5	24.5	38.3	52.1	64.1	77.2	89.2	Y8	101.2	113.4	**125.3**

SOURCE: OWN ELABORATION.
Net Asset Value (NAV) For this calculation, we have used an arithmetic mean of the prices from the real estate portal idealista.com, fotocasa.com, and the quarterly report from the Bank of Spain.

4. Risks and limitations

The Investment Committee applies a strict disciplinary approach to risk control, and monitors the investment approach in order to achieve the best combination of expected return and accepted risk. GJ-STATIC has a "Lock Up" period of 30 months and a grace period for withdrawals with six months advance notice, so that the investor cannot be reimbursed for the full value for up to three years. This is a result of the regulations regarding the minimum period in which the lessor, notwithstanding the reasons provided for in Law 29/1994, of 24 November, on Urban Leases and modified in Law 4/2013, of 4 June, of measures to promote the housing rental market and make it more flexible ("BOE" 5 June), is set as a minimum period to unilaterally terminate the lease.

The risks to consider when making an investment in GJ-STATIC are:

Liquidity Risk: Such risk stems from the possibility of there being no counterpart in the market and, therefore, that the property cannot be rented.

Investment advisors locate and analyse investment opportunities. They are in charge of finding the best, most secure opportunities, focusing the search for assets on high-population urban centres and in neighbourhoods with a high income per capita, to find the most secure and stable assets to include in the portfolio.

Solvency Risk: This risk would be covered by taking out insurance policies for non-payment of rents for rented properties.

For those properties that are not rented initially or others vacated during the term of the contract, and in order to expedite the search for and location of a new tenant, a 10% discount should be applied, after having carried out an exhaustive analysis of the average market price for this area. This reduction in price would reduce the time that the property stands empty.

Emitter Risk: Since this is a very attractive product for all the agents involved, it is possible that there would be a strong demand from the outset. As has been seen throughout the article, the success of the product is based on selecting the right real estate and calculating the average price per area, as the location of the buildings is considered a key success factor. If we follow these principles, it may be the case that there are not sufficient assets to cover demand. As a solution, we propose that centralized units are issued based on the properties in the portfolio rather than the demand for the product.

Economic risk: This is one of the most important risks associated with this product because it involves a medium-long term investment closely linked to the economic growth and the evolution of the real estate sector.

Credit risk. These are properties that in most cases have mortgages on them, and under Article 13 of Law 4/2013, of 4 June, on measures to promote the housing rental market and make it more flexible, "If, during the term of the contract, the right of the lessor is terminated by exercising a conventional withdrawal, the opening of a trust, dispossession resulting from foreclosure or court judgment or the exercise of a purchase option, the lease will be terminated."

As stipulated in the second paragraph of article 7 and in article 14, an exception is made in cases where the lease agreement had been registered at the Property Registry prior to the laws governing the termination of the lessor's rights. In such cases, the lease will continue for the agreed duration. There is a risk that the lease agreement will be terminated due to the owner's insolvency.

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