

**POLYTECHNIC UNIVERSITY OF MADRID**

Higher Technical School of Construction



**Analysis of the  
Capitalization Process of  
the Spanish Real Estate  
Sector**

**DOCTORAL DISSERTATION**

Submitted for the degree of Doctor by:

**Alejandro Segura de la Cal**

Graduate in Building Engineering Graduate in  
Economics

Technical Architect

Master's Degree in Economic Growth and Sustainable Development

***ORIGINAL VERSION WRITTEN IN SPANISH, TRANSLATION  
BY DEEPL NOT CONTRASTED***

Madrid, 2024



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**PhD in Technological Innovation in Building**

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Madrid, 2024



Title: Analysis of the Capitalization Process of the Spanish Real Estate Sector

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Doctoral Program: Doctorate in Technological Innovation in Construction Thesis

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External reviewers:

Thesis tribunal:

Date of defense:



To Society in its quest for Freedom





## Acknowledgments

The work presented here is the result of the contribution of many people who directly or indirectly have helped to make it possible to develop knowledge, criteria and sensitivities on the subject, as well as to have the necessary motivation and time. I would like to thank all those who have made it possible, highlighting those who I consider to have had a special impact on the development of what has been presented:

First of all, I would like to thank my directors Inmaculada Martínez and Antonio Martínez for their trust and full support, whose guidance has been essential to take each step in the right direction.

I would like to thank my colleagues at the Universidad Politécnica de Madrid, those at the ETS de Ingeniería Aeronáutica y del Espacio and the Department of Organizational Engineering, Business Administration and Statistics, for their trust and patience in facilitating my research work and for contributing their knowledge to the development of the ideas, with special thanks to Rafael González, Javier Espina and Gustavo Morales for their contributions. I would also like to thank my colleagues at the ETS de Edificación, who have always motivated me to develop my teaching vocation and research interest, especially Alfonso Cobo and Nuria Llauradó, who were my teachers before they were my colleagues.

Particular thanks to all the professors at *La Sapienza* in Rome who involved me in their team from day one, making the research training stay a unique experience.

I am especially grateful to the entrepreneurs who have contributed to my growth since I began my professional career, Eduardo de la Cal and my colleagues at UNIPYME, among whom I would like to mention Guillermo Marcos (†), Luis Cascales and Augusto de Castañeda. I would also like to thank Javier Moreno, Jorge Sierra, María González, Miguel Linera, Joao Matoso, Luis Alves Costa (†) and Pedro Alves Costa (†), who have allowed me to work side by side to ensure the success of our business projects, based on the conviction that business success can only be achieved by offering value to society.

To my friends, especially Ignacio Izaga, José Gismero and Antonio Gonzalez for having contributed with the continuous debate to develop the ideas presented.

And finally, to my family because I owe everything I am to them. To my parents, Teresa and Jesús, to my sister Teresa, and to my wife, María, for her boundless love.



## **Abstract**

*Today's economy is based on the existence of two Production Factors (PF) (labor and capital) that determine the relations of all Human Beings with each other and with the environment. It is a foundation that acts as a central point of economic thought, of property rights, of public action, of business accounting or of the sustainability of the planet in that it defines the treatment of the elements that interact in the economy and the returns they obtain. The economy treats capital as anything other than labor by treating elements such as agricultural plots, urban spaces, mines, hydrocarbon deposits, animals, buildings, machinery, software, brands, or patents as assets. This is a set of elements with different characteristics, since those that have an unlimited duration are treated as capital in the same way as those that are indefinite, those that have life and those that are inert, or those that have been created by human action, as well as natural goods that exist independently of the market.*

*Among capital goods, the real estate sector represents the main asset in today's world, accounting for two thirds of all property in the economy, including housing, offices and infrastructures. It is a sector with unique economic implications as it combines an undefined and scarce natural asset such as land with other elements such as construction materials and the work involved in its construction. Its characteristics make it a unique investment asset that combines the possibilities of profitability and risk inherent to the markets with those of security and family as the home of Human Beings. Real estate investment acquires prominence in a context of a continuous increase in society's accumulated capital, which causes a gap between housing prices and the individual investment capacity of citizens. Under these conditions, the market function takes precedence over the household function in a situation that has important economic and social implications.*

*The paper starts by analyzing the process of capitalization of the real estate sector in Spain, working on the concept of financialization, the role of regulation and the market activity of Real Estate Investment Companies. The results obtained lead to the study of the relationship between these elements and the FP of the economy as the foundations of the system. Based on the study of the FP, a new classification is proposed in the form of space, inert matter, living beings, labor, and capital, which considers the characteristics of each one at the highest level of aggregation. This classification leads to the reformulation of the aggregate Production Function and to the study of the implications on different aspects of the economy, such as the financial representation of FP, their link with the household and market functions, their relationship with the sustainability of the conditions of the Earth and their relationship with public action.*

*The results show how the application of the FP presented above introduces significant changes in the economic system, favoring society's access to nature's resources and protecting individual incentives that encourage work and investment as a source of wealth creation. This allows for an improvement in the efficiency and equity criteria of markets in conditions of sustainability, while at the same time facilitating the de-capitalization of housing in defence of its function as a home for Human Beings.*

## **Summary**

Today's economy is based on the existence of two Factors of Production (PF) (labor and capital) that determine the relationships of all Human Beings with each other and with the environment. It is a foundation that acts as a central point of economic thought, of property rights, of public action, of business accounting or of the sustainability of the planet insofar as it defines the treatment of the elements that interact in the economy and the returns they obtain. The economy treats capital as anything other than labor by considering elements such as agricultural plots, urban spaces, mines, hydrocarbon deposits, animals, constructions, machinery, *software*, trademarks or patents as assets. It is a set of elements with different characteristics, since those that have an unlimited duration are treated as capital in the same way as those that are indefinite, those that have life and those that are inert, or those that have been created by human action, as well as natural goods that exist independently of the market.

Among capital goods, the real estate sector represents the main asset in today's world, accounting for two thirds of all property in the economy, including housing, offices and infrastructure. It is a sector with unique economic implications as it combines an indefinite and scarce natural asset such as land with other elements such as construction materials or the work involved in its construction. Its characteristics make it a unique investment good that unites the possibilities of profitability and risk typical of the markets with those of security and family as the home of Human Beings. Real estate investment acquires prominence in a context of continuous increase of the capital accumulated by society, which causes a gap between housing prices and the individual investment capacity of citizens. Under these conditions, the market function takes precedence over the household function in a situation that has important economic and social implications.

The work starts from the analysis of the capitalization process of the real estate sector in Spain, for which the concept of financialization, the role of regulation and the market activity of the Real Estate Investment Companies are studied, the results obtained lead to the study of the relationship of these elements with the PF of the economy as foundations of the system. Based on the study of the PFs, a new classification is proposed in the form of Space, Inert Matter, Living Beings, Labor and Capital, which considers the particular characteristics of each one at its highest level of aggregation. This classification leads to the reformulation of the aggregate Production Function and to the study of the implications on different aspects of the economy, such as the financial representation of the PF, its link with the household and market functions, its relation with the sustainability of the conditions of the Earth and its relation with public action.

The results show how the application of the PFs presented above introduce significant changes in the economic system, favoring society's access to nature's resources and protecting individual incentives that encourage work and investment as a source of wealth creation. This allows an improvement in the criteria of efficiency and equity of markets in conditions of sustainability while facilitating the decapitalization of housing in defense of its function as a home for Human Beings.

## **Sintesi**

*The western economy is based on the existence of two production factors (labor and capital) that determine the relationships of all human beings with each other and with the environment. It is a foundation that serves as a central point of economic thinking, property rights, public action, corporate accounting or sustainability of the planet, as it defines the treatment of the elements that interplay in the economy and the returns they obtain. The economy considers capital as something different from labor, treating as assets elements such as agricultural land, urban areas, mines, hydrocarbon deposits, animals, buildings, machinery, software, markets or small businesses. It is a set of items with different characteristics, because those that have an unlimited duration are treated as capital in the same way as those with an indefinite duration, those that have a life and those that are inert, or those that have been created by human action, as well as natural goods that exist independently from the market.*

*Among the capital goods, the real estate sector represents the main asset of the world economy, with two thirds of all the goods present in the economy, including housing, offices and*

*infrastructures. It is a sector with unique economic implications, as it combines an undefined and scarce natural asset such as land with other elements such as construction materials and the labor necessary for its realization. Its characteristics make it a unique investment asset of its kind, combining the possibilities of profitability and risk in the markets with those of security and family, as a home for human beings. Real estate investment acquires importance in a context of continuous increase of the capital accumulated by society, which causes a gap between housing prices and the individual investment capacity of citizens. In these conditions, the role of the market prevails over that of the family, in a situation that has important economic and social implications.*

*The article starts from the analysis of the capitalization process of the real estate sector in Spain, working on the concept of financialization, on the role of regulation and on the market activity of Real Estate Investment Companies. The results obtained lead to the study of the relationship between these elements and the PF of the economy as the foundation of the system. On the basis of the study of the PF, a new classification is proposed under the form of Space, Inert Matter, Living Resources, Labor and Capital, which considers the peculiar characteristics of each one at the highest level of aggregation. This classification leads to the reformulation of the Aggregate Production Function and to the study of its implications on various aspects of the economy, such as the financial representation of PF, its relationship with domestic and market functions, its relationship with the sustainability of land conditions and its relationship with public action.*

*The results show how the application of the FP presented above introduces significant changes in the economic system, favoring society's access to natural resources and protecting individual incentives that encourage labor and investment as a source of wealth creation. This allows to improve the criteria of efficiency and fairness of the markets in conditions of sustainability, facilitating at the same time the decapitalization of the residential building in defense of its function as a home for human beings.*

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**Abbreviations and  
acronyms**

ABS	<i>Asset-Backed Securities (Asset-Backed Securities)</i>
CAGR	<i>Compound Annual Growth Rate (Compound Annual Growth Rate)</i>
CDO	<i>Collateralized Debt Obligations (Collateralized Debt Obligations)</i>
FP	Factor of Production (PF or PFs)
IRPF	Income Tax Personal Income Tax Transfer Tax
ITP	Value Added Tax Value Added Tax
ITP	Organization for the Cooperation Economic Cooperation y
VAT	the Development
OECD	<i>(Organisation for Economic Co-operation and Development)</i> General Chart of Accounts
PGC	<i>Real Estate Investment Trust (Real Estate Investment Trust)</i>
REIT	
SOCIMI	Real Estate Investment Company

## Definitions

- **Sustainable Human Action:** a concept based on Austrian subjectivism in the study of human action together with the search for static criteria of sustainability.
- **Billion:** the American criterion has been used, according to which one trillion equals one billion. **Trillion** is applied to one billion; one million million million.
- **Capitalization of nature:** process by which the Factors of Production Inert Matter and Living Beings are considered as FP Capital.
- **Market creation:** process by which nature's goods are incorporated into the market as Factors of Production.
- **Factors of Production (FP):** factors used for the production of goods, used in aggregate form unless expressly mentioned. Being:
  - **FP Classics:** Land (R), Labor (L) and Capital (K).
  - **Proposed FPs:** Space (S), Inert Matter (M), Living Beings (B), Labor and Capital.
    - **Nature PF:** Space, Inert Matter and Living Beings. The term primary PF is also used.

Read 'the PF' for the singular and 'the PFs' for the plural.

- **Financialization:** the process whereby financial markets acquire greater participation in the functioning of the economy. Definitions by different authors are included in section 2.1.1.
- **Production Function:** economic relationship that defines the quantity of product obtained (dependent variable) as a function of the Production Factors used. The following Production Functions are mainly used:
  - **Classical:**  $x=f(R, L, K)$
  - **Neoclassical:**  $x=f(L, K)$
  - **Proposal:**  $x=f(S, M, B, L, K)$
- **Sustainable supply:** limit value of consumption of a PF associated with the Sustainable Production Possibilities Frontier, i.e. the limit quantity that separates the criteria of sustainability and non-sustainability.
- **Sustainability (static):** maintenance of current ecosystem conditions for future generations.

- **Sustainability (dynamics):** continuous change in the balance of ecosystems, whether derived from natural issues or from human action.
- **Earth:** 'The Earth' is used to denote 'Planet Earth', 'FP Earth' or 'Earth' for the Factor of Production, and 'earth' for general use.







# 1. INTRODUCTION

---

Housing is a necessary good for human beings, it has basic connotations in matters such as security, identity or individual development. For one part of the population, it represents their main property and for another part, the main destination of their income. As a whole, housing is the greatest social asset, as well as a civilizing asset that contributes to the definition of the structure and values of society. All these reasons make it extremely important to understand the foundations on which the housing market is based.

Currently, housing functions as an asset available in the markets, with all citizens having the ability to acquire or sell it under conditions similar to those of any other. It behaves as a property with unique characteristics due to its stability over time, its low liquidity or reduced volatility, which makes it possible to provide security criteria to investors' portfolios.

In the constant search for investment opportunities, the real estate market offers new ways to improve expectations in the relationship between profitability and risk. The possibility of converting homes into liquid assets while maintaining their stability becomes a way for the dynamic functioning of the market to participate in real estate investment and turn home ownership into a new way of generating income. Under this perspective, homes become *commodities* that are consumed under market conditions, a situation that allows the generation of rental income to become a contribution to the countries' income that has positive effects on political activity.

The situation described above finds its place in the aforementioned role of housing as a capital asset, supported by the existence of a social consensus regarding property rights over it. In turn, the consideration of housing as an asset finds support in an economic science that focuses its research effort on questions related to economic systems, conditions of competition or citizen welfare, mostly assimilating a world in which two PFs confront each other in the form of labor and capital, while the peculiarity of land is absorbed as another form of capital.

This context shapes a society that in the last two centuries has seen the highest level of human development, combining population growth and an unprecedented general improvement in living conditions, while facilitating the expansion of the frontiers of technology and knowledge. However, this development has not affected all of society equally; it has concentrated its impact on part of the population, while others have maintained or worsened their condition. Thus, conditions of misery are observed in which a large part of the population is deprived of access to sources of livelihood, without rights over the space they inhabit, without access to agricultural sources that provide them with sustenance and without any type of capital, conditions to which is added a precarious education that complicates their possibility of contributing value in a complex society.

The search for solutions has meant that for much of the 20th century and the beginning of the 21st century, two largely opposing economic models have confronted each other, yet failed to provide a generalized response to the needs of citizens. Communism failed because of its lack of understanding of the human being, as a model that discourages individuals from contributing to the welfare of society, while limiting, if not eliminating, information as a decision-making mechanism. In contrast, the model that has competed and achieved higher levels of prosperity is called by different names depending on the proponent. It has mainly been defined as neoliberal in its criticism of globalization and the search for profit, while at the same time it is considered a social democratic model insofar as the most developed states intervene in economic activity in a proportion approaching fifty percent of annual income. It is a model in which property is mainly in private hands in its maximizing function, while the income it generates is intervened for a distribution between the public and private sectors.

Representation of a society that has its highest expression today in the role of national states and international organizations that must ensure

the improvement of living conditions and the search for the common good for all citizens. Institutions that take part of the value produced in the markets to allocate it to the social ends they consider most necessary. In their role they can achieve the direct effect of improving the existence of groups of people, but at the same time they modify the incentives for human action to an extent that is impossible to determine.

This context shows a society in which entrepreneurial action and even the generation of wealth are seen by part of the population as selfish behavior in the search for profit, considering that they absorb the value of society without appreciating the contributions that the same people may be making or have made through service to citizens from the market. This negative consideration, together with the fiscal pressure to pay for the search for the so-called common good, discourages the investment of time and resources by citizens.

The situation described above, together with the feeling that there is no answer to improve the living conditions of society, leads to the need to question whether the foundations on which our economic system is based allow the maximum level of application of all the capabilities of citizens. A search in which the work shown here has focused on the definition of the economy's PFs and their representation in the market.

The evaluation of the existence of unique characteristics on elements classified in the same Factor of Production (PF) leads to a reformulation of them, and therefore to propose a new Production Function of maximum aggregation of the economy. The proposed FPs: Space, Inert Matter, Living Beings, Labor and Capital, show different qualities among themselves. Space as a place measured in the form of area or volume on which economic activity is developed, Inert Matter understood as all matter without life that can be used to cover the needs and preferences of citizens, living beings as the basis of human life and at the same time as companions in the world, the Labor of Human Beings and savings invested in the form of Capital.

The formulation of PF makes it possible to differentiate those produced by human action from the goods offered by nature. Each PF thus poses particularities that are reflected in the place assigned in accounting, turning theoretical issues of economic thought into practical actions in the definition of the market.

The linking of PF, their practical relationship with markets and the delimitation of property rights in accordance with the role of human action, in turn allow us to consider the existence of rents from natural assets whose ownership is vested in all the stakeholders.

citizens. This consideration is due to the fact that the rents generated by the natural goods Space, Inert Matter and Living Beings are due to their exclusive use by other citizens. This use, in turn, presents differences between PF, posing temporal limitations or the extinction of the PF for Inert Matter and Living Beings, while Space poses a duration that can be considered indefinite.

The proposed model proposes the role of the market as an efficient distribution mechanism, the definition of PFs based on their unique characteristics, the remuneration of factors according to natural and human action criteria, and the minimum decision making that involves the market. Elements that propose an alignment between the criteria of efficiency, equity and sustainability that encourage Human Beings in the development of civilization.

Finally, it should be noted that the model proposes a new vision of the concept of capitalization of the real estate sector, contributing to a better allocation of space, as well as the rest of the resources that facilitate citizens' ability to have a home. In its application for Spain, it generates comparative advantages that contribute to the attraction of productive investment.

### **1.1. The Real Estate Sector in the Economy**

Real estate is the largest stock of wealth in society, a wealth that is often associated with a vocation for permanence over time and is basic to all forms of human activity. It includes the home of citizens, the space for learning or health care as fundamental for the development of society, but also that dedicated to any other economic activity in the form of infrastructure for means of transport, work or leisure. Knowledge of the elements that determine the organization of such real estate in the economy is essential for its proper functioning, distribution and growth.

Among all real estate, the role of the real estate sector stands out in its function of housing for citizens. Highly valued housing in any economy; be it the expensive newly constructed buildings featuring the latest technology or the overcrowded informal dwellings built with basic means in which no trace of the progress achieved in many parts of the planet can be observed, with land prices being the main determinant of the growth of housing prices (Knoll et al. 2017)<sup>1</sup>.

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<sup>1</sup> They show that more than 80% of the increase in housing prices between 1950 and 2012 is due to the increase in land prices derived from its scarcity.

This importance of housing has led public authorities to intervene in the functioning of markets on repeated occasions, promoting a wide range of measures<sup>2</sup> that include aspects such as the promotion of public housing, price fixing (Hayek 2022)<sup>3</sup>, housing aid and subsidies (Laffaire & Tucat 2021) (OECD 2021), or the acquisition of housing by the public sector. These measures seek to improve the quality of life of specific groups generally associated with conditions of need, for which the natural functioning of markets is arbitrated under the political criteria of the corresponding public authority. It should be noted that this arbitration function is not static, but is usually permanent, which implies that after its implementation, markets are conditioned to new rules, on which economic agents will make decisions and new dynamic equilibria will be reached (Hayek 2022).

This implies that in the search for equilibrium, political decisions on the real estate market alter the market's incentive system, modifying aspects such as the supply of housing, development, rehabilitation or renovation for property ownership, as well as the availability and conditions for renting (Berger et al. 2020)<sup>4</sup>. In short, changes in the expectations of profitability and risk in the real estate sector modify its relative attractiveness compared to other markets and therefore the conditions for investing in it.

Since *real estate assets* are considered a set of elements built on a single space and are usually associated with high labor and capital intensity, they are assets with special characteristics: in general they have a high value compared to other investments of citizens, they are associated with a low level of liquidity (Kotova & Zhang 2021)<sup>5</sup>, which means that their value cannot be specified with certainty, as well as requiring high transaction times. They are usually subject to important regulations (Azpitarte 2018)<sup>6</sup>, as well as to the payment of taxes, both in their purchase and sale, as well as in their

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<sup>2</sup> See Royal Decree 42/2022, of January 18, which regulates the Youth Rental Voucher and the State Plan for Access to Housing 2022-2025, which specifies among its cost-term objectives those of: facilitating access to housing for groups including: citizens with fewer resources, evicted persons, especially vulnerable persons, homeless persons, victims of gender violence or young people, to which are added long-term objectives of increasing the supply of both social and affordable rental housing, as well as temporary housing.

<sup>3</sup> p. 399 - 402

<sup>4</sup> p. 318, by studying the results derived from temporary fiscal policies in the real estate sector indicate the existence of positive results: '*stable demand shock to the market likely accelerated the reallocation of vacant homes from the portfolios of institutional investors and banks and from the unsold inventories of home builders into the hands of higher value and possibly constrained first-time homebuyers*'.

<sup>5</sup> According to their results at a global level with special incidence on the US market: '*The implied effect of spending an extra month on the market is, therefore, 5% higher prices*'.

<sup>6</sup> Part IV, see Chap. XX 'Building Quality Standards', Chap. XXVI 'The Economic Cost of Complying with Urban Development Standards'.

or simply by its <sup>possession</sup><sup>7</sup>. This particularity of the sector means that any alteration in its equilibrium level has very prolonged effects on the definition of the new market equilibrium.

The markets, in their continuous search for the profitability of their investments, continuously propose innovations in any area in which they have the possibility. In this way, they innovate through different techniques, such as those that contribute to improve the buying and selling process, those that improve the security conditions in the tenancy of the property, or those that increase the comfort of the homes, all of them improvements that obtain a return by offering a service valued by the owners (Siniak 2020).

In contrast, there is another line of innovation aimed at real estate tenancy, which achieves its performance not so much through the offer of a specific service, but through changes in the conditions of ownership and rental income in the real estate sector. In this regard, there are two lines that have been the focus of much of the attention in recent times. Firstly, the development of specific legislation for real estate asset management companies with the aim of providing liquidity to the market. Legislation that modifies the tax conditions of the income generated by the real estate of certain types of companies, which, thanks to the fulfillment of specific legal conditions, obtain preferential tax rates. In this field are the *Real Estate Investment Companies* (SOCIMI), as an adaptation for Spain of the model that emerged in 1960 in the United States as *Real Estate Investment Trusts* (REITs) (Aalbers 2016). Secondly, innovations aimed at offering liquidity to the market arise, through asset *tokenization* models that allow alternative ways of offering participation in real estate assets through smart contracts that simplify purchase or rent generation managements (Sazandrishvili 2019).

These innovations highlight a behavior of transferring real estate from individuals to legal entities with the aim of maximizing its use (Charles 2019)(Wijburg 2021). This converts assets that have traditionally been less dependent on financial markets into new financialized assets over which there is access to their ownership and rents through the purchase of shares of the holding companies. An issue that fits in with the concern of certain academic research on the process of financialization of the economy (Mader et al. 2020), as well as its combined effect together with the globalization of the economy (Mader et al. 2020).

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<sup>7</sup>Examples are the 'Impuesto de Transmisiones Patrimoniales' on purchase and sale, income or corporate tax based on the legal personality of the holder or 'Impuesto sobre Bienes Inmuebles' based on possession.



markets and to a Neoliberalism (Aalbers & Christophers 2014), which is considered as the definition of the current economic model in which profitability for shareholders becomes the main objective of all economic action.

The evolution towards these innovations can be considered as the natural result of the development of the markets, this is due to the fact that we are in a situation in which the world capital stock is growing at higher rates than the profitability obtained (Piketty 2014)<sup>8</sup>. Under this condition, real estate assets traditionally associated with lower rates of return become comparatively more attractive to financial markets.

However, all this does not translate into a generalized purchase of real estate assets, but rather into selective investment closely linked to specific municipalities with above-average rents or specific uses (Méndez 2021)<sup>9</sup>, as well as to specific sectors that respond to these profitability expectations. This means that the financialization of the real estate sector is seen not so much as a drastic change, but as a prolonged process of which both the positive and negative points must be known (Duménil & Lévy 2006)<sup>10</sup>.

The problem of real estate financialization stems from the transfer of real estate assets to legal entities. A transfer that responds to the search for the best opportunities to make them profitable (García-Lamarca 2020). In a world in which the same possession in the hands of individuals or legal entities presents different conditions of taxation and profitability, fiscal policy has become a determining factor in defining the distribution of assets in society. The role of the public sector is usually defended by the existence of market failures (Cuadrado et al. 2010)<sup>11</sup> that need to be mitigated, while at the same time being criticized for reasons such as the arbitrariness or inefficiency of its actions (Mises 2021)<sup>12</sup>. A public sector that has gone from managing values close to 10% of GDP at the beginning of the 20th century to values of around 40% and 50% at the end of the century in developed economies.

### **Economic foundations of financialization**

A basic element of the financialization process is the conception of real estate as capital assets, i.e., as fixed assets that appear on the balance sheet of the company.

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<sup>8</sup> Chap. I, p. 51-88

<sup>9</sup> Documents d'Anàlisi Geogràfica 2021, vol. 67/3, p. 450: '[...] investment funds, which joined the Spanish real estate market from 2013 to concentrate much of their activity in large urban areas and coastal tourist areas, considered more profitable and lower risk.'

<sup>10</sup> Chap. II, p. 17-41

II, p. 32

<sup>12</sup> Ch. XXVII, p. 845.

institutions. The location of any asset in the assets is associated with certain conditions of ownership, with profitability acting as the determining criterion for assessing the suitability of its possession. Property, that of land and everything built on it, represents a fundamental problem of economic thought, insofar as it unites natural elements prior to human action with others developed by the economy in its investment role. Despite the fact that this question of land ownership has traditionally been a source of discussion in economic thought (Marshall 1920) (Grotius 1925) (Harvey 1982) (Proudhon 1983) (George 2012), it has ended up being accepted as a basic element of economics, reducing its role to the margins of economic debate and incorporating it into the functioning of society through regulations such as accounting plans<sup>13</sup>.

The representation of real estate as real estate assets, implies the capacity of each human being to possess in a privative and indefinite way a part of the planet, being able to use it independently or to incorporate it to a process of economic exploitation. In any case, they can take advantage of the scarcity condition of their property while waiting for its revaluation (Harvey 2012), which may come as a result of the increase of the population around the asset, the increase of the complexity of the economy (George 2012), or even the improvement of the relative investment conditions with respect to other existing assets. Regardless of the destination given by the owner, society is excluded from its enjoyment, as well as from any income or increase in value that it may generate.

This combination of elements: in the form of land as a classic factor of production in the economy as well as real estate capital in the representation of its current use, shows an imbalance between concepts and rights, in which rights take precedence in terms of their real impact on economic functioning. The decision to invest is based on the same profitability-risk criteria for real estate (Fisher 1907) as those governing other assets; it becomes a problem of resource allocation in the market under entrepreneurial action, summarized by (Kirzner 2011)<sup>14</sup>.

Under these conditions it is necessary not only to study the effect of the financialization of the real estate sector (Aalbers 2016) (Sawyer 2022), but to extend the study to the economic fundamentals that motivate this financialization process, starting from land as a production factor and studying its use in the economy based on the unique characteristics it possesses.

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<sup>13</sup> See IAS40: 'International Accounting Standard No. 40 Investment Property'.

<sup>14</sup> Chap. 327, 'Prices, Profits, and the Reallocation of Resources', p. 327, 'Prices, Profits, and the Reallocation of Resources'.

## 1.2. Motivation

This document is the result of a process of analysis that, based on my previous experience, began in 2020 with the aim of studying the behavior of real estate investments in Spain, mainly defining the impact of existing regulations and technological progress on the housing stock and on the price of Spanish homes. However, the research process and my interest in the economic foundations on which the research was based have led me to ask myself questions progressively and to propose answers that have a scope significantly greater than initially expected.

In this evolution I consider the phrase "You will have nothing and you will be happy"<sup>15</sup> as a turning point in the search for the foundations that shape the world and the relationships between people, with emphasis on my interest in the economic world. It is a phrase with great human implications, in terms of an element that I consider one of the main desires of any person, which is to create a home on which to build his or her life.

We are faced with a sentence with two main elements, in the first place, the concept of property rights, from the point of view that, if a citizen cannot have anything, who has it, the state, companies, regardless of who is the owner, this part became an element to be analyzed. The second section, the expectation of happiness as something given and external to the human action of each individual. Two elements that seem to be the result of an imposition of a model of society that could be placed in a novel environment with connections between communist experiences or its reflection in Orwell's '1984', but that nevertheless present unique implications.

At the same time, this is a phrase that has been uttered in a different context from decades ago, since we live on a social-capitalist planet, in which practically all assets are in private hands, but in which at the same time public administrations intervene in the income obtained in order to offer a set of social services that make up what has come to be called the welfare economy. In the most developed countries, stocks (capital) are private, while flows (income) tend to be shared equally between public and private action.

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<sup>15</sup> The phrase 'You'll own nothing and be happy' emerges as a summary of the article by (Auken 2016) on November 12, entitled 'Welcome to 2030. I own nothing, have no privacy, and life has never been better' as part of the World Economic Forum publications.

When the phrase is observed in its environment, a model with novel implications from the historical point of view emerges, in that it seems that 'you' as a citizen 'will have nothing', but it will be some other private actor who owns the goods and can offer you their uses, while at the same time it would show a public sector that guarantees that 'you will be happy'. Additionally, all of the above is not presented as an imposition on society, but as the result of a natural evolution in which all property will pass into the hands of those who can maximize its use, while the citizen can let go of the ties of owning in favor of what could be understood as a freedom to use whatever he needs and whenever he needs it. Under these conditions, who could refuse to move towards a world in which we shed ownership and achieve more efficient, just and sustainable conditions for the whole community of human beings.

This being so, the aforementioned natural evolution of the facts would already be in development, as can be seen by the fact that we are getting rid of unnecessary material elements. You do not need to have records, because you listen to music on the net, you do not need to have books because you read them online, you do not need to have a car because you can rent it in a matter of seconds, it could be said that you do not need to have a kitchen because you can have in 'your house' the food you want ready to eat, so you can get rid of practically everything and at the same time have it available when you need it. In this everything you can get rid of, the home appears as the last link in the chain. In a dynamic world where you don't know where you are going to live, what could be better than getting rid of the ties of property and being able to have a space anywhere on the planet. Under this description of the situation, it even seems advisable to accept the marked future: "You will have nothing and you will be happy".

A future that nevertheless presents significant risks to people's lives and to the cohesion of society. The conversion of citizens' property into financial assets allows for a volatile life, but also brings volatility to life. At the Juan de Mariana 2023 awards, Anxo Bastos emphasized that "*Not everything we want is good for society. Financially, it may make more sense to live in rented housing than to ownership. But ownership generates a feeling of rootedness*"<sup>16</sup>. The evolution towards a society in which attachment to property disappears, in which everything becomes a simple problem of consumption and a contribution to the country's GDP not only presents problems of volatility, but is amplified to moral issues and the configuration of the society we want to build. Under traditional conditions, people have the possibility of creating a real patrimony to face the complications that may arise.

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<sup>16</sup> In speech delivered as recipient of the 'Juan de Mariana Award 2023' of the 'Juan de Mariana Institute' at the 'Freedom Dinner' on June 2, 2023.

occur. Everyone is responsible for what he or she owns, for its care and conservation, as well as for preserving it in order to pass it on to the next generations. In the face of this, a situation in which one has nothing, beyond stocks and shares in companies, increases uncertainty and generates disorder in people's lives, moving towards a model that rewards consumption over savings.

In the search for answers to all the questions I have been asking myself during this research period, it is worth mentioning the study of the foundations of the Austrian school of economics in its understanding of human action. Respect for the criteria of freedom and reciprocity as the foundations for the development of a complex society in which all citizens are encouraged to engage in those activities they consider preferable. At the same time, the study of Henry George's work in his analysis of land as the foundation of social goods that have not been produced by human action and under which an absolute property right is not possible became the opposite pole that refuted considerations that he had initially taken for good.

All of the above has contributed to the development of a study in continuous evolution in which, due to the breadth of the subject and the interrelation with other disciplines, it has been necessary to put a period and close this document. The result, totally unexpected from the initial conceptualization of the research, is raised from an academic point of view in the search for answers, having special respect to the concept of human action, to the contribution to the better coexistence of human beings with the environment in which we live and to the recognition of the use of common goods for the improvement of society.

I would like to highlight the words of (Mill 1971):

"The effect of custom, in preventing any doubts which might arise as to the rules of conduct which mankind imposes, is of such a nature that, on this subject, it has never been considered necessary to give reasons, whether it be about others or about oneself."<sup>17</sup>

In relation to this statement, it could be considered that nowadays, the society accustomed to solid foundations of economics has cornered the big questions that were repeatedly asked in the 19th century. Doubts about the ownership of economic factors have given way to new questions of a different nature, with an important role in the study of economic systems or intervention.

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<sup>17</sup>The work 'On Liberty' written in 1859, p. 11.

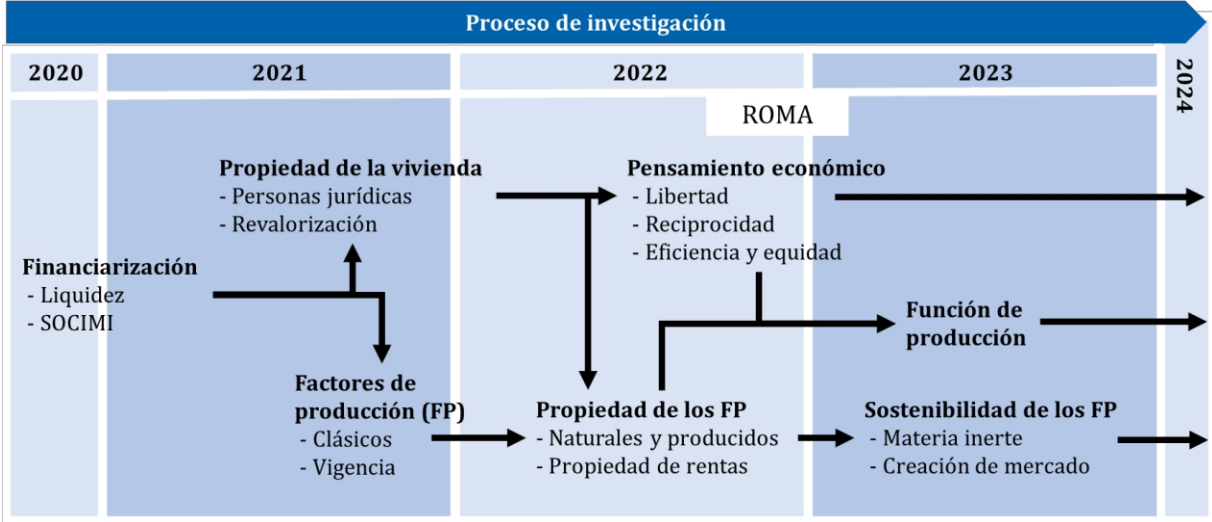
The public sector is a key contributor to the development of the welfare economy, generally taking for granted the previous conclusions on the fundamentals of the economy.

In the search for a better access to the home by citizens, the present work has ended up by resuming the study of these fundamentals of economic science.

**1.3. Research Process and Questions**

The situation described above poses a broad field of research that starts from the concept of financialization of the real estate sector, but which has evolved throughout the process to delve to a large extent into the study of economic issues that support real estate issues themselves. Figure 1 summarizes the research process and the main thread of the work.

At the beginning of the work, the area of study began with the dynamics of financialization of the economy with the increase in liquidity associated with the development of investment solutions that allowed the participation in the ownership of housing and other types of real estate for reduced amounts. At this point the main research question sought to determine the impact of financialization on citizens' access to housing.



**Figure 1:** Research process. Representation of the research process throughout the study period, including the main topics of interest and their main dependence on previous analyses. Source: own elaboration.

From the observation that ownership in the hands of legal entities acts as a determining element in the process of financialization, interest arises in analyzing the

property in housing, coupled with the role of the revaluation of real estate assets as a way of generating profits without generating value for society.

The consideration of ownership of all real estate assets, their appearance in the assets side of the balance sheet or the effect of revaluation, together with the vision of the problems of access to housing and the analysis of informal settlements lead to the study of the economic foundations on which the economic system in which we live is based. The analysis of the classic PF in the form of land, labor and capital leads me to observe differences between their formulation, their use, and the characteristics of the elements that compose them. It is difficult to clearly locate among the PF elements of nature such as: fossil fuels, farmland or agricultural animals, as well as for a building with respect to the land on which it stands. All this leads to the question of whether the classical PF classification is still valid as a basis for the definition of the economic system. Questions about the classification of PFs also affect the consideration of their ownership and rents. Given the coexistence of PFs dependent on human action and those independent ones that have not been produced, their conditions of ownership by citizens are based on different starting points that must be analyzed.

The real estate issue is absorbed here by an economic issue that conditions any sectoral result and covers much broader issues than those initially proposed. The location of everything analyzed in relation to the evolution of economic thought makes it possible to contrast ideas, supporting or refuting each of the advances achieved so far. Here arises the analysis of how the PFs defined in relation to economic efficiency and equity are affected as factors confronted by the so-called market failures. As well as their relationship with the criteria of citizens' freedom under conditions of reciprocity.

The vision of all the concepts in isolation required a formulation of the production function of the economy, in which the different elements could be clearly identified according to their common characteristics. In it, the determination of the fundamentals that allow defining the conditions for the creation of a sustainable market for the PF of society is studied.

Ultimately, the question arises as to the feasibility of implementing the proposed issues in today's world. Mainly under the difficulty of reconciling it with the respect for the respect of contracts agreed in the market under the current conditions. Also on the possibility of moving towards a consensual definition of market creation conditions. Thus closing the last period

The working group asked the question of what should be the way to materialize the ideas presented.

Under the conditions described above, the research questions formulated throughout the work can be summarized as follows:

- Q1: What is the impact of financialization on citizens' ability to access housing?
- Q2: Where does housing rank among the factors of production in the economy?
- Q3: Is there homogeneity in the characteristics of the factors of production?
- Q4: What characteristics allow a definition of factors of production of maximum aggregation?
- Q5: Is it possible to align efficiency, equity and sustainability issues by reformulating the factors of production, their ownership conditions and the allocation of their rents?

#### **1.4. Objectives and**

##### **Hypotheses Objectives:**

The overall objective (OG) stated from the beginning in the document has been to contribute to the study of the conditions that facilitate citizens' access to housing, preferably to one that they can consider a home. Other new objectives have emerged from this general objective, which have not, however, detracted from its importance in the development of the work.

The specific objectives have been:

- SO1: to study the impact of financialization on access to housing
- SO2: analyze the relationship between land prices and aspects such as the concentration of people and the complexity of the economy.
- SO3: identify the characteristics that factors of production have in common.
- SO4: relate the use of production factors to sustainability criteria.
- SO5: contribute to the study of the relationship between efficiency and effectiveness in the economy.

##### **Hypothesis:**



As a general hypothesis (HG) of the work, it is considered possible to generate conditions that facilitate citizens' access to home ownership with respect to the current situation.

The specific hypotheses have been:

- H1: financialization increases the difficulty of access to homeownership.
- H2: the classification of classic production factors groups elements with different characteristics in the same category.
- H3: it is possible to move towards a sustainable economy by distributing the factors of production through market mechanisms.
- H4: it is possible to find a definition of the factors of production that contributes to the improvement of efficiency and equity at the same time.

### 1.5. Methodology

A mixed methodological approach has been followed for the development of the work, using qualitative and quantitative techniques together, choosing those considered most appropriate for each section and specific case.

The process of contextualizing the process of financialization of the real estate sector in Spain has required a systematic work of data collection from the main companies and institutions. Data which, due to the type of companies, are in the public domain and can be accessed through the Internet, but which are in different formats as well as distributed in different repositories and documents. This compilation has used statistical data in different formats.

- Public institutions such as INE<sup>18</sup>, Eurostat<sup>19</sup> and Notaries<sup>20</sup> mainly provide time series of the main magnitudes with a general impact on the economy.
- Private associations such as Nareit<sup>21</sup> as well as advisory and consulting firms<sup>22</sup> publish sectoral reports on the performance of their companies among which cross-section data are more widely available.

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<sup>18</sup> See in 'Instituto Nacional de Estadística': 'Encuesta de condiciones de vida' and 'Encuesta continua de hogares'.

<sup>19</sup> See under 'Eurostat' Information on 'Housing statistics'.

<sup>20</sup> See 'Centro de Información Estadística del Notariado' for its 'Main statistics' on mortgages.

<sup>21</sup> See 'National Association of Real Estate Investment Trusts' web: [reit.com/data-research](http://reit.com/data-research).

<sup>22</sup> See 'Worldwide Real Estate Investment Trust (REIT) Regimes' published in June 2021 at '[pwc.com/REIT](http://pwc.com/REIT)'. See also 'Non-traditional commercial Real Estate: Capitalizing on the REIT opportunity' article published in 2011 in

- Companies dedicated to financial performance information such as Yahoo Finance or Google Finance present statistical <sup>data23</sup> on share prices, market volumes or main magnitudes and ratios.
- All companies in the sector are required to publish data on their operations, which are available at the <sup>CNMV24</sup>, as well as at their respective stock exchanges, among which BME <sup>Growth25</sup> stands out, including their financial statements, properties in portfolio or shareholding structure, offering a mixed set of data.
- The same companies publish information on their real estate properties through their web pages, as well as expand the public information with annual reports aimed at investors, which have been downloaded both manually and massively through *webscraping* by means of the R program using the *rvest* library.

At the macro and financial level, the data have shown a certain level of homogeneity, while the data on company properties are more heterogeneously presented.

From a temporal point of view, the data for Spain are relatively recent, given that in the case of SOCIMIs they arise from their regulation in 2009. For the general case of REITs, previous data have been used since they were regulated in 1960. With respect to land prices, data series have been available since the beginning of the 21st <sup>century26</sup>.

Based on the analysis of the foundations of the system, it has been necessary to study the economic problem of PF. For this purpose, a historical approach has been used based on the analysis of outstanding works in the history of economic thought. The organization and structure of PF, as well as the treatment of their ownership, have been studied. The conclusions obtained have allowed us to advance towards the modeling of the problem, contrasting the findings from an economic theory perspective. Finally, the process of applying the model developed under the fundamental role of the market has been worked on, including its effect on the current economic structure and the changes considered necessary to move towards it. The four steps of

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'deloitte.com/us/en/pages/real-estate/articles/'. See also 'Understanding Real Estate as an Investment Class' published in February 2017 by 'mckinsey.com'.

<sup>23</sup> See pages 'finance.yahoo.com' and 'google.com/finance/'.

<sup>24</sup> Referring to REITs, in 'cnmv.es' under the search: 'Inicio > Consultaciones a registros oficiales > Entidades emisoras: Información regulada > Informes financieros anuales > Consulta informes fin. anuales'.

<sup>25</sup> See 'bmegrowth.es/esp/Listado.aspx', page from which detailed information on SOCIMIs can be obtained. listed on BME Growth.

<sup>26</sup> See in 'Ministerio de Vivienda y Agenda urbana' the 'Estadística de Precios del Suelo Urbano' at 'https://apps.fomento.gob.es/BoletinOnline2/'.

contextualization, rationale, modeling and application are summarized in Figure 2.

<b>Cap. I:</b> Introducción
<b>Cap. II:</b> Capitalización del Sector Inmobiliario <b>Cap. III:</b> Dinámicas en la Capitalización de los Hogares <b>Cap. IV:</b> Crecimiento del valor del Suelo
<b>Cap. V:</b> Los Factores de Producción y su Propiedad <b>Cap. VI:</b> La Función de Producción <b>Cap. VII:</b> Factores de Producción en las Finanzas <b>Cap. VIII:</b> El Hogar en los Factores de Producción
<b>Cap. IX:</b> Sostenibilidad de los Factores de Producción <b>Cap. X:</b> Políticas y Factores de Producción <b>Cap. XI:</b> Acción Humana Sostenible
<b>Cap. XII:</b> Conclusiones

Figure 2: Structure of the document. Source: own elaboration

### 1.6. Document Structure

The work begins in this first chapter, which introduces the subject of the study, offers an overview of the general situation of the problem and develops the objectives and questions of the work. The motivation of the study is included as an element that has conditioned to a great extent the evolution of the research towards the results achieved.

The second chapter analyzes the process of financialization of the economy, with the study of the role of SOCIMIs in the capitalization of the Spanish real estate sector in its role as a financial intermediary.

improvement of risk-return conditions that attract investment while modifying the relationship between citizens and the market through changes in the ownership of assets.

The third chapter analyzes the evolution of housing tenure in Spain, dealing with both the increasing role of renting and the impact of the aging population on the housing stock. The fourth chapter studies the role of property prices according to population criteria, analyzing the relationship between price increases and population increases at both the point and time levels. It also studies its relationship with the type of legal person acquiring the real estate and with the complexity of the economy in the different autonomous communities of Spain.

The fifth chapter starts from the real estate problem to extend the analysis to the foundations of economic theory. It begins by studying the classic PF of economics, namely: land, labor and capital, starting from the consideration of their particular characteristics and rents, which leads to a new formulation in the form of Space, Inert Matter, Living Beings, Labor and Capital. This formulation leads to chapter six, in which the production function of the economy is developed in an expanded version that includes the FPs indicated.

In chapter seven we advance in the study of the relationship of the PF with the different legal persons, the location of each factor in the financial statements of the companies as a critical element in which theory is related to economic practice. The section ends with the role of the household given the PFs enunciated in chapter eight, in which the confrontation between the concepts of household and market is analyzed.

It begins in chapter nine with the study of the impact of the proposed PF formulation on sustainability, working on the concepts of market creation and capitalization of nature's PFs. It then discusses the effect of PF rents as revenue generators for society by comparing them with the main taxes in the economy. Finally in chapter eleven the concept of sustainable human action is discussed from the subjectivist vision of the individual in The Earth understood as a framework for common action, the chapter ends by analyzing the impact of work based on the Sustainable Development Goals (SDGs) from a conception of the good definition of the market as a means to achieve them, replacing public intervention based on arbitrary criteria of the corresponding authorities.

The final chapter contains the general conclusions of the work carried out, followed by the limitations and the main lines of research that emanate from it as sources of inspiration for the development of future work.

## 1.7. Quality Indicators

Scientific publications associated with the research, as well as participation in forums, seminars and training received are listed below:

### 1.7.1. Research

- **Article** (Martínez Raya et al. 2023 - 1): '*Financialization of Real Estate Assets: A Comprehensive Approach to Investment Portfolios through a Gender-Based Study*'. In which the issue of the financialization of the real estate sector in relation to the wealth tax in the Spanish economy and the different behavior of investment portfolios between men and women is discussed. Co-authored with the director Antonio Martínez Raya in *Buildings* (Impact Factor 3.8).
- **Article** (Martínez Raya et al. 2023 - 2): '*An Empirical Analysis of the Aircraft Emissions by Operating from Scheduled Flights within the Domestic Market in Spain*'. In which the impact of fuel consumption and emissions performance as a function of kerosene prices is studied, aspects linked in chapter nine of the thesis in the study of the relationship between PFs and market sustainability. Written with the director Antonio Martínez Raya in *Processes* (Impact factor 3,352).
- **Conference contribution** (Segura & Linera 2022): '*Comparative review of World Bank data and empirical studies on inadequate housing*' at the '*11th Annual Conference on Architecture and Urbanism 2022*' held at the Faculty of Architecture, *Brno University of Technology*, on November 9, 2022. Under the supervision of the director Inmaculada Martínez Pérez.

### 1.7.2. Transfer

- **Article** (Grijalvo et al. 2021): '*Computer-based business games in higher education: A proposal of a gamified learning framework*' published in '*Technological Forecasting and Social Change*' in May 2022. In which criteria are developed that contribute to the better acquisition of competencies through business simulators (Impact Factor 12).
- **Manual** (Gonzalez Díaz et al. 2023): '*Problemas resueltos de Gestión de Empresas y Proyectos*' published by Garceta. ISBN: 978-84-1903-433-5
- **Manual** (Gonzalez Díaz et al. 2024): '*Problemas resueltos de Economía de la Empresa*' published by Garceta. ISBN 978-84-1903-434-2.

- **Book chapter** (Segura et al. 2021): 'Participation decisions in gamification of learning experiences. Para adquisición de competencias blandas' published in 2021 by Egregius publishing house, with the participation of the director Inmaculada Martínez Pérez. ISBN: 978-84-18167-39-3.
- **MOOC** (González Díaz et al. 2023): 'Problemas de Microeconomía y Macroeconomía' published in the MiriadaX platform, taught between April 24 and May 18, 2023.

### 1.7.3. Disclosure

- Presentation of paper at the **seminar** of the '*Società Italiana di Estimo e Valutazione*' (SIEV), entitled '*Le Valutazioni nei Processi di Finanziarizzazione delle Transformazioni Urbane*' held at the Faculty of Architecture of the *Sapienza Università di Roma* on February 3, 2023.
- Attendance and presentation at the **conference** '*Better Understanding of the interactions between climate change impacts and risks, mitigation and adaptation solutions*' at the *Med PhD School 'From sustainable to regenerative and resilient design'* held by the Department of Civil Engineering, Architecture and Environment of the University Federico II of Naples, October 10-15, 2022.

### 1.7.4. Research Training

During the research period, a research stay at the Faculty of Architecture of the '*Sapienza*' University in Rome was carried out between October 17, 2022 and January 27, 2023. During this period the research was based on the relationship between economic aspects and real estate valuation, as well as the effect of financialization on urban transformation.

Other training received:

- Attendance to the seminar: '*Towards a new international economic order*', held on July 3-7, 2023 at the Universidad Internacional Menéndez Pelayo in Santander.
- Attendance at the '*European Real Estate Society 2022*' conference held June 22-25, 2022 and organized by *SDA Bocconi School of Management*.
- '*Technological Innovation and Entrepreneurship*' in the cross-disciplinary training program for the PhD of the Universidad Politécnica de Madrid in the academic year 2021-2022.

- Attendance to the '*Andean Congress of Engineering, Construction, Technology and Innovation - CAICTI 2021*' organized by the National University of Chimborazo and held on December 8-10, 2021.
- *MIT SA+P Data Science in Real Estate* by '*MIT School of Architecture and Planning*', held between February 17 and April 8, 2021. Course aimed at providing the fundamentals of data science in the real estate sector, highlighting the use of the R program for the management of large volumes of data, both from a statistical perspective and for its spatial representation.

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## 2. CAPITALIZATION OF THE REAL ESTATE SECTOR

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We live in a rapidly changing world in which capitalization has increased to unprecedented levels, the land remains the source of our way of life, shaping the space on which we live, the materials of our buildings or the resources that allow us to live such as food or clothing. Even under conditions of high innovation and use of technology, the real estate sector still accounts for two-thirds of the total value of the world's assets<sup>27</sup>. Land itself accounts for more than half of this value. Land whose existence predates any kind of human action, but whose real value increases as the economy grows, both as a result of population growth and as a result of the increase in economic flows and stocks.

Specifically, global capital is currently estimated at 6.17 times the Gross Domestic Product (GDP) of the planet, valued at 621 trillion dollars. Of this, 46% is made up of residential assets, 8% of commercial real estate and 7% of agricultural assets. In contrast to the important role played by real estate, corporate shares, which could be considered the reference asset in the capitalist system's imagination, have a significantly lower impact, accounting for 16% of the total stock. The 288 trillion dollars corresponding to residential assets are without any doubt the most important assets in the world's capitalist system.

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<sup>27</sup> See McKinsey Global Institute '*The rise and rise of the global balance sheet.*'

highly concentrated. Ten countries account for 75% of them, with China, the United States and Japan being the three <sup>largest</sup><sup>28</sup>.

This distribution of real estate in the world not only affects from a geographic point of view, but also from the point of view of distribution among individuals in society. Real estate investment is the main investment segment of high net worth <sup>individuals</sup><sup>29</sup>, accounting for 66% of their portfolios. Direct investments in housing account for 32%, while those directed to commercial premises account for 34%, through different means, such as: direct investment, funds or *Real Estate Investment Trusts* (REITs). This situation shows the conception of the real estate sector as a combination of traditional fixed assets on which large outlays must be made, but which are associated with low levels of liquidity, at the same time as flexible investment markets that can be accessed from low amounts. Aspects that mark the situation and expectations of elements such as security, revaluation or income generation.

This is a sector with great social and economic implications. It represents both the home of the families that inhabit the land and the place where the economic activities that are offered in the markets are carried out. Understanding the fundamentals and dynamics that govern the sector is a necessary step to encourage its development through investment in the search to meet the needs of the population.

## **2.1. Introduction**

Housing is a basic element of human needs, in the most elementary states it acts as a space for rest, security or property, while as one moves towards higher states of individual development, needs grow and become associated with elements such as values, ideals, norms or standards that contribute to the fulfillment of individuals (Sayyed & Jusan 2012). These are elements that continuously evolve along with the evolution of society itself, leading to real estate construction being presented as a dynamic market in which companies must adapt to the demand of citizens. The adaptation of the real estate market can be understood as a broad concept that ranges from its design to its execution and subsequent maintenance, relating urban and constructive aspects, but

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<sup>28</sup> See (Tostevin 2021) Savills Market Trends '*Total Value of Global Real Estate: Property remains the world's biggest store of wealth.*'

<sup>29</sup> See Knight Frank Research '*The Wealth Report, The global perspective on prime property and investment.*'

also in the form of a relationship with the built environment according to the ownership regime or the services associated with the properties.

As an example of the changes in the market, from the social point of view, we can see how the configuration of families in developed countries has changed in recent decades. An example of these changes can be seen in the case of Spain, where the average household size has been steadily decreasing over the last 50 years, going from 3.82 members in 1970 to 2.54 in 2021<sup>30</sup>. A situation has been reached in which 55.1% of households currently have two or fewer people. This situation is similar to that which has occurred in the rest of the world, with the decline in the birth rate as the main factor<sup>31</sup>.

In the same way, the variation in lifestyles leads to a change in the housing needs of the population that impacts in relation to elements such as its location, design or needs<sup>32</sup>. With highlights such as greater mobility of citizens (Howard 2017) who have less attachment to a single place throughout their lives or the increased permanence of children in the home of their parents (Burn & Szoeki 2016). Additionally, the uses of housing have also changed, with a large role of connectivity options that increase the uses of entertainment or work at home (Cetrulo et al. 2020)<sup>33</sup>, or that allow connecting with markets without the need to move from home from the development of home service models.

All of these elements make up an environment of constant change in the real estate market, which, due to its own market concept, will continue to innovate in the search for new solutions that cover needs in a profitable manner (Kirzner 2011). Associated with this market of real estate products and services is a highly developed financial market that offers particular solutions to different financial needs. These needs have also evolved from financing traditional needs such as those aimed at housing development or offering credit to families for their purchase, to current models that include financing development for rental (Nethercote 2019) or the distribution of property through numerous investors (Swinkels 2023).

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<sup>30</sup> See 'Continuous Household Survey 2020' published on April 7, 2021 by INE ([ine.es/prensa/ech\\_2020.pdf](http://ine.es/prensa/ech_2020.pdf)).

<sup>31</sup> See 'State of World Population Report 2023' report prepared under the auspices of the United Nations Population Fund (UNFPA).

<sup>32</sup> See the impact of the collaborative economy on human relationships (Paniello et al. 2022).

<sup>33</sup> It studies jobs that can be performed from home, which are among the intellectual and technical professions, to which it assigns 30% of the total labor force as of the date of writing the article. Similarly, higher pay and greater job security are observed for home-based jobs.

This change in the role of finance in the real estate sector contributes to the conception of housing as a *commodity* (Polanyi 2001), which can be easily exchanged in the markets, facilitating investment in the market or the globalization of investments. At the same time, this *commodity* vision entails design effects such as its tendency towards product uniformity in a process of standardization of the solution.

Under these conditions, we find ourselves in a process of capitalization of the real estate sector that implies the inflow of economic flows for the acquisition of housing with the aim of incorporating them into the process of economic exploitation (Fields 2018). However, the capitalization of the real estate sector can also be understood in a positive sense in that it seeks to offer the market a highly demanded solution in the form of increased availability of rental housing for citizens thanks to activities such as building, restoration, adequacy and management by individuals specialized in each area, being able to understand the lack of capitalization as a problem that forces people to live in informality (Azpitarte 2018).

It shows a process of capital inflow that requires the observation of profit opportunities for the investment, being the result of the consideration of entrepreneurs and investors of positive expected profit circumstances in relation to the risks assumed. A process that in turn can be the natural result of changes in the market, or in its place, the result of a modification of the legal conditions that govern the holding and exploitation. Among the legal conditions, fiscal policy decisions stand out for their ability to modify the risk-benefit ratio with particular magnitude and independently of market conditions and trends (Hayek 2022).

The process of capitalization is a global trend, in which housing prices have undergone high growth compared to the prices of other assets, a situation shown in the report '*The rise and rise of the global balance sheet*'<sup>34</sup>, which indicated that the price of housing had grown globally by 250%, while rents had grown by 69%. Although this situation is not homogeneous throughout the world, it shows a generalized tendency for housing to decrease its profitability.

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<sup>34</sup> See McKinsey Global institute, p. 17, 'Rising home prices are a function of rent price growth and declining rental yields, with the latter shaping home prices in most countries.'

### 2.1.1. Financing

In this process of capitalization, the concept of financialization plays an important role. A relatively new word that was defined by (Epstein 2005) as "*The increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies*"<sup>35</sup>. A definition that has been followed by others such as:

- (Krippner 2005) - "*pattern of accumulation in which profits accrue primarily through financial channels rather than through trade and commodity production*".<sup>36</sup>
- (Aalbers 2008) - "*the rise of financial markets not for the facilitation of other markets but for the trade in money, credit, securities, etc.*"<sup>37</sup>
- (Mader et al. 2020) - "*The increasing power of financial interests over politics, as the growing dominance of financial logics or "Shareholder value"*"<sup>38</sup>

All four definitions share the increased weight of financial markets in a context in which exchanges of real goods and services are losing weight in the economy. This situation is shown by (Sawyer 2022) in his analysis of the different indicators that he considers to be associated with financialization:

- With respect to financial institutions, there has been a reduction in employment while at the same time there has been an increase in the added value of these companies and their profits in line with their capitalization and the increase in assets at their disposal.
- At the market level, it shows the increase in the value of financial exchanges in relation to GDP or in the growing importance of the role of derivatives.
- In terms of the citizens' economy, it shows the variable impact on household debt, at the same time as there is an increase in total wealth and a reduction in property income in terms of percentage of GDP.

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<sup>35</sup> Trad. lib. author: 'the increased importance of financial objectives, financial markets, actors and financial institutions in the operation of domestic and international economies'.

<sup>36</sup> Trad. lib. author: 'A trend of accumulation in which profits come primarily from financial markets rather than from trade and production'.

<sup>37</sup> Trad. Lib. author: 'The increase of financial markets with the object, not of facilitating other markets, but for the trade of money, credit, insurance, etc.'

<sup>38</sup> Trad. Lib. Author: 'The increasing power of financial interests over political interests, such as the growing importance of financial logic or "shareholder value"'.

The literature on financialization usually picks up its interest in the area together with the concepts of neoliberalism and globalization (Aalbers & Christophers 2014). The relationship between neoliberalism and financialization starts from the main concept of the pursuit of shareholder return, a return that in recent decades has become increasingly associated with financial issues rather than real exchanges. At the same time, the literature shows how the process of expansion of so-called neoliberal ideas, which have led to the privatization of state enterprises, deregulation, globalizing actions or the investment of public resources in private funds, as in the case of pensions, have contributed to the development of financial markets, have contributed to the development of financial markets and therefore once again to raising the weight of finance on the economy in general, increasing the role of financial assets in the balance sheets of non-financial companies (Crotty 2006) and focusing activity on the generation of shareholder value (Erturk 2020). According to (Vercelli 2013) the financialization derived from the neoliberal process shows contradictions in that it demands a general freedom of the economy while limiting or annulling redistributive mechanisms, leading to greater inequality.

In turn, the interconnection between globalization and financialization is associated with the role of finance as an enabler of international trade, facilitating financial development in different areas such as credit, insurance or currency exchange for its operations. This interconnection has accompanied the great processes of globalization as shown by trade growth data over the last decades (Sawyer 2022). In the same line, the issues of direct investment abroad derived from the decrease in capital control, or the financialization of the aforementioned *commodities*, which have come to be listed on financial markets in a similar way to shares or bonds, appear as an expression of globalization.

Under these conditions, financialization is mostly seen in the literature as a negative aspect of the processes of economic transformation that have taken place in recent decades. This idea clashes with the generalized approach of the need for a high degree of redistributive state intervention. In the face of models defined as neoliberal, a large part of the studies on financialization are confronted with the consideration of the need for a heterodox economic policy (Keaney 2014) based on Marxist principles (Duménil & Lévy 2006), with greater state intervention to reorient economic aspects such as industrial policy, structural unemployment or climate change.

In contrast to these negative conceptions on the part of the public sector, financialization has positive effects on GDP. This leads to the growth of what is currently the macro-magnitude of reference in the performance of countries, allowing both the analysis of its evolution and its comparison. These positive effects occur both in the form of services associated with financial markets, such as the supply of insurance, and in the form of the transfer of assets from those intended for use to those used for rental<sup>39</sup>. The importance of this change lies in the fact that the use of property does not generate economic transactions once the asset has been acquired, while renting it does have such transactions constantly over time. These transactions add value to the country's income at the same time as they are taxed and allow new taxes to be collected. This aspect, when positively valued by the public authorities, can generate a confrontation in their decisions in the face of the social effect of citizens moving from living in their own homes to living in rented housing to a greater extent.

The process of financialization also has an effect on competition, in that it facilitates the concentration of assets in a few hands that professionally manage their portfolios (Chacon 2021). In contrast to the traditional consideration of the entrepreneur-entrepreneur who creates a company and manages it, a significant part of the economy operates on the basis of large companies in which ownership and management are separate, with a large number of owners numbering in the thousands or millions and management by a small professional team that does not necessarily participate directly in the company's results beyond their remuneration for the work performed. This separation of functions means that the work of the management team is focused on maximizing shareholder value while complying with the corresponding legal requirements.

This professionalization is also associated with the maximization of profitability as the sole objective of managers (Friedman 1970) (Benegas Lynch 2021), relegating the role of highly topical elements such as corporate governance or corporate social responsibility (Muñoz Machado 2013). The work of management teams translates into a search for the optimization of the profitability-risk problem for which professional environments can assess the impact of their decisions on the results of their companies, for which actuarial concepts are applied to estimate the present value of shares with techniques such as discounted cash flows, or the impact on investment portfolios (Chiapello & Walter 2016).

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<sup>39</sup> See in the 'Statistics of Personal Income Tax Filers' the detail on Real Estate in which the 'Imputed Real Estate Income Derived from Real Estate at the Disposal of its Owners' appears. The model faces arbitrary imputation criteria with respect to market criteria.

The search for profitability in turn affects managers' own remuneration, in the incorporation of market valuation as a management measurement tool, in a model that confronts the more short-termist vision of the manager versus the generally undefined role associated with corporate existence (Batt & Appelbaum 2013). The difficulty for shareholders to limit the scope of action of managers, and the search for solutions that add value to the organic growth of the company in the form of mergers or acquisitions of companies, are highlighted in this work.

In short, financialization from the point of view of assets is a market response to the search for return on investment that transfers the concept of ownership from use to leasing. It is a model that impacts the economy with implications at the microeconomic level, such as the level of competition in the markets or the professionalization of management, as well as at the macroeconomic level with its greatest exponent in relation to GDP.

### **2.1.2. Real Estate Sector Financing**

Within the financialization process, the market with the largest volume of assets available to replace usage models with leasing ones is the real estate market. A sector that shows a capital-to-income ratio (Piketty 2014) of approximately 3.8 times global GDP (Tostevin & Rushton 2023), and which is available in the form of assets that can be managed for leasing, leading to important implications at all economic levels.

This is a market which, as already mentioned, has some particular characteristics, usually associated with a lower risk and at the same time a lower profitability than other types of assets. Additionally, it shows a medium and long-term trend towards the revaluation of assets in real terms, which implies an increase in the purchasing power of the investment over time.

Within the real estate sector, the housing stock is the one with the highest capitalization and, at the same time, the one that offers the greatest security in that it is aimed at citizens as the market's end customers. People who generally need to invest an important part of their income in having a home, either in the form of a mortgage associated with the acquisition of a property, or in the form of a rental income dedicated to its lease. Under the traditional vision of acquiring housing as property, the real estate sector has always been closely linked to the financial sector. The acquisition of housing requires high investments that usually depend on financing in the form of loans. The fact that they are long-term assets and at the same time tenants' homes offers higher guarantees than other types of real estate.



This situation is due to the fact that investment in housing involves lower risks of default and therefore greater security for the borrower. This situation is due to the fact that investment in housing entails lower default risks and therefore greater security for the borrower.

Since these are highly capital-intensive assets, interest rates have a transversal influence on the sector, substantially modifying the decisions of all agents. From the buyer's point of view, it defines the cost of indebtedness, facilitating the acquisition when interest rates are lower, an element that encourages demand under a combination of lower costs and greater borrowing capacity, both in terms of quantity and time. From the point of view of real estate supply, interest rates act as a catalyst for development insofar as they modify its costs and profit options, as well as for renting insofar as they modify the profitability of the existing housing portfolio.

The aforementioned characteristics of the market make it attractive not only for investment in the home of its owners, but also as an investment for renting, or even as an investment for speculation<sup>40</sup>, with all investment motives having a significant dependence on the financial markets. The speculative model based on buying at a low price and selling at a high price that allows high profit margins to be obtained was defined as financialization 1.0 (Aalbers 2016).

Market conditions and the search for profitability in sectors have led to an increase in the participation of rental models, with two commonly used concepts such as *buy to rent* and *build to rent*<sup>41</sup>. There has been a shift to management models in which the property is built/acquired for operation, referred to as financialization models 2.<sup>42</sup> The generation of rents from the assets becomes the objective of the acquisition of the property (Wijburg et al. 2018). In a model that decreases risk, with the capacity to generate returns in the long term, but with lower returns than those present in other industries. Facing tenants, these models imply a reduction of their bargaining power and a high dependence on the markets, which leads them to assume the possibility of large changes in rents or even the need to change their home.

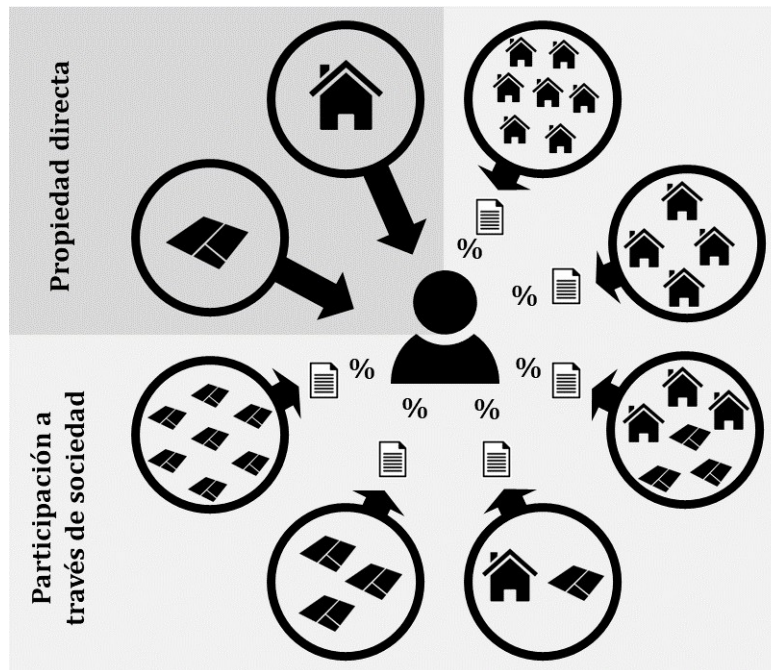
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<sup>40</sup> See the consideration of '*highly speculative nature of modern international financial markets*' in (Epstein 2019).

<sup>41</sup> See the increase in cohousing or coliving models implemented largely for the elderly but also for the elderly in growth in other age brackets. The case of Spain can be consulted (Valenzuela Rubio 2023).

<sup>42</sup> See the 'European Living Snapshot' report published in April 2022 by Colliers, which shows the importance of the European Living Snapshot.

of the residential sector in investment and income generation.



**Figure 3:** Financialization of the economy, representation of the investor in models 1.0 under direct ownership of the assets and models 2.0 in which the companies acquire the role of owners. Source: own elaboration

Figure 3 shows how the investor can access the property directly, in the so-called 1.0 financialization models, in which financial institutions mainly provide the credit for its realization, to models where the investor can access the property directly, in the so-called 1.0 financialization models, in which the financial institutions mainly provide the credit for its realization.

2.0 in which the investor acquires shares of a company that owns portfolios of real estate assets, having a limited participation and control of it.

The functioning of the 2.0 models is highly dependent on regulatory and fiscal policy decisions. The capacity of the public sector to modify the conditions of the real estate market modifies the relationship between profitability and risk in the sector<sup>43</sup>. On the fiscal role, the different consideration of legal personality in the definition of taxes stands out, differentiating the conditions of taxation depending on whether the lease is offered by a natural person or a legal entity. In the case of Spain, individuals are taxed on the leasing of real estate in the general personal income tax base (IRPF)<sup>44</sup>, in addition to other income such as salary or pension received, which means that the lessor is subject to a variable rate that increases as the income increases. In the case of legal entities, leasing is subject to double taxation, which combines business income in the form of corporate income tax, plus capital gains and capital gains.

<sup>43</sup> See the functioning of the 'Spanish Tax System' in (Gonzalo and Gonzalez 2005).



The tax on real estate property is subject to personal income tax (IRPF), both taxes subject to fixed rates with low or no progressivity. In addition to the above, real estate is subject to other taxes depending on its use, such as Value Added Tax (VAT) or Transfer Tax (ITP). At the same time, the market is subject to regulatory conditions in which maximum prices may be set or the possession of empty homes may be penalized. It is also subject to conditions of competition in which the public sector encourages or develops the construction of social housing. In short, it is a market whose social importance calls for specific control by the public authorities and whose conditions make it possible to obtain different returns on the same assets depending on the legal ownership of the assets.

Among the forms of market intervention is the capacity of the public sector to offer special taxation conditions according to the social objectives sought. In the case of the real estate sector, the legal development of Real Estate Investment *Trust* (REIT) companies (SOCIMI) stands out in their role as market intermediaries. These are companies that have allowed access to investment in the real estate sector for all citizens regardless of the availability of large or small amounts of capital through trading on stock exchanges.

#### **2.1.2.1. Real Estate Investment Companies**

REITs have a long history since their original creation in the United States in 1960.<sup>45</sup> This is a time when the conditions for incorporation as a real estate investment trust were identified, including ownership distributed among 100 or more persons or the management of properties for lease, conditions under which the companies enjoy advantageous taxation. The preferential tax treatment offered to REITs is due to the objective of democratizing real estate investment, allowing any person to make investments from small amounts, eliminating the obstacles usually associated with this type of investment. The special taxation conditions of REITs are associated with the requirement to distribute the profit among its shareholders, which allows the generation of liquid returns on a regular basis in a concept that is similar to that which would represent the leasing of a real estate property. This situation generates an attraction for investors in the form of distribution guarantees of

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<sup>45</sup>P.L. 86-779, 'Real Estate Investment Trust Act' of September 14, 1960.

dividends, while at the same time limiting the possibilities for organic growth of this type of company through reinvestment of profits.

Regulation in the United States was followed by a series of new countries in the next four decades of the 20th century (Table 1), with the incorporation of countries such as the Netherlands, Australia, Brazil, Canada, Belgium and Turkey. However, it was not until the first decade of the 21st century that regulation was extended to most of the developed economies, with a special impact on Europe, with Japan, France, the United Kingdom, Germany and Italy joining in the 8-year period between 2000 and 2007. Spain published its initial regulation in 2009, followed by new countries until there are currently more than 40.

This regulatory process has had an international impact on the growth in the number of REITs to over 900 in 2023, distributed among the Americas (36%), Europe (29%), Asia (27%), Oceania (4%) and Africa (3%)<sup>46</sup>. Despite the high distribution in the number of companies among the three continents, the value of their capitalization is highly concentrated in the United States (67%), with all Asian REITs accounting for 14% and European REITs for 9% of total capitalization. Despite these growth figures, implementation has been very uneven between countries, as can be seen in the fact that in Italy their presence is residual, with only one company at present.

Year <sup>d</sup>	Country	Name <sup>to</sup>	N <sup>2023b</sup>	Capitalization (Millions of EUR) <sup>c</sup>
1960	United States	US-REIT	173	1.137.232
1969	Netherlands	FBI	4	2.482
1972	Puerto Rico	REIT	-	-
1985	Australia	TRUST	36	81.686
1992	Thailand	PFPO/REIT	61	10.896
1993	Brazil	FII	114	-
1994	Canada	MFT/ C-REIT	41	48.574
1995	Belgium	SICAFI / BE-REIT	17	19.363
1995	Turkey	REIC	37	6.859
1997	Costa Rica	REIF	-	-
1999	Greece	REIC	6	2.477
1999	Singapore	S-REIT	33	61.165
2000	Japan	J-REIT	60	99.773
2001	South Korea	REIC	24	5.773
2003	France	SIIC	28	43.122
2003	Hong Kong	HK-REIT	9	18.464
2003	Taiwan	REIT/REAT	7	2.938
2004	Mexico	FIBERS	18	23.768
2004	Nigeria	REIC	2	13

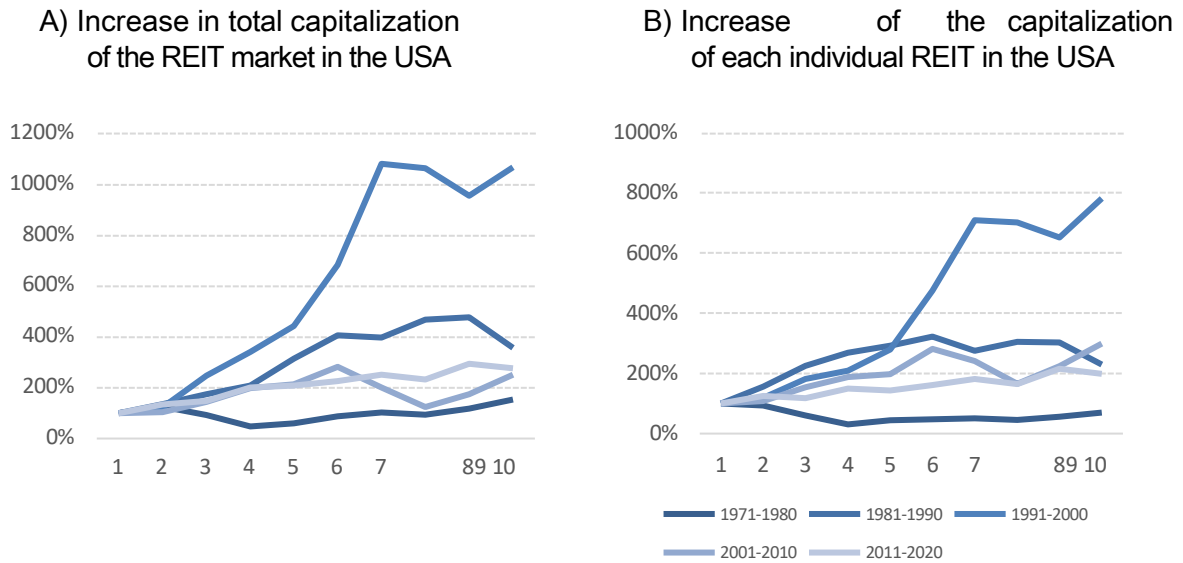
<sup>46</sup> According to data from 'EPRA Global REIT Survey 2023, a comparison of the major REIT regimes around the world'.

CAPITALIZATION OF THE REAL ESTATE SECTOR

2005	Malaysia	REIT	19	8.111
2006	Dubai	REIT	-	-
2006	Israel	REIT	6	1.940
2007	Germany	G-REIT	6	1.872
2007	Italy	SIIQ/SIINQ	1	267
2007	Luxembourg	SIF/RAIF	-	-
2007	United Kingdom	UK-REIT	49	56.568
2007	Indonesia	DIRE	2	453
2007	New Zealand	FOOT	6	4.312
2008	Lithuania	REIT	-	-
2009	Spain	SOCIMI	85	22.136
2009	Philippines	REIT	8	3.978
2010	Finland	Finnish REIT	-	-
2011	Hungary	REIT	2	298
2013	Ireland	Irish REIT	1	504
2013	Kenya	REIT	1	7
2013	South Africa	REIT	28	8.492
2014	Chile	FI/FIP	-	-
2014	India	TRUST	5	8.866
2016	Saudi Arabia	REITF	18	4.116
2019	Portugal	SIGI	2	156
2020	China	C-REIT	8	4.469
2021	Bulgaria	SPIC	34	718
2021	Vietnam	V-REIT	-	-
2022	Pakistan	REIT	2	104

**Table 1:** List of countries that have specific regulations for REITs ordered according to their year of regulation. <sup>a</sup> General name of the type of company in the country. <sup>b</sup> Number of existing companies in 2023 reported by EPRA. <sup>c</sup> Capitalization of existing companies in 2023 reported by EPRA. <sup>d</sup> Year of regulation according to EPRA report data. Source: data from the report (EPRA 2023).

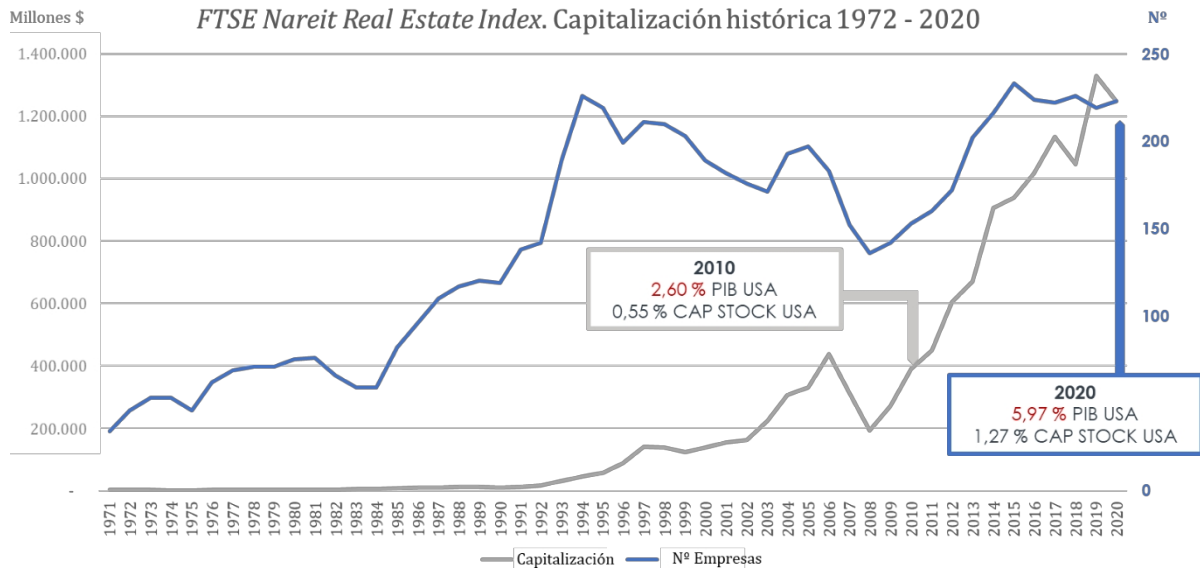
Given the importance of these companies in the United States, it should be noted that their growth in the country has not been homogeneous, as shown in Figure 4. In the decade from 1971 to 1980, the number of companies doubled, while the overall capitalization grew by a smaller 54%, while in the following decade, which ended in 1990, the growth in the capitalization of the companies was 258%, significantly higher than the 57% increase in new incorporations to the market.



**Figure 4:** Evolution of REIT capitalization in the USA. A) Percentage growth of the capitalization of REITs in the United States in the different decades B) Percentage growth of the average capitalization of REITs in the United States according to the different decades. The abscissa axis shows the years elapsed since the first year considered for the decade. Source: Prepared by the authors based on 'FTSE Nareit Real Estate Index Historical Market Capitalization, 1972 - 2022'.

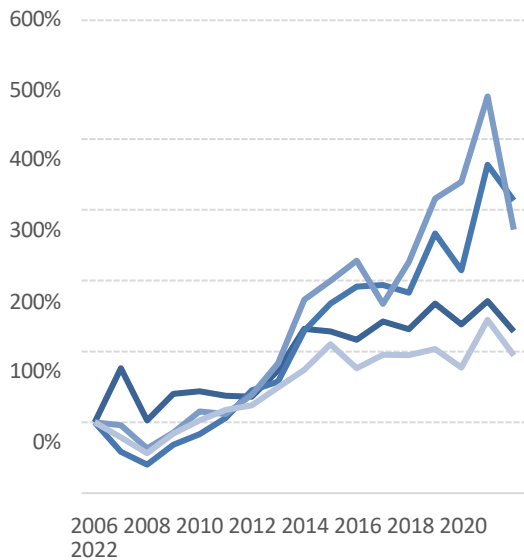
The 1990s marked the take-off of these companies in the United States, with total capitalization growth of 970% and 681% per company. After these figures, the results obtained in the 21st century have moderated to rates slightly above 150% growth in total capitalization in the first two decades. It should be noted that in this period we find a mature market in which the size of the base has an important impact on the capacity for growth.

The conditions described above have led the capitalization of REITs to account for 1.35% of U.S. GDP in 2000, 2.59% in 2010 and 5.93% in 2020, as shown in Figure 5. Data associated with a higher volume of asset management by this type of company compared to the total assets available in the U.S. market, which demonstrates the significant growth achieved by the sector in the years in which the data show a trend towards stabilization.

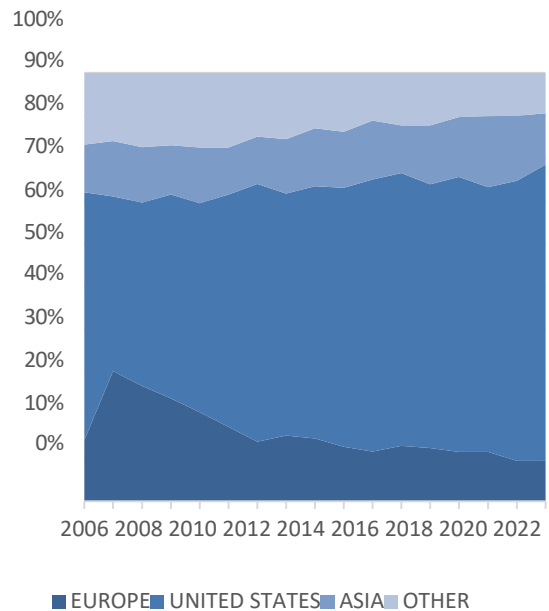


**Figure 5:** Number of companies and capitalization of REITs in the USA. Source: own elaboration based on Nareit data.

**A) Growth in REIT capitalization in the world**



**B) Distribution of capitalization by region of REITs**



**Figure 6:** Capitalization of REITs in the world distinguishing Europe, the United States, Asia and Other markets. A) Growth in capitalization using 2006 as the base year. B) Capitalization share between 2006 and 2022. Source: Own elaboration based on public data from Nareit.



Contextualizing this growth data for the United States with respect to the rest of the world in the period in which the globalization of the REIT investment model can be considered to have taken place<sup>47</sup>, the US market has continued to grow at higher rates, with the exception of Asia (Figure 6). This situation has led to even greater market concentration than in 2006, prior to the approval of the legislation in countries such as Germany, Great Britain, Italy and Spain.

REITs offer their services to different market sectors, which have specific needs associated with them from the architectural point of view; their uses, buildings, space management, facilities or location vary considerably depending on the tenant. This situation drives an additional specialization that leads to the sectorization of services.

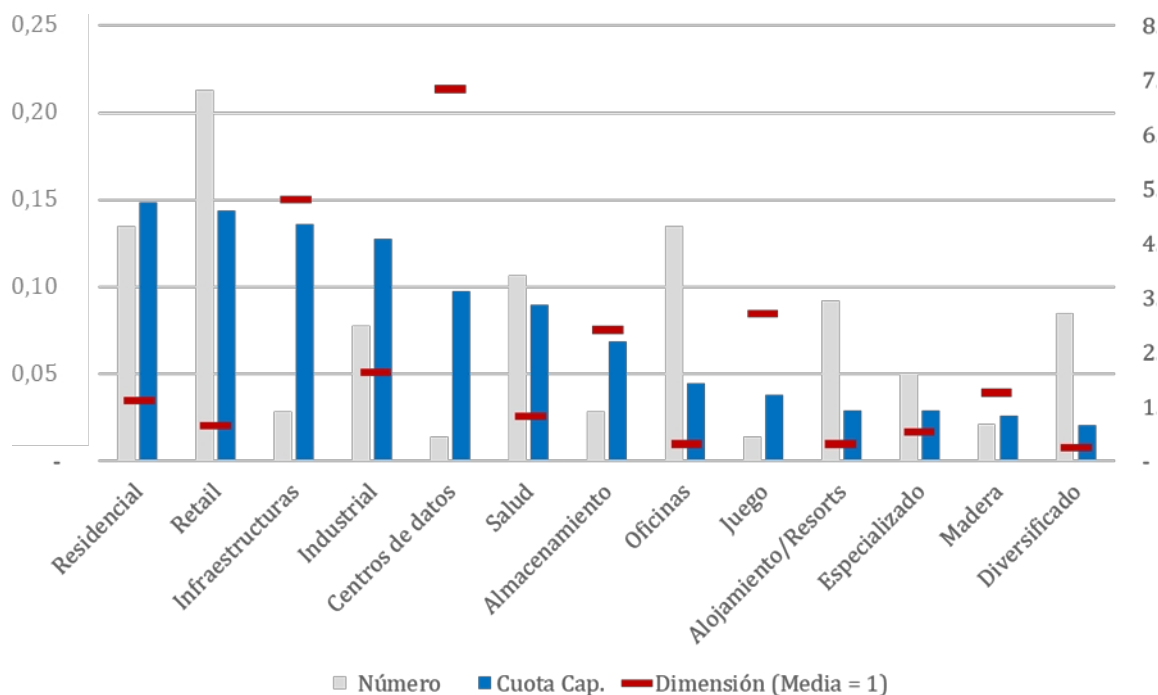
Sector	Companies <sup>a</sup>	Quota <sup>b</sup>	Cap. m\$ <sup>c</sup>	Quota Cap. <sup>d</sup>	Cap/Company <sup>e</sup>	Dimension (Mean = 1) <sup>f</sup>
Industrial	11	0,08	137.609	0,13	12.510	1,63
Offices	19	0,13	48.468	0,04	2.551	0,33
Retail	30	0,21	155.246	0,14	5.175	0,68
Residential	19	0,13	160.563	0,15	8.451	1,10
Diversified	12	0,09	22.640	0,02	1.887	0,25
Hotels/Hospitality	13	0,09	31.616	0,03	2.432	0,32
Health	15	0,11	96.778	0,09	6.452	0,84
Storage	4	0,03	74.016	0,07	18.504	2,42
Wood	3	0,02	28.170	0,03	9.390	1,23
Infrastructure	4	0,03	147.063	0,14	36.766	4,81
Data centers	2	0,01	105.446	0,10	52.723	6,89
Game	2	0,01	41.186	0,04	20.593	2,69
Specialized	7	0,05	31.312	0,03	4.473	0,58
	141		1.080.114		7.660	

**Table 2:** sectors in which real estate investment trusts indexed in Nareit (National Association of Real Estate Investment Trusts) operate, indicating: <sup>a</sup> Number of listed companies, <sup>b</sup> Share of listed companies by sector, <sup>c</sup> Capitalization in millions of dollars, <sup>d</sup> Capitalization share by sector, <sup>e</sup> Average capitalization per company in the sector, <sup>f</sup> Ratio of companies in the sector to the average. Source: data obtained from Nareit 'REIT Industry Fact Sheet' published on October 31, 2023.

Table 2 shows how real estate investment trusts are highly diversified to service the different sectors, as can be seen in that no sector exceeds 15% market capitalization by 2023. At the same time, we can see the different level of competition between sectors according to the number of companies and their capitalization, the average capitalization of 7,669 million per company has an uneven behavior, with the case of the offices whose capitalization

<sup>47</sup> See the publication of (Funari 2022) on Nareit's website (reit.com), which shows the growth of the sector and the historical results obtained, which show a performance superior to that obtained at a general level by shares or bonds.

The average is 33% of this value, or that of data centers, which have a unit capitalization close to 7 times the average level with few companies in the market. This situation can also be seen in Figure 7, with the sectors ordered according to decreasing capitalization and diversification as measured by the number of companies in the gray bar.



**Figure 7:** REIT size by sector, representation of shares from Table 2: on the left axis represents the share in number of listed REITs and market share by capitalization; on the right axis represents the size of the companies with respect to the average, with value 1 being the market average. Source: data obtained from Nareit 'REIT Industry Fact Sheet' published on October 31, 2023.

Within the scope of the present work, it is worth noting the differentiation between REITs dedicated to serving other companies in the market, with respect to those dedicated to the citizen as the end customer. In this respect, only the residential sector is directly focused on the consumption of individuals, while all the other sectors are generally aimed at leasing to legal entities that use the real estate to carry out their activity. An outstanding example of the latter are shopping centers, located in the *retail* sector, and dedicated to the supply of space to businesses (legal entities) whose business tends to have a greater focus on the end customer. Another example could be logistics centers, since they are usually located upstream in the production and distribution process, and their customers tend to be other companies.

legal entities at one or more additional levels up to the citizen as the final customer.

The difference in legal personality is of importance here based on their participation in the economic exploitation or consumption activity. This aspect, as will be seen below, has implications in the form of the foundations of the economic system.

#### **2.1.2.2. Effects of Real Estate Investment Companies**

The birth of REITs in the United States was a milestone from the point of view that real estate investment began to change its focus towards a shareholding model, in which the participation in the ownership of the property is achieved through investment in the company that owns it, a participation aimed at generating income from its exploitation in the market. This fact entails a process of capitalization of the real estate sector, in that the amount required to access this type of investment is reduced, leading to greater access to investors who previously did not have this possibility. Real estate is now listed on the stock exchange under similar conditions to any other type of share.

The fact that real estate is listed entails important changes with respect to the traditional consideration, which can be grouped into the following concepts:

- **Access to investment:** directly through the stock market, eliminating intermediaries and the requirements associated with ownership, can be accessed from low amounts.
- **Investment times:** investment becomes immediate, leaving the lengthy process of buying and selling real estate in the hands of the company's management team.
- **Ease of diversification:** access to real estate investment from low amounts allows diversification of portfolios for any type of investor, regardless of the economic value of such portfolio. This is allowed not only in real estate investment with respect to other different assets, but also with respect to different real estate assets associated with different uses or locations.
- **Liquidity:** we move from an asset of great rigidity to the opposite, in which the purchase and sale of shares is automatic, with the possibility of a large number of bidders and offerers.

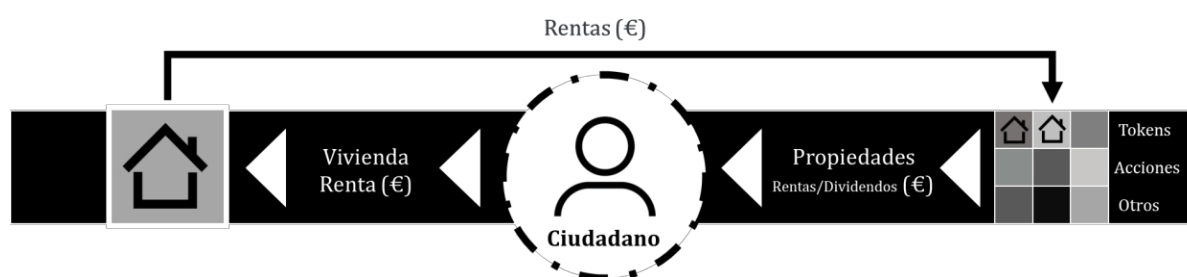
- **Reduction of intermediation:** the company's management team becomes responsible for the entire real estate process, eliminating intermediation for its shareholders, who are subject only to the highly competitive intermediation of the listed stock market.
- **Professionalization:** management is left in the hands of industry professionals with expertise in different areas, replacing investors who usually have less knowledge of the sector. Knowledge of real estate valuation, buying and selling processes, updating and renovation of properties or regulation is distributed in the hands of a professional team that defends the interests of the firm in line with their own personal interests (Gosh et al. 2011). At the same time, there is an increase in monitoring that allows management costs to be reduced (Gilstrap et al. 2021).
- **Reducing the need for leverage for individuals:** by investing from low amounts, the generalized need for individuals to resort to leverage to access the real estate market is eliminated.
- **Leverage in the hands of the companies:** it is the company that can resort to leverage instead in order to maximize returns for its investors. For REITs, being highly capitalized companies, leverage becomes of central importance in generating profitability, adjusting a debt ratio of between 49% and 60% in most cases (Versmissen & Zietz 2017). There is different behavior depending on the ownership stake of managers, leading those with less dependence on earnings to make decisions that minimize business risks (Gosh et al. 2011). Leverage acts here as a profitability criterion, at the same time as an increase in risk.
- **Globalization:** since investment in a company's shares becomes accessible to citizens from all over the world through the stock market, regardless of specific knowledge of the real estate market in third countries.
- **Market arbitrage function:** the professionalization of the sector allows a constant valuation of real estate assets, in turn allowing all the company's investors to benefit from market opportunities in the constant search for equilibrium.

- **Selected location:** where the location of real estate is shown as a basic element that modifies the possibility of achieving high levels of growth (Feng & Wu 2021).
- **Modification of risks:** from an investor's point of view, they change from real estate risks to investment risks in companies (Li 2012). This aspect is compounded by internal elements of each company, such as the role of institutional investors (Chacon 2023) or that of the management team (Heng et al. 2016).
- **Increased volatility:** since real estate companies are focused on permanence and growth, the security of ownership of assets takes second place to their capacity to generate income for their shareholders. This implies that the valuation of asset-holding companies becomes more conditioned by market trends (Li 2012). A search for value generation that leads to the existence of a volatility of REITs (Chung et al. 2016), which in turn has been shown to be higher than that of the real estate market, although lower than that of other stock market shares (Delisle et al. 2013). Volatility related to the high levels of leverage in the sector (Chacon 2023).
- **Search for efficiency:** The search for shareholder value generation forces the management team to seek efficiency (Beracha et al. 2019), which in turn is a condition for the managers' own survival at the head of the companies (Jensen 1986). The REIT investment property market can be considered efficient (Birz et al. 2022).
- **Capitalization:** the improvement in investment conditions causes a flow of capital from other investment assets to real estate, which leads to an increase in real estate prices. This effect has repercussions both on the increase in real estate income and on the change in the return on investment of these assets.

All the elements indicated above show changes in the market situation derived from the increased role of legal entities in real estate investment. Entities whose first obligation is the sustainability over time of the function they perform, with the generation of results greater than zero being the first objective. An institution that obtains losses on a sustained basis is generating a supply that must be financed indefinitely, a matter that leads to its disappearance, and therefore to the disappearance of the activity it is offering to society. From the point of view of real estate investment trusts, the fact that they are

This leads to a clear separation of ownership, in the hands of shareholders, from management, which is entrusted to a professional team whose objective is to maximize profitability.

The result is a model that shows a financialized behavior of the economy, in which the citizen acts in its investment and consumption aspects. From the investor's point of view, he accesses the markets through a diversified portfolio in which real estate investment can occur to a greater extent through instruments such as shares or tokens, while at the same time he acts as a tenant of his home in his consumption function, generating income that will be distributed by the owners of the property. This situation is reflected in Figure 8.



**Figure 8:** representation of citizens in their investment and consumption aspects in relation to the real estate market. Source: own elaboration.

### 2.1.3. Real Estate Investment Companies in Spain

Real Estate Investment Companies were regulated in Spain in 2009, under the local name of SOCIMI<sup>48</sup>. A regulation that sets minimum criteria to form part of a group with special taxation conditions, a situation that makes it possible to modify the profitability offered for investments made in the real estate market, which leads to favoring the entry of capital. These conditions are developed by the authorities with the purpose of improving the real estate market. It can be seen how Law 11/2009, of October 26, 2009, which regulates Listed Companies for Investment in the Real Estate Market, begins by stating in the preamble:

"The search for constant improvements in the well-being of citizens requires the promotion of new investment models that provide an adequate response to the constant needs of the market, with the aim of maintaining its dynamism and minimizing the negative impacts of economic cycles, in such a way as to

<sup>48</sup> See summary on the origin and evolution of SOCIMIs in Spain in (PWC 2020).

favor the continued economic integration of our country in a globalized environment".

An objective on which three years later it was indicated in the preamble XIII of Law 16/2012, of December 27, adopting various tax measures aimed at consolidating public finances and boosting economic activity that it was "*a totally inoperative regime*", so it was necessary to review the conditions with the same prior purpose of "*boosting and energizing the Spanish real estate market*", a purpose for which a 0% corporate income tax levy was established for its main income. Since then, specific modifications have been made for non-residents as well as for undistributed profits. All these regulations are listed chronologically in Table 3.

Year	Title	Critical elements
2009	Law 11/2009, of October 26, 2009, regulating Public Limited Companies (Sociedades Anónimas) Listed Real Estate Investment Companies.	Initial regulation
2012	Law 16/2012, of December 27, 2012, which adopts various tax measures aimed at consolidating public finances and boosting the economic activity.	Adaptation of taxation
2018	Order HFP/441/2018, of April 26, approving the corporate income tax and non-residents' income tax return forms. Residents [...]	Non-residents
2021	Order HFP/1430/2021, of December 20, approving form 237 "Special tax on undistributed profits of public limited companies". listed investment companies in the real estate market. [...]	Retained earnings

**Table 3:** Summary table of SOCIMI legislation since its regulation in Spain in 2009. Source: Own preparation based on information collected in the Official State Gazette (BOE).

The process is summarized in a series of steps in which it is initially regulated for social purposes and based on international experience. Due to the low interest aroused by the market, in a second phase a tax modification is introduced that captures the attention of the markets and the incorporation of companies into the model begins (García-Vaquero & Roibás 2020)<sup>49</sup>, which once it reaches a stage of maturity receives new regulations in the following phases aimed at modifying the specific conditions of sectors while increasing state revenue.

## 2.2. Methodology

For this study we have used the information published by the SOCIMIs in Spain, information available through their own websites such as

<sup>49</sup> Bank of Spain report in which the growth of the sector between 2013 and 2019 as well as the main trends can be observed. Issues of capitalization, number of assets and concentration of investments are included.

annual reports from the Spanish national securities market commission, the information contained in the stock market indexes in which they are listed<sup>50</sup>.

In contrast to the 2009 regulation, which aroused little investor interest, the 2012 legislation marks a turning point in the growth of SOCIMs in Spain, with 15 in 2015, distributed between the Spanish stock exchange (4) and BME Growth (11). To reach 96 SOCIMs in 2020 distributed between: stock exchange (5), BME Growth (78) and Euronext Access.

(13)<sup>51</sup>. The growth of SOCIMs is initially concentrated in markets aimed at companies, such as offices, shopping centers or healthcare, to later expand to provide services to citizens as end clients, with significant growth in the residential sector since 2016 to become the main sector in 2022 with a 27% market share.

The market currently has one of the largest portfolios of companies in the sector in the world, however they have a lower average capitalization than other neighboring countries. Table 4 shows the 18 SOCIMs with a capitalization of more than 200 million in November 2023, only 3 of which are above 1,000 million.

SOCIMI	Tickr	Cap.	Ch. 2020	Ch. 2021	Ch. 2022	Market Quotati on	Cot. 2019	Cot. 2020	Cot. 2021	Cot. 2022	Main market
MERLIN	MRL.MC	6.008	3.654	4.495	4,122	IBEX35	12,79	7,78	9,57	8,77	Offices
COLONIAL	COL.MC	5.772	4.077	4.452	3,243	IBEX35	11,36	8,02	8,25	6,01	Offices
GMP	YGMP	1.090	1.090	1.080	1,070	BME.G	57,00	57,00	56,00	56,00	Various
VIVENIO	YVIV	503	706	837	947	BME.G	1,15	1,14	1,35	1,35	Residential
ZAMBAL	YZBL	794	781	762	729	BME.G	1,23	1,21	1,18	1,13	Offices
TESTA	YTST	846	839	833	714	BME.G	6,40	6,35	6,30	5,40	Residential
CASTELLANA	YCPS	603	474	590	646	BME.G	7,00	5,50	6,85	6,55	Commercial
SILICIUS	YSIL	-	-	613	436	BME.G	-	-	17,00	14,10	Various
EMPEROR	YEPSA	-	-	-	428	BME.G	-	-	-	4,20	Offices
FIDERE	YFID	145	141	136	409	BME.G	14,40	14,00	13,50	40,60	Residential
MILLENIUM	YMHRE	270	245	298	387	BME.G	5,40	4,50	3,88	3,34	Hotelier
LAR SPAIN	LRE.MC	643	409	428	353	M.CON	7,10	4,67	5,12	4,22	Commercial
ATOM	YATO	355	322	305	322	BME.G	11	10	9	10	Hotelier
ALBIRANA	YAPS	324	324	270	270	BME.G	33,60	33,60	28,00	28,00	Residential
TRIVIUM	YTRI	249	247	235	231	BME.G	5,00	5,00	5,00	5,41	Commercial
ARIMA	ARM.MC	321	235	260	213	M.CON	11,30	8,30	9,18	7,50	Offices
OLIMPO	YORE	194	200	208	206	BME.G	0,99	1,02	1,06	1,05	Commercial
IBERVALLES	YIBV	-	-	-	148	BME.G	-	-	-	5,55	Offices

**Table 4:** List of SOCIMs in Spain with capitalization over 200 million euros as of November 23, 2023, including their capitalization (Cap.) between 2019 and 2022, their share price (Cot.) for the same period and the market identifier on which their securities are listed (BME.G = BME

<sup>50</sup> See: 'bolsasymercados.es', 'bmegrowth.es' and 'live.euronext.com'.

<sup>51</sup> See the report 'SOCIMs Ten years since their creation' published by JLL in December 2022.



Growth, M.COM= Continuous Market, IBEX 35). Source: Prepared by the authors based on data from Bolsas y Mercados Españoles.

It is worth noting the evolution of these companies over the four years shown in the table. On the one hand, the large loss of capitalization of different companies, among which Merlin and Colonial stand out, a situation that began in 2020 with the COVID19 crisis, derived from the high dependence on office space or business services.

For the analysis, the dwellings have been downloaded from the websites of the respective SOCIMIs by means of *web scraping* techniques using the statistical program R. In the same way, the data have been contrasted and completed manually as well as by accessing the annual reports reported by the companies and hosted in BME Growth. Work carried out between December 2022 and January 2023.

The last section includes information on the aging of the population in Spain, due to its relationship with the financing activities of SOCIMIs such as Inversia. For this purpose, data from the General Council of Notaries has been used in relation to notarial acts on reverse mortgages granted as well as Nuda Propiedad.

## **2.3. Results**

### **2.3.1. Generating Shareholder Value in Financial Statements**

Information on the company's operations is reflected in the company's accounts, which in turn are summarized in the financial statements. These show the company's income and expense structure, as well as its properties and cash position. In the case of SOCIMIs, whose function is based on the leasing of the real estate assets they own, the ratio of income to available real estate assets is a major issue.

Tables 5 and 6 show selected information from the accounts of eight of the main SOCIMIs in Spain whose business is associated with different sectors. They include, firstly, the accounts of their properties, among which real estate investments represent the vast majority of assets, as these companies are required to do. Secondly, there is a breakdown of the main items of real and financial income of the income statement up to the generation of profit. The third and last section contains information on the companies' liabilities and net worth, showing the distribution of funds between equity and borrowed funds. It is worth noting that the table mainly includes data for the year

2020 when the COVID19 crisis occurred, an aspect that does not change the basis of the comparative static analysis between the different companies, which allows us to base the subsequent value generation process.

With respect to the information on income, it can be seen how their leasing objective generates positive income in all cases, ranging for the year between 2.16% and 6.77%. In addition to this income, the impact of changes in the fair value of assets is added to the income statement, causing negative variations of around 20% of business income for the three largest companies, but of great magnitude in the rest of the companies, with changes in the valuation of assets accounting for an amount much higher than the income from the natural business. This situation means that the EBITDA of the companies is highly conditioned by the effect of changes in the value of assets, reducing dependence on rental income.

In the same section it is worth highlighting the impact of the depreciation of assets, as well as the payment of interest recorded in the transition from EBITDA to net profit, a natural issue for these companies due to their dependence on fixed assets and the level of leverage that allows them to have funds to achieve the objective of maximizing the result for shareholders, in this case, companies such as Merlin or Colonial lose 77% and 66% of the profit for the current year.

In the last level of tables 5 and 6, the section on equity and liabilities, it can be seen that all the largest companies have approximately 50% to 60% of equity, while they resort to financing for the rest. Most of the liabilities are long-term and, in general, the short-term debts are very low, as low as 1.3% for Merlin and Vivenio.

	MERLIN 2020	COLONIAL 2020	GMP 2020	LAR 2020
	Office and Commercial	Offices	Offices	Commercial
Real Estate Investments	12.139.347	11.516.120	2.124.000	1.373.000
Non Current Assets	13.061.757	11.704.419	2.203.000	1.406.000
Total Assets	13.477.612	12.354.976	2.383.000	1.678.000
Revenues	446.132	341.669	97.000	93.000
Changes in Valuation of Assets	- 84.468	- 79.052	- 16.000	- 100.000
EBITDA	240.536	185.365	23.000	- 30.000
Net Profit	56.358	62.817	15.000	- 53.000
Real Estate Income/Investments	3,68%	2,97%	4,57%	6,77%
Heritage	6.696.267	6.833.164	1.403.000	859.000
Non-Current Liabilities	6.602.085	4.817.502	930.000	752.000
Current Liabilities	179.260	704.310	52.000	67.000
Equity and liabilities	13.477.612	12.354.976	2.385.000	1.678.000
Non-current liabilities/Equity	49%	39%	39%	45%

**Table 5:** 1st summary table of selected financial variables of the most representative Spanish SOCIMs in different sectors at the close of the fiscal year indicated. Source: own elaboration based on data reported by the companies published by the CNMV and by BME Growth according to listing market.

	CAST 2020	VIVENIO 2020	SILICIUS 2021	FIDERE 2019
	Retail	Housing	Housing	Housing
Real Estate Investments	987.160	1.116.577	741.401	640.752
Non Current Assets	994.048	1.119.441	759.885	646.151
Total Assets	1.038.036	1.137.472	776.004	749.286
Revenues	55.379	24.150	28.754	36.215
Changes in Valuation of Assets	- 45.464	18.046	44.070	64.620
EBITDA	- 18.992	29.901	58.135	72.107
Net Profit	- 31.856	21.655	54.754	40.552
Real Estate Income/Investments	5,61%	2,16%	3,88%	5,65%
Heritage	498.167	796.933	395.448	48.731
Non-Current Liabilities	457.384	325.475	257.531	630.342
Current Liabilities	82.485	15.258	123.025	70.212
Equity and liabilities	1.038.036	1.137.666	776.004	749.285
Non-current liabilities/Equity	44%	29%	33%	84%

**Table 6:** 2nd summary table of selected financial variables of the most representative Spanish SOCIMs in different sectors at the close of the fiscal year indicated. Source: Prepared by the authors based on data reported by the companies published by the CNMV and by BME Growth according to listing market.

Moving from the static analysis to the dynamic analysis shown in Table 7, SOCIMs have been selected that combine high real estate investments and the availability of financial reports for at least 5 years. It can be seen how there is a progressive growth of the companies' real estate investments, peaking in 2020 in most cases, even in an adverse situation such as the one suffered by COVID19. It can also be seen the high concentration of business in the two main SOCIMs.

	2014	2015	2016	2017	2018	2019	2020
MERLIN	1.969.934	5.397.091	9.087.084	10.352.415	11.740.461	12.169.157	12.139.347
COLONIAL	5.663.309	6.743.313	7.762.627	8.782.396	11.083.133	11.797.117	11.516.120
LAR	357.000	776.000	1.191.000	1.306.000	1.363.000	1.449.000	1.373.000
FIDERE	22.518	115.445	461.351	636.735	706.489	640.752	-
GMP	-	1.596.000	1.772.000	1.966.000	2.046.000	2.070.000	2.124.000
ZAMBAL	-	305.800	623.122	724.938	906.824	804.419	653.208
GAL.COM.	-	-	222.383	270.143	316.354	347.629	444.916

**Table 7:** Evolution of real estate investments of selected SOCIMs in the Spanish market between 2014 and 2020. Source: own elaboration based on data reported by the companies published by the CNMV and by BME Growth according to listing market.

For the same SOCIMs and with respect to the aforementioned change in value of the assets in portfolio, Table 8 shows how there is irregular behavior. At the same time, it can be seen that not all the companies reflect the change in the fair value of the assets in the income statement, with Zambal or Galerías Comerciales not recording the amount until the purchase and sale transaction that shows the real change in value is carried out. It is worth noting here the irregular evolution of the values depending on the market situation with 2017 as the year with the greatest impact on the valuation. There are revaluations of over 10% for Colonial in 2015 and 2017, for Fidere in 2019 or for GMP in 2015 and 2016. Similarly, the role of 2020 stands out, the only year in the period in which there is a correction of valuations, with a magnitude of less than 1% for Merlin, Colonial or GMP, although over 7% for LAR Spain. The latter change derives from the impact of the COVID19 in Spain, with different effects among the different business sectors.

	2014	2015	2016	2017	2018	2019	2020
MERLIN	49.471	314.586	453.149	897.401	629.184	354.972	84.468
COLONIAL	331.953	719.982	560.777	933.435	701.952	873.699	79.052
LAR	-	25.000	87.000	101.000	70.000	40.000	100.000
FIDERE	-	-	2.092	9.906	6.282	64.620	-
GMP	-	169.000	195.000	88.000	127.000	138.000	16.000

**Table 8:** Change in the value of real estate assets of selected SOCIMIs in the Spanish market between 2014 and 2020. Source: prepared by the authors based on data reported by the companies published by the CNMV and by BME Growth according to listing market.

### Value generation: income and asset valuation

The main, if not the only, objective of any company (Friedman 1970) is the creation of shareholder value. This is an objective that is achieved through the generation of value for the market; generating revenues in excess of costs that are transformed into a net profit as a result of the company. As shown in the previous point, the generation of income in SOCIMIs can have two components, the first in the form of actual income from the function of lessor of space, and the second derived from the change in value of the assets. This change in the value of the assets is realized at the time of their sale, considering the goodwill or impairment on the value of the asset as adjustments to the income statement. The adjustments are computed for business profit in a manner similar to that of the company's revenues or costs.

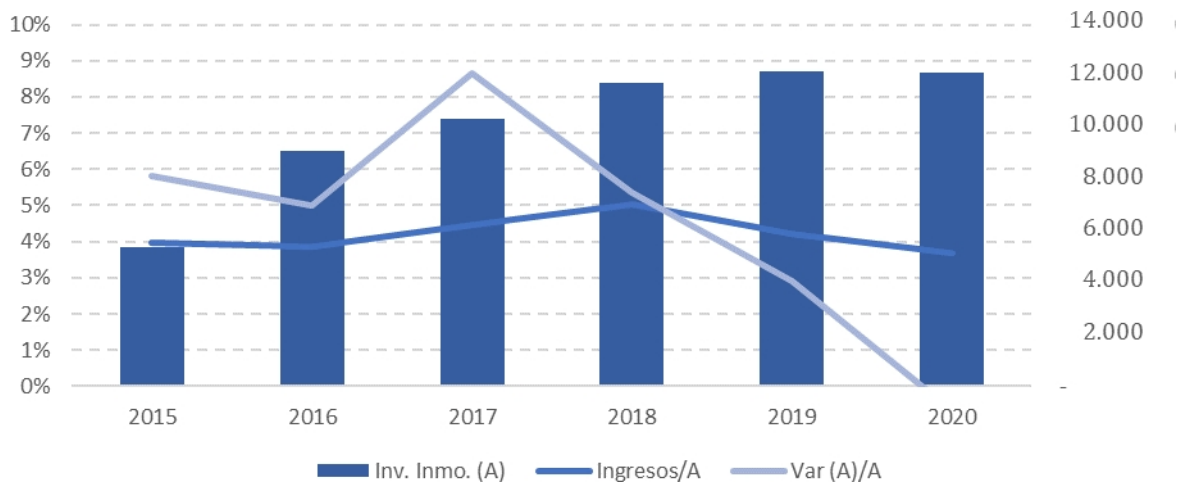
The change in the value of the assets can be accounted for at the time it materializes, generating extraordinary results in the corresponding period. Instead, it can also be accounted for by periodic expert valuation of the assets in the portfolio, updating their value in the balance sheet and recording the increase or deterioration in value in the income statement, which makes it possible to spread the expected gain or loss over different years, while at the same time representing in the balance sheet the value of the assets that is estimated to be the most realistic.

However, this form of accounting also presents risks, since it is a financial solution that has impacts that go beyond the accounting problem. A positive valuation of assets that has an impact on the company's profit and therefore influences the size of its dividends implies a cash outflow not associated with any inflow, but with a financial transaction that could materialize in the sale of the asset in an undefined future period. The accumulation of these increases in value can have significant negative implications on cash flow if the assets are held for long periods of time.

The situation described above of periodically updating the valuation of real estate assets of SOCIMIs in Spain is shown to be an option for the most part.

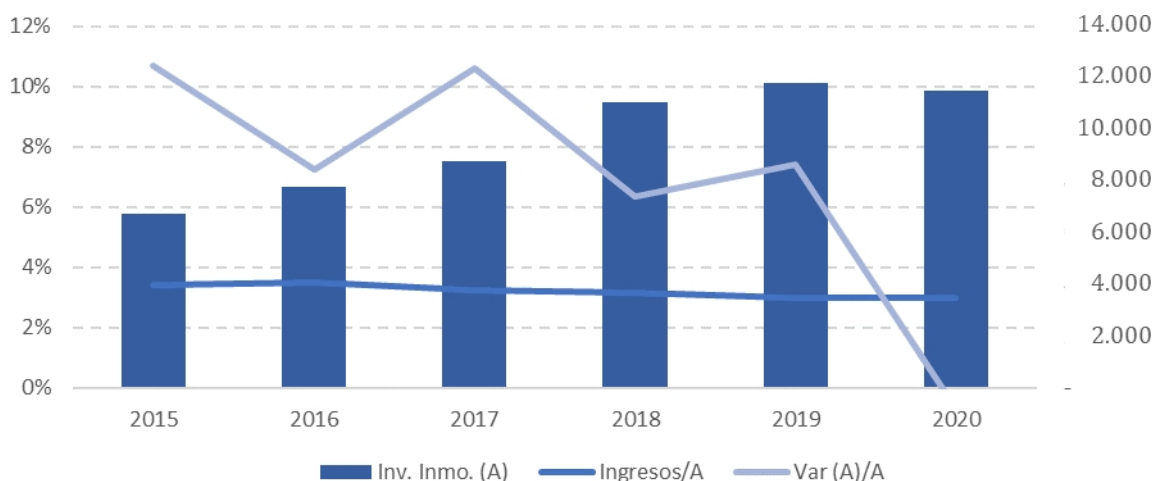
chosen. Given the legal conditions associated with owning real estate assets in excess of 80% of the assets, the change in value of the assets has high implications for the business of these companies, usually exceeding the income obtained from leasing.

Figure 9 shows the evolution of Merlin Properties between 2015 and 2020, during the first four years of the period the impact of the changes in the value of the assets is higher than the operating income of the business, this fact is reversed in the last two years reaching a break-even situation in which the sum of the income equals the sum of the changes in valuation for the six years. This situation means that, for Merlin, half of the income shown in the income statement does not have the necessary cash generation associated with it. Financial income which, by contributing to the generation of profit, has the obligation to pay out dividends in a proportion of more than 80%, which does translate into a cash outflow.



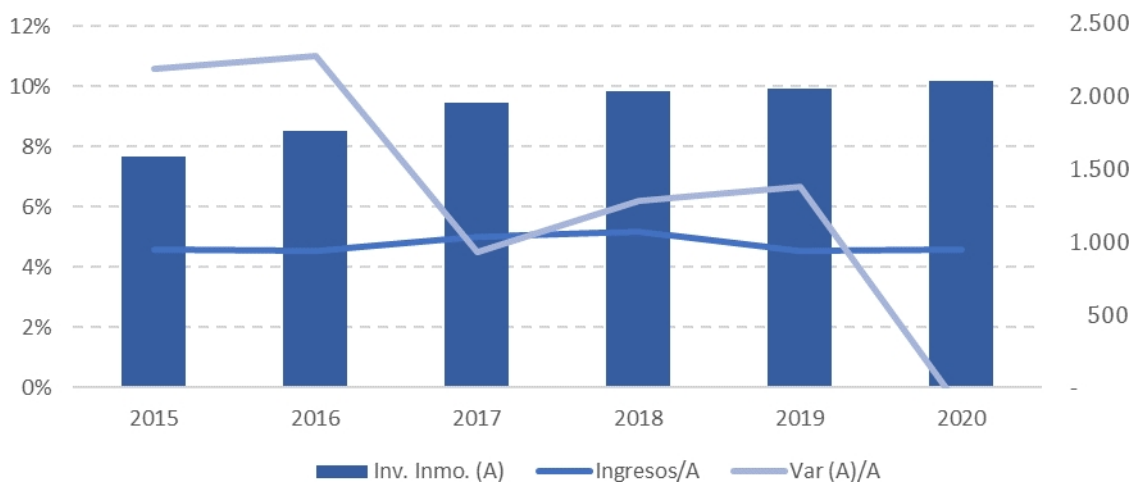
**Figure 9:** Selected financial data of Merlin Properties, diagram showing the evolution of the portfolio of real estate investment assets (millions of euros), represented in columns on the right axis. Lines on the left axis show the evolution of revenues and change in the value of real estate investments with respect to the real estate asset portfolio. Source: Prepared by the authors based on financial statements published by the company.

The case shown for Merlin is repeated in Inmobiliaria Colonial with a more pronounced result, as shown in Figure 10. Changes in asset valuation are higher than revenues in five of the six years, with 2020, the Covid year, being the only year in which the situation is reversed. This leads to an average revenue generation of 3.17% over the period, at the same time as a more than doubling of the change in fair value of assets to 6.43%, implying that one third of the revenue booked is due to the company's own business while the remaining two thirds is due to financial reasons, exacerbating the cash gap shown in Merlin.



**Figure 10:** Selected financial data of Inmobiliaria Colonial, diagram showing the evolution of the portfolio of real estate investment assets (millions of euros), represented in columns on the right axis. Lines on the left axis show the evolution of revenues and change in the value of real estate investments with respect to the real estate asset portfolio. Source: Prepared by the authors based on financial statements published by the company.

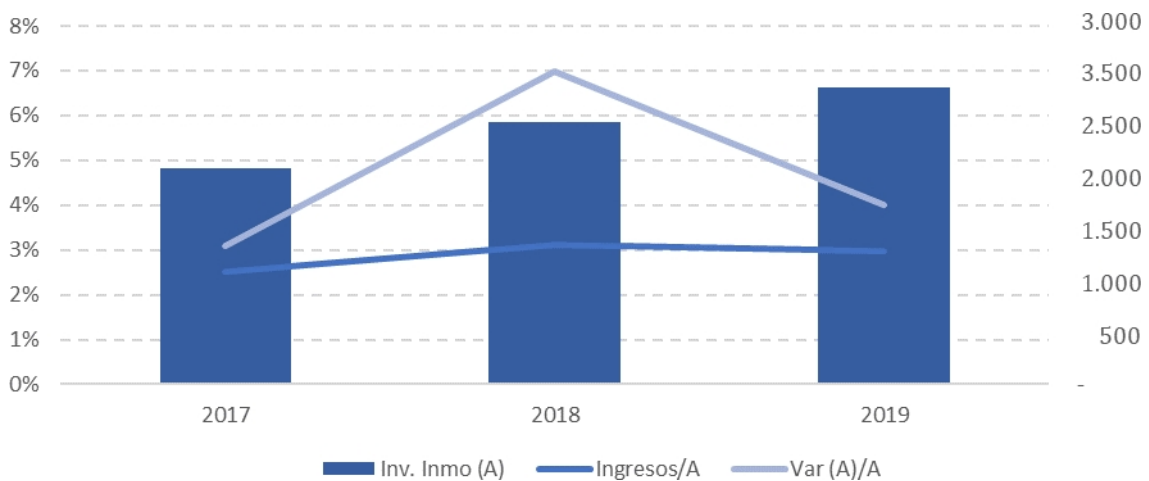
The third particular case is that of SOCIMI GMP Property (Figure 11), a company that is in an intermediate condition, with a higher share of changes in the value of assets in its income statement, accounting for 56% of income for the period, while the remaining 44% corresponds to income generated.



**Figure 11:** Selected financial data of GMP Properties, diagram showing the evolution of the portfolio of real estate investment assets (millions of euros), represented in columns on the right axis. Lines on the left axis show the evolution of revenues and change in the value of real estate investments with respect to the real estate asset portfolio. Source: Prepared by the authors based on financial statements published by the company.

The three previous companies (Merlin Capital, Inmobiliaria Colonial and GMP properties) have been analyzed due to their large size in the Spanish market, however they are mainly dedicated to the commercial and office sectors. The following three cases (Testa, Fidere and Vivenio) correspond to SOCIMIS in the residential real estate market, of which Testa and Fidere have received academic interest because they are under ownership of the American company Blackstone as the largest real estate investment fund (Méndez 2021) (Byrne 2019).

The first case is Testa Residencial SOCIMI, S.A., a company in which 91.78% of the share capital is held by the US company Blackstone through five investment funds<sup>52</sup>. Figure 12 shows that between 2017 and 2019 the company's behavior is similar to those previously analyzed, reporting income from 'Variation in fair value of real estate investments' that significantly exceeds the amount of turnover.



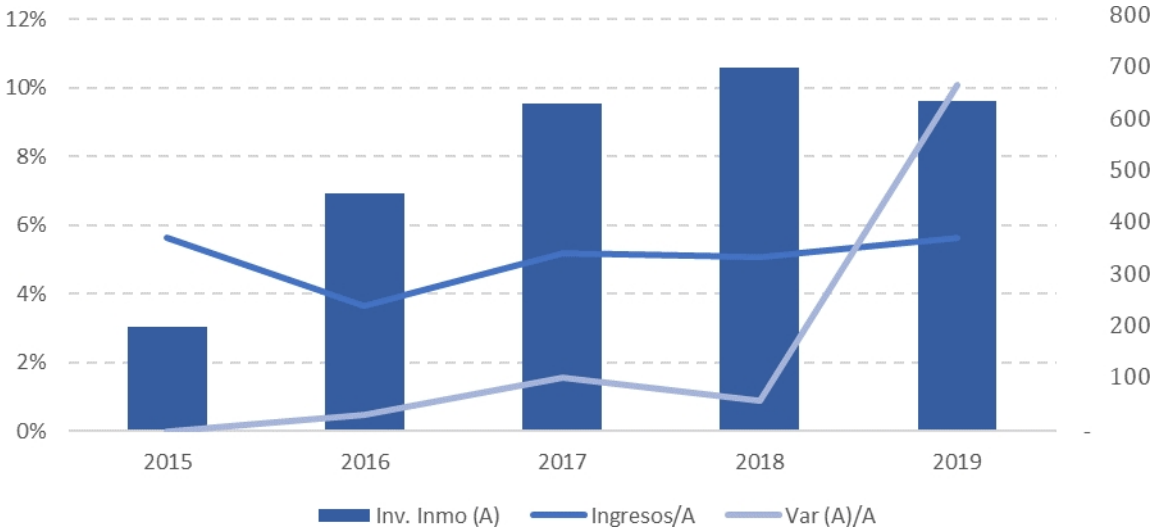
**Figure 12:** Selected financial data of Testa Residencial, diagram showing the evolution of the portfolio of real estate investment assets (millions of euros), represented in columns on the right axis. Lines on the left axis show the evolution of revenues and variation in the value of real estate investments with respect to the real estate asset portfolio. Source: Prepared by the authors based on financial statements published by the company.

In the second case, related to the housing sector, the real estate company Fidere Patrimonio SOCIMI, S.A. (Figure 13) is majority owned by

<sup>52</sup> See documentation of significant shareholdings of Testa in 'bmegrowth.es' as of January 10, 2023, 99.52% of Testa was held by Tropic Real Estate Holding, S.L.U., which in turn was owned by Blackstone Real Estate Partners Europe V-NQ L.P. (34.21%), Blackstone Real Estate Partners VIII.F-NQ L.P. (26.51%), Blackstone Real Estate Partners VIII-NQ L.P. (15.18%), Blackstone Tropic Co-Investment Partners L.P. (10.13%) and Blackstone Real Estate Partners VIII.TE.1-NQ L.P. (5.79%).



Blackstone's investment funds<sup>53</sup>. In its case the impact of changes in the value of assets is reflected as 'Impairment and gain or loss on disposal of fixed assets' reporting significantly lower figures for the first years of life since its listing in 2015, rising to over 10% of the value of real estate investments in 2019 derived mainly from the sales of housing developments<sup>54</sup>.

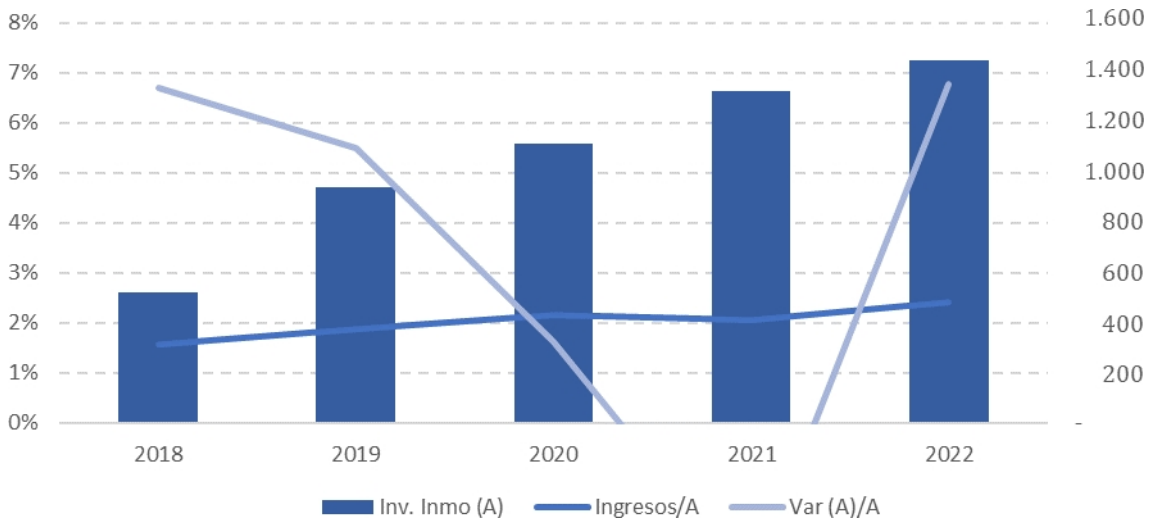


**Figure 13:** Selected financial data from Fidere Patrimonio, diagram showing the evolution of the portfolio of real estate investment assets (millions of euros), represented in columns on the right axis. Lines on the left axis show the evolution of income and change in the value of real estate investments with respect to the real estate asset portfolio. Source: Prepared by the authors based on financial statements published by the company.

The last case analyzed corresponds to the residential real estate company Vivenio Residencial SOCIMI, SA, which shows the same behavior analyzed in the previous cases, in this case with returns from the revaluation of real estate assets significantly higher for all years except for the effect of the COVID19 between 2020 and 2021.

<sup>53</sup> See documentation of significant shareholdings of Fidere in 'bmegrowth.es' as of July 10, 2023, 98.97% of Fidere was held by Spanish Residential (REIT) Holdco, S.à r.l., which in turn was owned by Blackstone Real Estate Partners Europe IV - NQ L.P. (44.95%) and Blackstone Real Estate Partners Europe IV L.P. (28.96%).

<sup>54</sup> See report on the consolidated financial statements of Fidere Patrimonio SOCIMI S.A. for the year ended December 31, 2019, p.40.



**Figure 14:** Selected financial data of Vivenio Residencial, diagram showing the evolution of the portfolio of real estate investment assets (millions of euros), represented in columns on the right axis. Lines on the left axis show the evolution of revenues and change in the value of real estate investments with respect to the real estate asset portfolio. Source: Prepared by the authors based on financial statements published by the company.

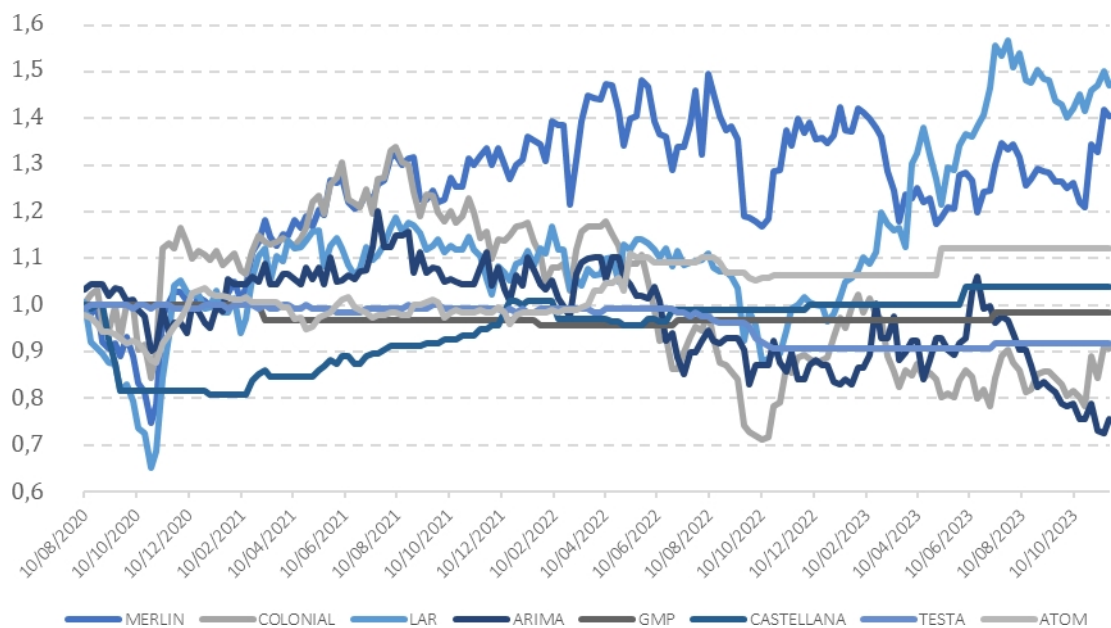
In summary, this section shows the importance of accounting in the generation of results of SOCIMs due to their dependence on a portfolio of real estate assets that represents the majority of their assets.

### 2.3.2. Impact on Real Estate Sector Volatility

Having considered the main elements that influence the results, I now analyze the change in value of SOCIMs in the stock market. And given that they have 80% real estate assets, I relate this value to the change in the price of real estate in Spain. For this purpose, both the companies' share prices, obtained from Yahoo Finance, and the housing price index published by the INE are available.

Figure 15 shows the evolution of the stock market price of eight of the main Spanish SOCIMs measured as of August 10, 2020, with the first two listed on the IBEX 35 (Merlin and Colonial), the second two on the continuous market (LAR España and Arima), and the last four on BME Growth (GMP, Castellana Properties, Testa Residencial and ATOM Hotels). The first point to note is the volatility of the share price, with the case of Colonial being the most representative, with growth of more than 30% at the end of the first year and falling back to a value close to 30% lower than the starting value in the following year. A similar case to the volatility of LAR Spain, which went from losses of 10% in the last quarter of 2022 to revaluations exceeding 50%.

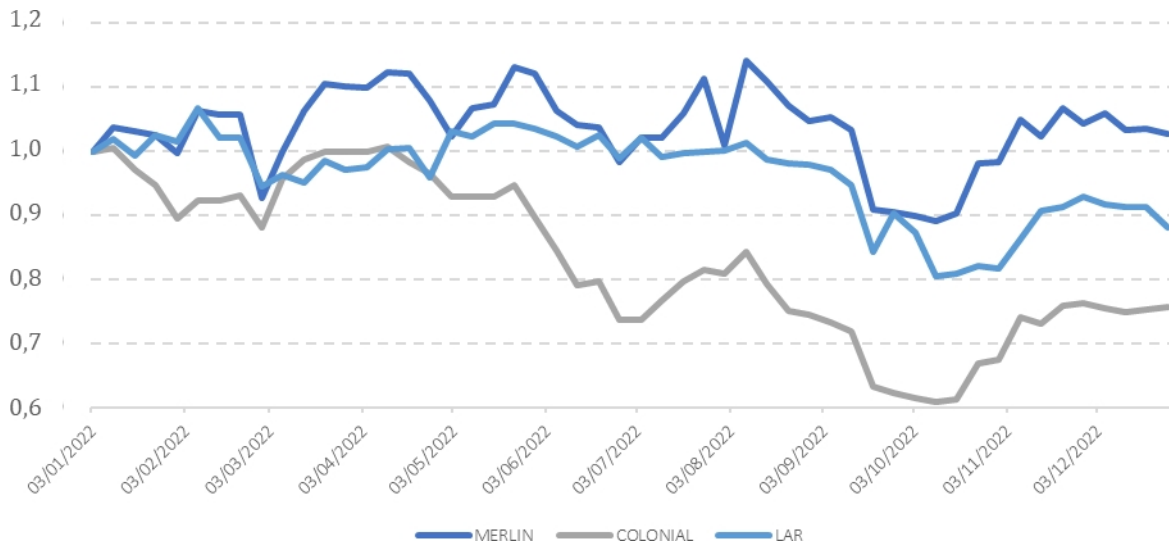
in the third quarter of 2023, a situation that is not exceptional in the case of the stock market but extraordinary when considering real estate assets.



**Figure 15:** Evolution of the weekly share price of selected SOCIMIs in the Spanish market, considering August 10, 2020 as the initial value. Source: own elaboration based on data from Yahoo Finance.

The second issue is the difference in the performance of the companies for the same period, in which two SOCIMIs such as Merlin and Colonial, with a high exposure to the office market, show completely different results. At the end of the period, Merlin has a revaluation of more than 40%, while Colonial's share value has decreased by 10%.

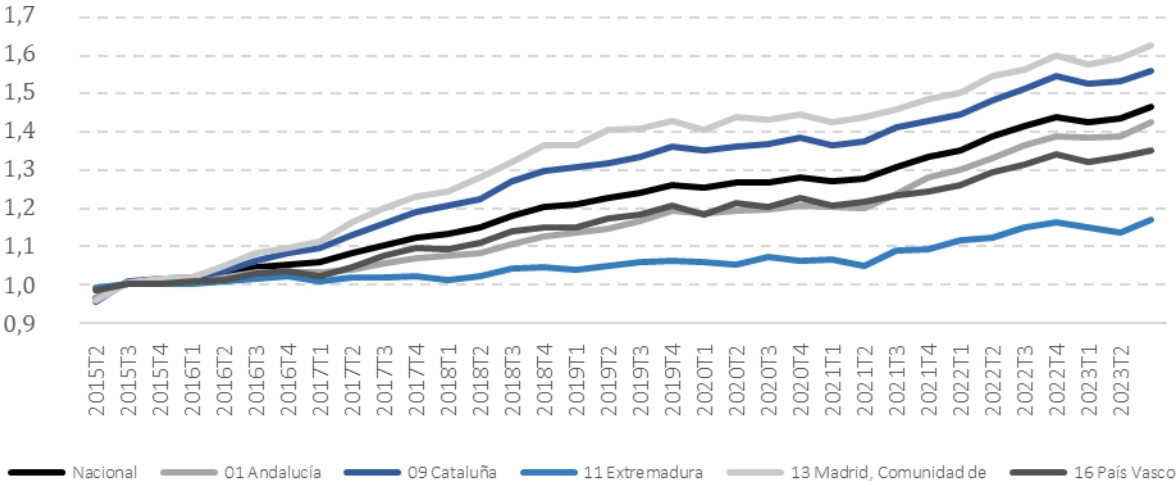
A third noteworthy element is the difference observed between the shares listed on the Ibex and the continuous market, with respect to those of BME Growth. It can be seen how, in the latter case, share prices have maintained minimal variations during practically the last full year, a situation that occurs in a context of practically zero trading volume, which implies an absence of shareholder turnover.



**Figure 16:** Evolution of the weekly share prices of SOCIMIs with the highest volatility in the Spanish market throughout 2020. Source: Prepared by the authors based on data from Yahoo Finance.

Figure 16 allows us to observe the issue of volatility to a greater extent for weekly quotations during the full year 2022. It shows price reductions of more than 10% between weeks, especially in the case of September, variations that subsequently show practically equivalent recoveries in a behavior typical of financial volatility, but not of real estate prices.

In contrast to the variations in share prices shown for 3 and 1-year periods, Figure 17 shows the growth in housing prices over the 8-year period between the second quarters of 2015 and 2023. The data is shown for Autonomous Communities representative of Spain according to the national average (47%), its maximum growth in Madrid (63%), and minimum in Extremadura (17%), as well as three regions of greater economic dimension Basque Country (35%), Andalusia (43%) and Catalonia (56%). During the entire period, there was a generalized growth in prices, except for specific corrections lasting less than two quarters.



**Figure 17:** housing price index (HPI) including the national average and a selection of Autonomous Communities according to highest and lowest price growth and greatest impact on national income. Source: Prepared by the authors based on data from the National Statistics Institute (INE).

The data shown separates the behavior of SOCIMI shares with respect to the behavior of the real estate market, going from a relatively stable trend to high volatility, which adds business risks to those inherent to the real estate sector. There is a shift from a valuation of the asset in which the fundamental element is the asset itself to a valuation of the asset's profitability that is highly dependent on its own market as well as on higher variables at a national or global level. To illustrate this, one can consider the effect of tourism expectations in the form of occupancy or trip duration factors for the hotel sector or the case of commercial lease contracts, visitors to the center or the average ticket for the *retail* or shopping center sectors.

**2.3.3. Spatial Distribution of the SOCIMI Offering in Spain**

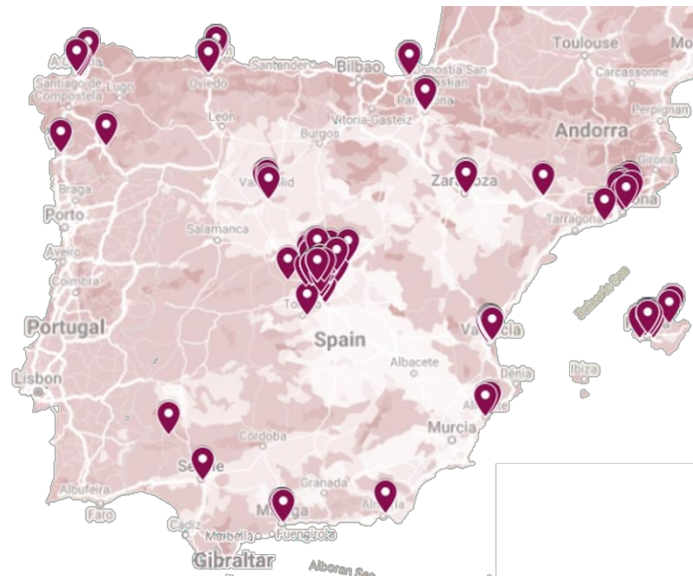
As is natural in the real estate sector, in analyzing the role of SOCIMIs in Spain, the importance of the location of their properties should be highlighted. These properties are highly concentrated in large cities and metropolitan areas, while they are present to a much lesser extent in other large municipalities in Spain. This distribution of investments has an important sectoral character.

Investments mainly respond to business strategy decisions, with asset portfolios changing and being identified not only with different locations, but also with different uses, sizes, age or services, which allow them to work

with different tenant profiles, whether they are citizens or legal entities, while at the same time having prices and cost structures in line with the particularities of each company.

### The real estate offer dedicated to housing

For the study of the spatial distribution of housing, we have used the spatial representation of all the properties reported by the three main SOCIMIs fully dedicated to residential leasing: Testa, Vivenio and Fidere. For this purpose, data was downloaded from the property listings on their respective websites testaresidencial.com, vivenio.com and encajatuquiler.com (Fidere).



**Figure 18:** Distribution of properties in the portfolio of SOCIMIs (1) Testa, Vivenio and Fidere in Spain. Source: own elaboration based on the compilation of properties on company websites and BME Growth documents. Google Maps

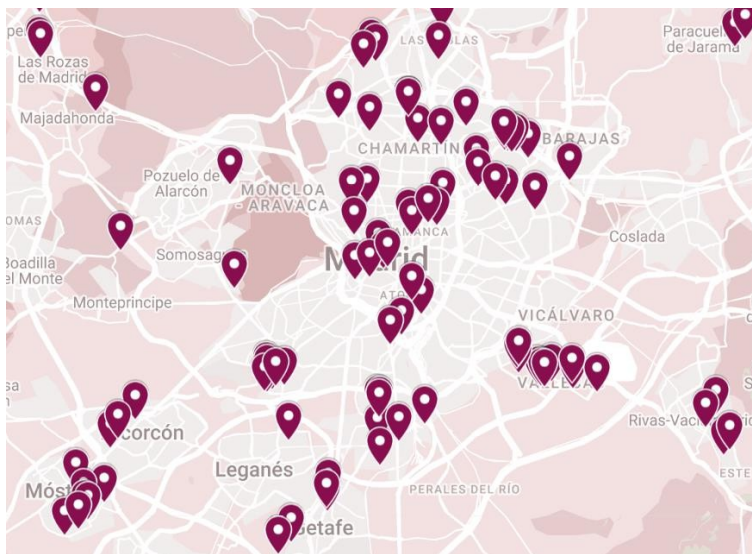
A total of 283 locations have been registered for these three companies in Spain, with 203 for Testa, 36 for Vivenio and 44 for Fidere. Figure 18 shows the presence of SOCIMIs throughout Spain; however, this presence is associated with the diversification of Testa's portfolio, with a presence in 20 different provincial capitals, while Vivenio works only in Madrid and Barcelona, as well as in Valencia and Palma on an occasional basis, and Fidere only in Madrid, with an occasional participation in Catalonia. At the regional level, Madrid accounts for 46.9% of the housing portfolio, while Barcelona accounts for 10.3%, the Balearic Islands for 7.2% and Valencia for 6.8%, bringing the total of these four locations to 71.2% of the housing portfolio available for rent in Spain for the three largest companies dedicated to housing leasing, and reaching 86.3% at the end of the year.

The cases of Asturias, Malaga, Navarre and Valladolid should be added. There is a high concentration of housing around large cities.

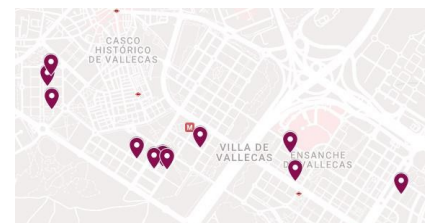
In the specific case of the Community of Madrid shown in Figure 19, which concentrates 46.9% of the housing units, it can be seen how these are distributed in most of the large municipalities in the metropolitan area of Madrid. This distribution shows how housing tends to be grouped around critical points that mark the investment decisions of each company. Thus, the assets of Fidere's portfolio are highly distributed in neighborhoods and municipalities around Madrid, but concentrated in specific areas of each of them, such as the neighborhoods of Carabanchel or Villa de Vallecas, as well as in municipalities such as Rivas Vaciamadrid, Torrejón de Ardoz, Móstoles or Alcorcón, places generally associated with lower housing prices compared to the center of Madrid, as well as higher yields. On the other hand, Testa presents a greater spatial distribution of its assets throughout the metropolitan area, with an important role of all the municipalities to the south of Madrid, as well as the National IV and National

VI. In the case of Vivenio, it has a very high spatial distribution of assets, without The distance between properties is measured, with some exceptions, in kilometers.

#### A) Madrid Metropolitan Area



#### B) Villa de Vallecas



#### C) Four Winds



**Figure 19:** Distribution of the SOCIMIs' housing portfolio (2) Testa, Vivenio and Fidere:

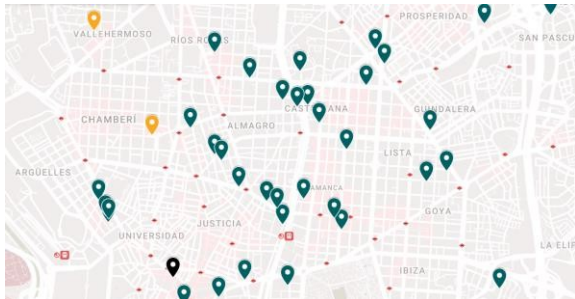
A) Madrid capital and metropolitan area, B) Example of Fidere's portfolio concentration in Villa de Vallecas, C) Example of Fidere's portfolio concentration in Cuatro Vientos. Source: prepared by the authors based on the compilation of properties on the companies' websites and BME Growth documents.

The same situation indicated in Madrid is observed for Testa or Vivenio properties in Barcelona. Similarly, the spatial distribution of Testa's properties in the rest of Spain shows a behavior more linked to the opportunity of the acquisition of residential assets than to the intentional concentration of assets in a few spaces.

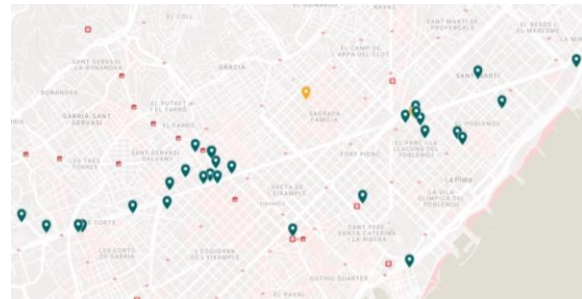
**The offer dedicated to offices**

With respect to office supply, there is a higher level of concentration, with Merlin Properties, Colonial and Arima investing 66.5% of the portfolio in Madrid and 22% in Barcelona, with the rest of the assets mainly in Paris (in the case of Colonial), outside of Spain. Between the three regions, they account for 98.3% of the investments in the sector. This concentration is highly concentrated in each of the cities (Figure 20), with Madrid's city center and the industrial estates in the north and around Madrid Airport being the most important. For Barcelona, the distribution follows a similar pattern, with the portfolio mostly distributed around the Avenida de la Diagonal, as well as occasionally in the vicinity of the Barcelona airport.

A) Offices in the center of Madrid



B) Offices in the center of Barcelona



**Figure 20:** Distribution of offices in the portfolio of SOCIMI Merín Properties, Inmobiliaria Colonial and Arima. Source: prepared by the authors based on the compilation of properties on the companies' websites and BME Growth documents.

The GMP situation for Madrid follows the same distribution criteria, mainly inside the M30 ring road and around the Castellana axis. It also includes investments in specific assets in cities such as Lérida, Córdoba and Seville.

**The offer dedicated to shopping centers**

In contrast to the concentration of residential and office investment, shopping centers (Figure 21) show a high distribution of their assets throughout the country.



territory. The highest concentration remains in Madrid with 14.3% and Barcelona with 11.4%, followed by Alicante and Valencia, both with 8.6% of the investment, but with a high distribution in which for the 35 shopping centers observed there is a presence in 21 provinces, with the 7 with the highest concentration accounting for 60% of the portfolio.



**Figure 21:** Distribution of shopping centers in the portfolio of SOCIMI Lar España and Castellana Properties. Source: Prepared by the authors based on the compilation of properties on the companies' websites and BME Growth documents.

**2.4. Discussion**

The results show the growth of SOCIMIs in Spain, which in a decade has gone from being practically non-existent under a regulation with no incentives for investment, to growing to over 25 billion in capitalization thanks to the tax exemption for real estate leasing profits. A model that has been successful in Spain after the success previously achieved in other developed countries, with the United States playing the leading role as the initial promoter and as an example of the development of its companies over six decades.

The case of Spain has shown a growth similar to that of the United States, with the initial incorporation of companies dedicated to the operation of shopping centers, logistics and offices, in a business-to-business model associated with higher profitability conditions. Subsequently, other sectors were incorporated, among which the housing leasing sector stands out, which has progressively become the main sector at the national level. Leasing is offered in the form of a service between

The results show behaviors in line with the working hypotheses, in that the acquisition of assets, their distribution and their subsequent management obey the criteria of maximization of performance in the market given the objectives of each company. The results show behaviors in line with the working hypotheses, in that the acquisition of assets, their distribution and subsequent management obey criteria of maximization of market performance given the objectives of each company. Thus, in general, there is a concentration of activity in large cities such as Madrid or Barcelona, which are subject to more dynamic real estate markets. At the same time, each company distributes its assets according to its market, finding a high spatial distribution for shopping centers, while at the same time combining concentration and distribution in the residential leasing business, depending on the owners.

In the generation of profitability of the SOCIMIs studied, the variation in the estimated value of the assets plays an important role in the generation of profit and therefore in the total profitability obtained. Thus the company's income comes both from the actual business of leasing real estate and from the yield derived from the revaluation of assets. The inclusion of this valuation in the income statement has a first level impact in that it is a non-consolidated financial result that modifies the net result of its activity and generates obligations in the distribution of dividends that modify the company's liquidity. This operation causes companies not only to offer a service of interest to society, but, as the data show, the case in which non-operating income is higher than that of the corporate purpose itself is significant.

There are reasons that contribute to updating the value of assets according to market conditions, showing in the balance sheet of the companies the most faithful representation of the current situation. At the same time, other reasons appear in favor of the revaluation yields being obtained at the time of the purchase and sale of the asset, representing in this case the image of the consolidated facts, not of market expectations. This confrontation between the two conceptions does not prevent us from considering that the non-consolidated financial returns shown by the companies analyzed have significant effects on the functioning of the market and on the relationship between profitability and risk to which the investments are subject.

The conversion of real estate fixed assets into liquid assets subject to the stock market also has an effect on market profitability insofar as their valuation becomes dependent on business criteria. Thus, there is a high increase in volatility subject to greater dependence on the results published by the companies as well as on the variation of macroeconomic elements. The interest rate

considerably increases the speed with which it impacts the market, as it does so directly on corporate actions, replacing the delay caused by the long times for granting credit and formalizing asset purchase and sale operations.

The public sector appears as a key player in the process as it has the capacity to modify the profitability conditions of real estate assets according to their owner. This capacity leads to the existence of a situation of current equilibrium, subject to the uncertainty produced by the possibility that the regulation on the holding of assets or the rates at which their activities are listed may be modified. Actions that, given the four specific regulations on SOCIMIs published in a period of less than 15 years, at the same time as the particular regulations of the real estate market, make it difficult to make profitability forecasts in the sector.

It also highlights the role of existing population dynamics, including general aging, as well as the decrease in the number of children per woman. This condition favors the process of financialization in that it implies a greater predisposition to sell real estate assets in the form of reverse mortgages or bare ownership, financial solutions that may favor the individual in terms of the availability of both the home and the agreed rent, but that modify the functioning of the economic system in that they increase the participation of companies in home ownership. At this point, the paper does not go into the level of benefit resulting from the consensus between the parties, but rather highlights the transfer of properties in the hands of individuals to legal entities.

The consideration of a greater role for legal entities is to be expected in current economic terms. There are two essential elements such as the preference for liquidity and the conditions applicable to tax policy. In the case of liquidity, it is worth highlighting the fact mentioned in this paper of the ability to convert illiquid properties such as real estate into liquid ones such as corporate shares or tokens. In this sense, the process of financialization of the real estate sector makes it possible to increase the liquidity of these properties and therefore it would be expected that the market, all fiscal conditions being equal, would promote this increase in liquidity. For the second case, in terms of tax policy, the difference lies in the cost associated with both types of property, showing similar costs in relation to the holding of the property, but different in terms of exploitation, based on the fact that in the case of individuals, taxation is carried out according to the income generated in the period, while in the case of legal entities it is based on the result of

profit or loss obtained by the capital. A differential yield is generated based on tax policy criteria and therefore on the holding of the assets.

Additionally, the role of regulatory objectives can be considered in relation to the maximum use of physical resources, according to which, given current conditions, higher usage conditions are produced under exploitation models based on businesses such as space leasing, than under tenancy models without any other associated economic activity. This also has a macroeconomic impact in that the exploitation of space increases the Gross Domestic Product of countries in the form of lease payments, while the holding of such assets contributes to a lesser extent to national accounts, based mainly on elements related to maintenance and supplies. In line with the above reasoning, the efficiency gains from the effect of the exploitation of legal entities should lead to a reduction in prices based on the maximum use of space, which translates into an improvement in the welfare of citizens.

In contrast to this criterion of efficiency based on the commercial exploitation of space, there is the opposite effect derived from two elements: first, the reduction of incentives for exploitation derived from regulation and fiscal policy, which limit the possibilities of profit and therefore the attractiveness of possible businesses to be developed in space. This implies that policies. Secondly, the expected increase in the value of space over time associated with the concentration of people and economic growth. This aspect translates into a speculative activity with the capacity to present profits regardless of the exploitation decisions made.

All of the above indicates that there are efficiency considerations that can be taken in favor of improving the conditions for an increase in the acquisition of space by legal entities, but that at the same time there are considerations in the opposite direction that limit such efficiency and even contribute to the promotion of the speculative nature of real estate investment. In short, considerations that may lead to an increase in public intervention that distorts the market and brings to the surface inefficiencies that did not previously exist.

It should be noted that despite the increased importance of all the market tools analyzed, they currently have a low share of the total real estate sector. The impact of SOCIMIs does not represent 1% of Spanish real estate assets, an amount that can nevertheless grow in conditions similar to those of the U.S. market, where capitalization has surpassed

2.5% and where the growth of the sector began decades after the launch of its regulation. In this sense, the interest of the work does not result so much from the current situation of the market as from the behaviors and trends shown and their influence on the distribution of future real estate assets.

Finally, it should be noted that the role of the businessmen and managers of the companies analyzed here dedicated to the real estate sector is based on achieving maximum profitability for their shareholders; these are professionals who seek to maximize their results, a condition for which they analyze market opportunities, acquire real estate under the best possible conditions and manage them with the objective of achieving maximum profitability in the market. Under these conditions, we observe professionals focused on the success of their work under the given economic rules who find and exploit opportunities, many of which are the result of the failures of the public sector in influencing the price system and modifying the decisions of the rest of the agents in the economy.

## **2.5. Conclusions**

The process of financialization of real estate assets, understood as the conversion of assets that have traditionally presented greater market rigidity into liquid assets in which it is possible to invest through entities listed on stock exchanges, has important implications for the organization of society. The search for models of profitability over time that provide guarantees to shareholders on the growth of their investments becomes a preferable model to the processes of investment and sale of assets on an ad hoc basis, which can offer significant returns, but which also show high risks and uncertainties. Thus, real estate asset leasing models, thanks to their income stability, become preferable. This is a process similar to that developed in other industries in which subscriptions to services that generate constant income in the company and relegate the traditional sale of high amounts and delivery of the property. Examples are cloud storage, subscriptions to online audiovisual platforms, vehicle leasing or renting models.

In contrast to the aforementioned models, which are highly integrated into society, the financialization of the real estate sector can be considered incipient. Most of the homes are still in the hands of the people who live in them, while the capitalization of all SOCIMIs, as the maximum exponent of the process, is still in its infancy.

less than 3% of Spain's GDP. The analysis highlights the significant growth achieved by SOCIMIs in Spain, their sectorial and territorial distribution, as well as their capacity to generate returns under the criteria of leasing their properties, as well as under those of real estate asset revaluation.

The evolution towards consumption models in which the link with ownership is lost in favor of on-demand use may have positive effects in terms of efficiency in the use of assets, but it also conditions the type of society that is formed. The fact that these models are promoted by the public authority through the generation of advantageous conditions distorts the market in favor of objectives whose results run the risk of being the opposite. In this sense, the arrival of investment derived from the increase in liquidity of assets causes an increase in capitalization that can lead to an increase in prices to maintain market profitability or to a reduction in it.



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The situation described in the previous chapter shows the growth of business models based on the ownership of real estate for lease, models that in themselves can be conceived as positive in terms of providing liquidity and flexibility to the market, but which at the same time have implications for the lifestyle and society that is formed as a result of them.

To continue the analysis, it is necessary to know the evolution of housing availability in Spain, studying the effect of the growth of both construction and housing prices and analyzing their relationship with population dynamics. Among the dynamics that have an impact on the growth trend of financialization are, on the one hand, the aging process of the population in a society with an inverted population pyramid<sup>55</sup> in which housing needs show large differences between generations, on the other hand, the increase in housing capital available in society<sup>56</sup> and, in third place, the

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<sup>55</sup> According to data from the 'Estadística del Padrón Continuo' of the INE as of January 1, 2022, the age with the highest population in Spain is 45 years old with 818 thousand people, while 18 years old is 493 thousand and 1 year old is 341 thousand.

<sup>56</sup> According to data from the 'Global Wealth Report 2022' prepared by 'Credit Suisse', world wealth will amount to 463.6 trillion



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dollars at the end of 2021, also indicating that there has been an annual growth of 6.6% worldwide during the first two decades of the 21st century.

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changes in the conception of the home as a result of technological development, which broaden the possibilities for both leisure and work.

This chapter analyzes the process of capitalization of the real estate sector from its basic fundamentals, which include changes in home purchase prices, the increase in the housing stock, changes in population, the effects of population aging and the transfer of households from an ownership model to a rental model.

### 3.1. Introduction

Housing in Spain is traditionally associated with the concept of investment by citizens who have preferred it as a means of savings over other more dynamic forms among which shares stand out, a situation that is observed in the high level of owners of their homes in relation to the number of people living on rent<sup>57</sup> associated in turn with the concept of security inherent to the welfare state, in line with what was exposed by (Conley & Gifford 2006) (Echaves and Navarro 2018).

It can be considered that this preference not only attends to issues of the housing decision under the criteria of investment and consumption (Anari & Kolari 2022) but is largely due to economic-social issues about the difficulty of acquiring a home based on the fact that "until one has a certain economic stability and does not achieve certain income - who can reach it- it is not possible to have that amount of non-financeable own resources" (Nasarre Aznar 2016)<sup>58</sup>.

Under these conditions we find the difficulty for young people to access home ownership (Echaves 2016), a situation that is shown on the one hand in the high cost of access during the early stages of the working career<sup>59</sup> and on the other hand the high payment obligations with respect to the rent that are committed when signing a mortgage loan<sup>60</sup>. Between the two reasons, the difficulty of accumulating the capital input for obtaining the mortgage becomes a decisive constraint, which leads to an increase in the demand for rent, an increase in the price of rents and therefore

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<sup>57</sup> See 'Housing Statistics' of September 18, 2020 published by Eursotat, which shows that in 2018 more than three quarters of Spanish households were owned. This is higher than the average for the European Union, as well as for countries including Germany, the United Kingdom, France and Italy.

<sup>58</sup> p.53, According to the sample on the reasons for living in rented housing only 30% of the responses show a preference for renting, while the remaining tenants find it difficult to afford home ownership.

<sup>59</sup> Due to the need to have a minimum down payment of 20% of the value of the property as well as the amount of taxes to be paid in the process.

<sup>60</sup> See 'Emancipation Observatory' for the 2nd half of 2022 published by the Spanish Youth Council, which indicates that the cost of access to home ownership amounts to 84.2% for wage earners between 16 and 24 years of age, 53.4% for those between 25 and 29 and 45.7% for those between 30 and 34. These figures are all higher than the maximum of 40% recommended by the Bank of Spain.

upward pressure on housing prices as an investment tool (Byrne 2019). At the same time postponing the emancipation of young people from family housing<sup>61</sup>.

On the other hand, the conditions of the elderly appear when facing old age, a situation that poses the use of all the savings generated throughout life. The prospects of imbalances in the pension system lead to consider own housing as a source of income generation (Atance et al. 2021) through tools such as reverse mortgages (Alai et al. 2014) or bare ownership, situations that allow obtaining current liquidity in exchange for long-term financial commitments, even going as far as the transfer of ownership.

With the aim of reducing the burden of access to housing public authorities tend to intervene in the housing market with different methods and results, as shown by the disparate autonomous budgets in Spain (Echaves & Navarro 2018). Thus the conclusions of (Olea et al. 2019) show a relationship of the state with housing under the considerations of: public financing of private property, use of housing for economic promotion rather than as a social policy or human right or the consideration of housing as a real estate asset.

### **3.2. Capital Stock in Housing in Spain 2001-2022**

The study of the process of capitalization of the real estate sector requires analyzing the current value of the housing stock and the dynamics in its capitalization over time, in a contribution to the partial updating of the data shown in the work of (Uriel Jiménez et al. 2009) in which the information for the period 1990 - 2007 is analyzed more extensively. In order to do so, the same data sources have been used as those of the Ministry of Transport, Mobility and Urban Agenda, and the information on the evolution of macro magnitudes has been completed with data from Eurostat.

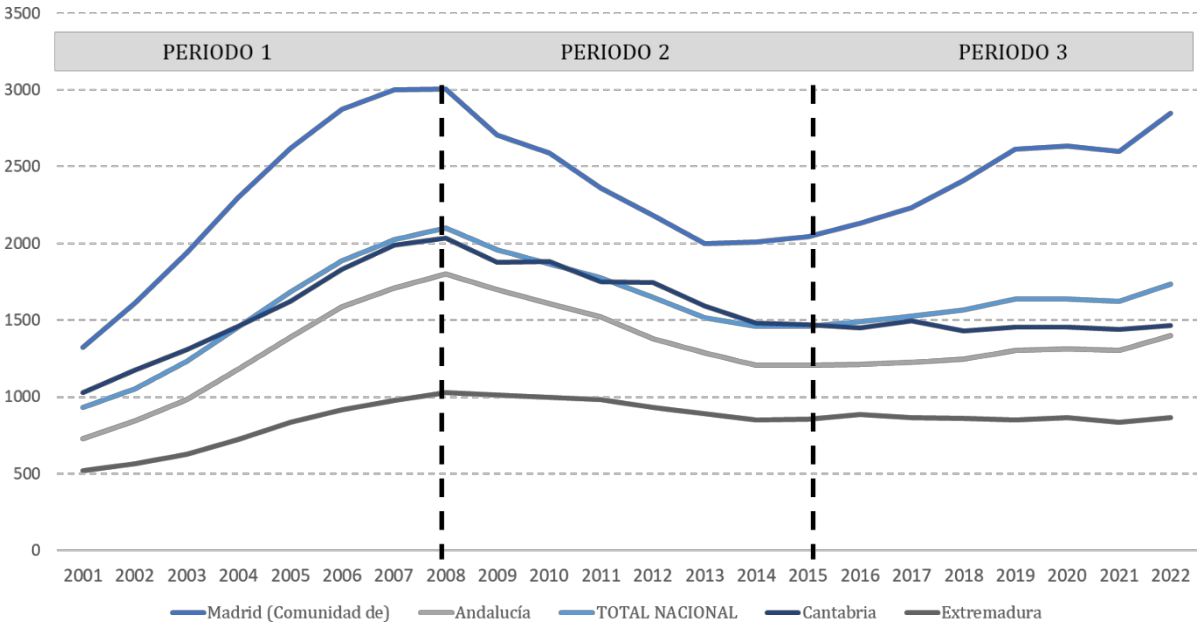
This is a study of aggregated data that analyzes general market trends. The disaggregated values, in turn, show differences according to different elements such as technical (Potepan 1996), socioeconomic (Capozza et al. 1989) and situational (Capozza et al. 1989) factors, whose changes are reflected in the aggregate value of each region.

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<sup>61</sup> See: '*When do Young Europeans leave their parental home*' published on September 5, 2023 by Eurostat. It indicates an age of 26.4 years for the emancipation of young people, a figure that exceeds 30 years for eight countries including Spain.

3.2.1. Housing Price Increase 2001 - 2022

The growth of housing prices in Spain during the beginning of the 21st Century is clearly marked by three periods: the first between 2001 and 2008 in which there is a high increase in prices that exceeds 10% digits at the national level as well as in 12 of the 17 Spanish Autonomous Communities (CCAA), a second period between 2008 and 2015 in which there is a price correction and the third in which there are large disparities between CCAA with annual growth close to 5% and others with practically zero growth, see Figure 22.



**Figure 22:** Evolution of home purchase prices in Spain between 2001 and 2022, selection of Autonomous Communities including the one with the highest (Madrid) and lowest (Extremadura) prices in 2022, as well as those with the highest (Andalusia) and lowest population (Cantabria). Source: own elaboration based on data from the 'Estimated Housing Stock' of the 'Ministry of Transport, Mobility and Urban Agenda'.

The data shown in Table 9 show the evolution of prices per square meter between 2001 and 2022, broken down by Autonomous Community. Firstly, it can be seen that in 2001 the difference between the Autonomous Communities with the highest and lowest prices was 1,044 euros, a difference that widened to 1,982 at the end of the period. This situation is observed in the price growth rate, with the Community of Madrid presenting the highest price in 2022, accumulating an average annual growth of 3.72%, while the case of Extremadura is observed, with the lowest price at the beginning and end of the period, with an average growth of 2.5%, and Castilla y León showing the lowest growth with 1.02%. Accumulated growth rates implying an increase of more than 100% in prices for Madrid (115%) and the Balearic Islands.

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(109%), with the lowest growth for Castilla y León (24%) and La Rioja (28%).

With respect to the partial growth throughout the period, the three phases of seven years are clearly marked, with the first having a rapid growth of 12.3% per year for the whole country, the second as a period of recession with an average price reduction of 5.1% per year, and finally the third period is the one that shows a trend of uneven growth between regions including rates around 0% per year and others close to 5% per year.

	PRICE M <sup>2</sup> <sup>1</sup>		PARTIAL GROWTHS (CAGR) <sup>2</sup>			CREC TOTAL
	2001	2022	2001-2008	2008-2015	2015-2022	CAGR <sup>01-223</sup>
Andalucía	726	1.400	13,8%	-5,5%	2,1%	3,2%
Aragon	893	1.259	11,9%	-6,9%	0,8%	1,6%
Asturias (Principality of )	897	1.304	10,2%	-4,7%	0,4%	1,8%
Balearic Islands	1.248	2.611	9,9%	-3,5%	4,8%	3,6%
Canary Islands	1.049	1.595	8,3%	-4,8%	2,9%	2,0%
Cantabria	1.026	1.465	10,3%	-4,5%	-0,1%	1,7%
Castilla y León	844	1.045	8,8%	-5,3%	0,0%	1,0%
Castilla-La Mancha	648	913	12,2%	-6,8%	0,5%	1,6%
Catalonia	1.179	2.160	11,1%	-5,5%	3,9%	2,9%
Valencian Community	741	1.320	12,4%	-5,6%	2,3%	2,8%
Extremadura	518	865	10,3%	-2,6%	0,2%	2,5%
Galicia	768	1.237	10,8%	-4,2%	0,8%	2,3%
Madrid (Community of)	1.322	2.846	12,4%	-5,4%	4,8%	3,7%
Murcia (Region of)	621	1.045	14,6%	-6,9%	0,9%	2,5%
Navarra (Comunidad Foral de)	1.100	1.510	6,9%	-4,1%	2,1%	1,5%
Basque Country	1.562	2.502	10,0%	-3,3%	0,6%	2,3%
Rioja (La)	881	1.129	9,3%	-5,6%	0,4%	1,2%
TOTAL NATIONAL	930	1.734	12,3%	-5,1%	2,5%	3,0%

**Table 9:** Evolution of home purchase prices in Spain according to Autonomous Regions. 1Average price per square meter for each Autonomous Region. 2Annual growth in housing prices by Autonomous Region segmented into three periods with different trends. 3Annual price growth for the entire period analyzed between 2001 and 2022. Source: Prepared by the authors based on data from the 'Estimated Housing Stock' of the 'Ministry of Transport, Mobility and Urban Agenda'.

### 3.2.2. Housing Stock Increase 2001 - 2022

With respect to the growth of the housing stock in Spain, the data show a sustained average growth of 1.16% per year during the period, which nevertheless presents two phases, a first one from 2001 to 2008 with an accumulated annual growth of 2.24%, and a second one from 2008 to 2021 with a growth of 0.63%. The changes in the growth of the housing stock have a more progressive behavior with respect to that observed in the price, maintaining a process of reduction as of 2008 that extends for five years until 2013, a situation typical of the times of the construction process and the fulfillment of the requirements for its habitability.

Table 10 shows the increase in the housing stock during the period, showing once again the large regional differences, while the housing stock in the Region of Murcia grew by 43%, or that of Castilla-La Mancha by 37%, in the cases of Madrid and Barcelona the growth is lower in relative terms due to the broad starting base, with 21% and 18%, respectively.

	STOCK 20011	STOCK 20222	INCR. 2001-20223	CAGR 2001-20224
Andalucía	3.554.198	4.706.234	1.152.036	1,3%
Aragon	657.555	846.431	188.876	1,2%
Asturias (Principality of )	524.336	678.652	154.316	1,2%
Balearic Islands	504.041	658.589	154.548	1,3%
Canary Islands	855.022	1.094.330	239.308	1,2%
Cantabria	286.901	386.140	99.239	1,4%
Castilla y León	1.455.050	1.837.704	382.654	1,1%
Castilla-La Mancha	988.555	1.354.924	366.369	1,5%
Catalonia	3.328.120	3.940.622	612.502	0,8%
Valencian Community	2.558.691	3.304.752	746.061	1,2%
Extremadura	575.284	701.807	126.523	1,0%
Galicia	1.312.496	1.763.143	450.647	1,4%
Madrid (Community of)	2.482.885	2.998.245	515.360	0,9%
Murcia (Region of)	595.319	848.361	253.042	1,7%
Navarra (Comunidad Foral de)	261.147	335.724	74.577	1,2%
Basque Country	892.009	1.085.029	193.020	0,9%
Rioja (La)	156.769	212.935	56.166	1,5%
TOTAL NATIONAL	21.033.759	26.811.833	5.778.074	1,2%

**Table 10:** evolution of the housing stock in Spain by Autonomous Community. 1Housing stock by Autonomous Community in 2001, 2Housing stock by Autonomous Community in 2022, 3Housing growth during the period, 4Annual growth rate of the housing stock. Source: own elaboration based on data from the 'Estimated Housing Stock' of the 'Ministry of Transport, Mobility and Urban Agenda'.

### 3.2.3. Increase in Housing Capital Stock in Spain

Taking into account the results shown on the growth of housing prices and housing stock in Spain, the growth of the housing equity stock during the period can be calculated, under the assumption that the size of the housing stock in the different regions has remained stable. In this situation, at the national level, housing equity has grown at an annualized rate of 4.21%, which implies that the value of the housing stock doubles every 17 years, triples every 27 years and quadruples before the age of 34.

Table 11 shows the relationship between the growth of the Gross Domestic Product per capita (GDP pc) and the growth of housing prices, understood as an indicator of the increase in the relative cost of housing acquisition (I), in the form:

$$I = \text{CAGR Price} - \text{CAGR GDP pc}$$

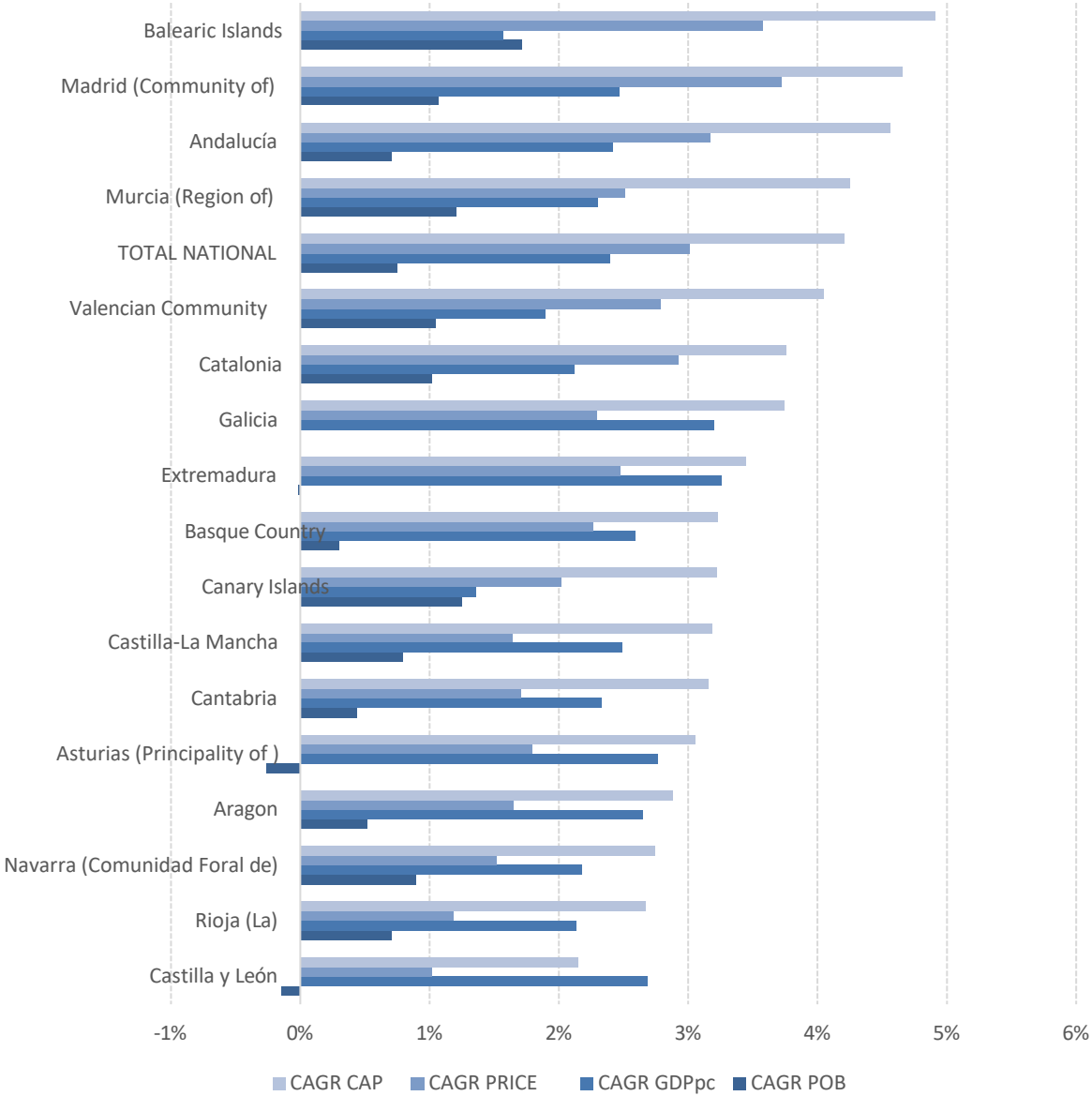
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This shows that in the cases of the Balearic Islands (2%), Madrid (1.3%) and the Valencian Community (0.9%) the cost of housing has increased at rates higher than the growth of the population's income; on the contrary, in the cases of Castilla y León (-1.7%), Aragón (-1%) and Asturias (-1%) the opposite is the case and rents grew during the period at a faster rate than housing prices.

	CAGR POB	CAGR GDPpc	CAGR PRICE	CAGR STOCK	CAGR CAP	I
Balearic Islands	1,71%	1,6%	3,6%	1,3%	4,91%	2,0%
Madrid	1,07%	2,5%	3,7%	0,9%	4,66%	1,3%
Valencian Community	1,05%	1,9%	2,8%	1,2%	4,05%	0,9%
Catalonia	1,02%	2,1%	2,9%	0,8%	3,76%	0,8%
Andalucía	0,71%	2,4%	3,2%	1,3%	4,56%	0,8%
Canary Islands	1,25%	1,4%	2,0%	1,2%	3,22%	0,7%
<b>TOTAL NATIONAL</b>	<b>0,75%</b>	<b>2,4%</b>	<b>3,0%</b>	<b>1,2%</b>	<b>4,21%</b>	<b>0,6%</b>
Murcia	1,21%	2,3%	2,5%	1,7%	4,25%	0,2%
Basque Country	0,30%	2,6%	2,3%	0,9%	3,23%	-0,3%
Cantabria	0,44%	2,3%	1,7%	1,4%	3,16%	-0,6%
Navarra	0,89%	2,2%	1,5%	1,2%	2,74%	-0,7%
Extremadura	-0,02%	3,3%	2,5%	1,0%	3,45%	-0,8%
Castilla-La Mancha	0,79%	2,5%	1,6%	1,5%	3,18%	-0,8%
Galicia	0,00%	3,2%	2,3%	1,4%	3,75%	-0,9%
Rioja	0,71%	2,1%	1,2%	1,5%	2,67%	-0,9%
Asturias	-0,26%	2,8%	1,8%	1,2%	3,05%	-1,0%
Aragon	0,52%	2,6%	1,6%	1,2%	2,88%	-1,0%
Castilla y León	-0,14%	2,7%	1,0%	1,1%	2,15%	-1,7%

**Table 11:** evolution of the capitalization of the housing stock in Spain, period 2001-2022 according to Autonomous Regions (ordered according to capitalization), as well as main socioeconomic indicators, average annualized growth of <sup>1</sup>Population, <sup>2</sup>GDP, <sup>3</sup>Price per square meter, <sup>4</sup>Housing stock, <sup>5</sup>Housing stock capitalization. Source: own elaboration using data from the 'Estimated Housing Stock' of the 'Ministry of Transport, Mobility and Urban Agenda'.

Figure 23 shows the results in order of the increase in the capitalization of the housing stock of the different Autonomous Regions. It can be seen that in the cases of the Balearic Islands, Community of Madrid, Community of Valencia, Catalonia, Canary Islands and the Region of Murcia there is a population growth at rates higher than 1% per year, in all of them except for Murcia the relationship between the price per square meter of housing and the GDP pc rises at rates higher than the national average. In the case of Murcia, the existence of a lower value coincides with the highest accumulated growth of the housing capital stock of all the regions, at 1.7% per year. On the other hand, all the regions with population growth rates of less than 1% show a reduction in the value 'I' as the relative cost of acquiring housing. The relationship between the value of 'I' and population growth has a correlation coefficient of 0.8%.



**Figure 23:** Evolution of the capitalization of the housing stock in Spain, period 2001-2022 according to Autonomous Regions (ordered according to capitalization), as well as main socioeconomic indicators. Source: own elaboration based on data from the 'Estimation of the Housing Stock' of the 'Ministry of Transport, Mobility and Urban Agenda'.

Compared to the increase of 500% indicated by (Uriel Jimenez et al 2009)<sup>62</sup> for the period 1990-2007, in which average annual variation rates were higher than 9% for most of the Autonomous Communities, in the present case the average growth rate reaches 4.21% per year, with an accumulated 138% for the 21 years analyzed, a significantly lower rate that occurs however in an economy in which there had already been a significant expansion of the housing stock as well as a growth in prices.

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prolonged in time. The increase in the absolute value of the starting point leads to a reduction in relative growth rates.

### **3.3. The Aging Population in the Financialization Process**

Living conditions for the elderly have evolved over the last few decades. The increase in the life expectancy of the population, together with the population dynamics already mentioned, such as the increase in the permanence of children in the family home, the reduction in the number of children per family or the work of all the adults in the family unit, means that the conditions in which the elderly must face their old age are different from those of previous generations. In this sense, the market creates models in which specific services are offered for the group of people who need them, a market that adapts its offer to the needs of the people who demand specific types of care. To meet the cost of this care, we find in many cases the need to supplement the pension and the most liquid savings available with alternative income derived from real estate savings.

This situation implies that the elderly find themselves in a situation in which they must face significant expenses with the objective of maintaining the best possible quality of life (Friedman 1957)<sup>63</sup> through a combination of disposable income and disinvestment of savings generated throughout their working life (Modigliani & Brumberg 1954), additionally, the role of the elderly without descendants poses a different behavior in relation to the will to leave an inheritance (Modigliani 1986). An issue that not only affects owners and those interested in improving their living conditions, but also, given the existence of an inverted population pyramid, the decisions that older people make about their properties can have an effect on the general distribution of properties and therefore on the world inherited by their descendants.

In the context described above, real estate property becomes a tool for channeling income through different divestment formats that allow an asset to be sold under conditions that can combine the enjoyment of the asset and the generation of annuities for the seller. Thus, different figures appear, such as reverse mortgages, bare ownership, or annuities. In the same way, solutions aimed at guaranteeing the flow of income for owners who cannot take charge of the management of the properties they own are emerging, in the form of guaranteed rentals that may include sale and purchase transactions. The main element of

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<sup>63</sup> Chap. III, p. 20-25

The key issue of these operations in relation to the current analysis is the identification of the ownership of the assets. The alternatives shown tend to shift asset ownership from older individuals to structured investment platforms aimed at generating shareholder value, or in other words, generating liquidity from real estate assets. The three main cases are described below.

1. **Reverse mortgage:** which allows the creation of a mortgage on the real estate asset under which the property is maintained, but an increasing debt is generated based on the rental payments that are received periodically. By maintaining the property, the owner must be responsible for both the maintenance of the property and the corresponding taxes and management costs<sup>64</sup>.
2. **Nuda propiedad:** a transaction in which the ownership of the property is given in exchange for a price adjusted by the right to maintain the usufruct during the lifetime of the individual. In this case, when the property is transferred, the tax, insurance or other extraordinary costs are also transferred.
3. **Sale with guaranteed rental:** a transaction in which the ownership of the property is transferred in exchange for a payment, but in which a rental contract is entered into for a specific term.

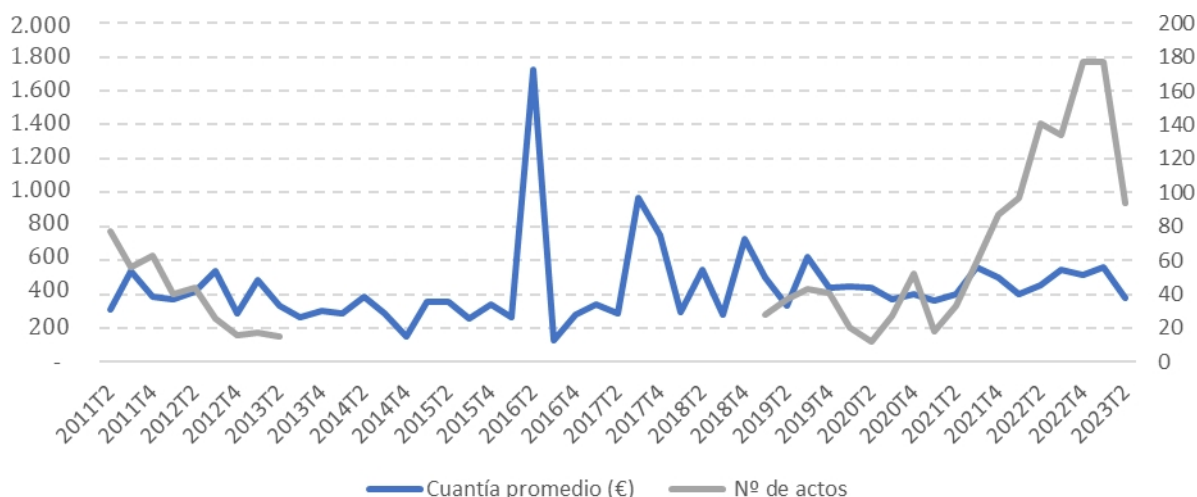
The profitability of the different products may be conditioned by the tax policy conditions existing at the time and place, for example, the result of applying a reverse mortgage on a habitual residence is not the same as that of a real estate investment, since the regulation establishes the exemption from stamp duty (AJD) for the first case, but not for the second.

In summary, the alternatives shown generate liquidity on the property in different formats depending on what is advisable for the initial owner. Ownership may or may not be transferred while income is generated on the property. The case of the reverse mortgage can be considered as a financial product, while the cases of the bare ownership or the sale with guaranteed rent deliver the ownership of the property to the buyer, who, due to the high amounts and the investment nature, benefits from its liquidity and execution through legal entities.

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<sup>64</sup> See: 'Guía de acceso a la hipoteca inversa' published by the Bank of Spain in its August 2017 version.

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**Figure 24:** Number of quarterly reverse mortgage transactions in Spain and amount of transactions carried out. Source: Prepared by the authors based on data from the General Council of Notaries.

Despite the fact that investments through this type of tool have grown in the last decade, they continue to have a smaller market share, as shown by the statistics of the General Council of Notaries in Figure 24, where a growth in the number of quarterly reverse mortgage signing acts can be observed from 2021 to reach 549 operations in all of 2022, while the average amount remains relatively constant. The low level of acts signed prior to 2021 can be highlighted as well as the variability of amounts that seem to be due to the high influence of extraordinary amounts in a low volume of operations. It is worth mentioning the unavailability of data on the number of acts between the third quarter of 2013 and the fourth quarter of 2018.

In the case of bare ownership, although it presents a significantly higher number of transactions, it also has a residual representation with respect to the total Spanish market. With a total of 1,657 transactions for the whole of 2022, according to data from the 2022 Yearbook of Real Estate Registry Statistics. These transactions are 75% concentrated in five Autonomous Communities: Valencia (22.87%), Madrid (17.68%), Andalusia (17.32%), Catalonia (9.47%) and the Canary Islands (7.97%).

Adding the 2022 figures for reverse mortgages (549) and bare property mortgages (1,657) gives a total value of 2206 transactions, which represents 0.5% of the total number of real estate mortgages as collateral for loans, credits or acknowledgement of debt, which amounted to 439,489 transactions in the same year. This figure is not very representative in relation to the total number of transactions.

which occurs in even giving maximums of reverse mortgage and bare ownership transactions.

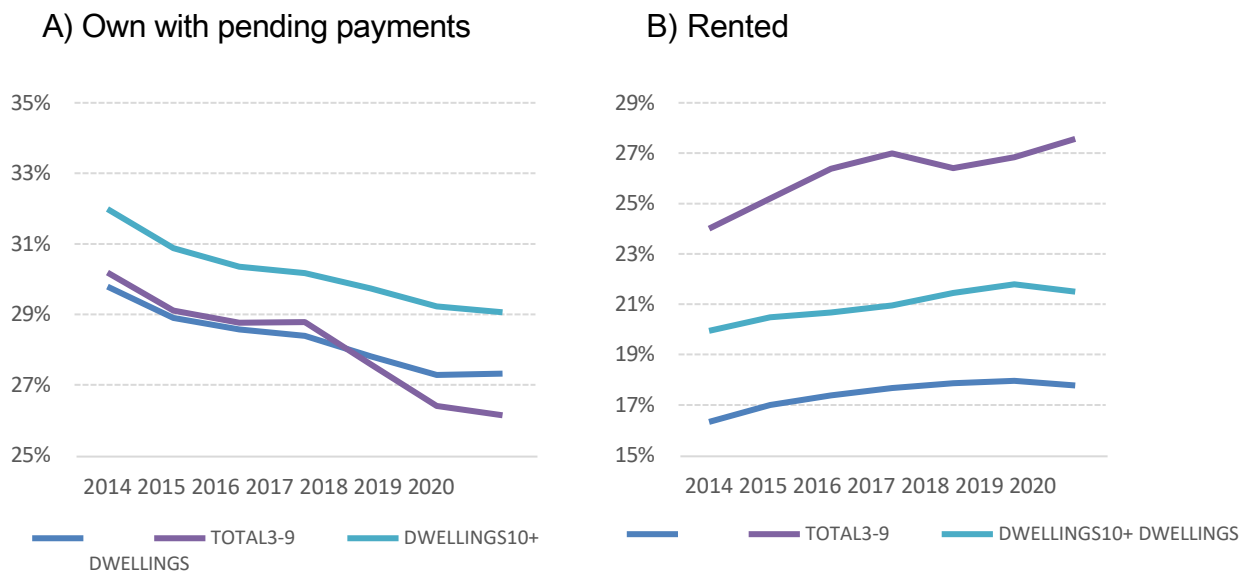
### **3.4. Capitalization and Preference for Renting**

The desire for home ownership that is observed in the tradition of families in Spain is conditioned by the reality of the markets. National statistics show how the number of properties owned is decreasing, while at the same time the number of rental properties and those that are free of charge or subject to special conditions is growing. Specifically, home ownership remained relatively stable, with a reduction of 0.3% between 2014 and 2020 in the overall computation, but there was in the same period a significant reduction in the number of homes that had a mortgage with outstanding payments of 6.1%. With respect to rentals, they rose by 342 thousand homes (Figure W, B), while those let for free or under special conditions such as low price or availability by the company grew by another 132 thousand units. The combination of both facts, close to five hundred thousand dwellings, shows how in a period of growth of the Spanish economy all the growth of the housing stock has been absorbed by the non-ownership modalities of those who live there, in addition to a slight substitution of the dwellings owned.

Figure 25-A. shows the trend towards a reduction in homeownership with outstanding payments, which implies that the signing of new mortgages is lower than the cancellation of existing mortgages. Although this situation is observed mainly in the construction of more than three homes in urban environments, it is a generalized behavior for the total market. With respect to Figure 25-B, the opposite trend can be seen, with a generalized increase in rentals, with a greater impact on residential buildings than in the aggregate case. Thus, only single-family and semi-detached houses show opposite trends, which, however, are not enough to modify the trend of substitution of home ownership for renting.

These results occurred during a period of economic growth in which the reference interest rates were at their lowest historical level, a situation which implies that, in conditions of very low borrowing costs, the opposite effect to that expected has occurred, with a significant reduction in the number of mortgaged households.

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**Figure 25:** information on dynamics of owned and rented housing, A) Owned housing with outstanding payments in Spain, evolution between 2014 and 2015. B) Rented housing in Spain, evolution between 2014 and 2020. Source: own elaboration based on data from INE's 'Encuesta Continua de Hogares'.

### 3.5. Conclusions

During the first two decades of the 21st century, there has been a growth of more than 100% in the capital stock in the form of housing in Spain, a growth led by the rise in prices mainly between 2001 and 2007, although accompanied by a construction process that has been adding housing throughout the period. This situation leads to an increase in housing prices higher than the increase in income by 0.61% per year, which shows large regional differences. The increase in the relative cost of housing is thus considered as a process of capitalization of the real estate sector in Spain under which housing prices are progressively distancing themselves from citizens' incomes, which is highly correlated with variations in population.

On the other hand, the results show how population dynamics pose new challenges to the real estate sector: on the one hand, the aging population is finding solutions to supplement their pensions by generating income from their real estate assets. The models of bare ownership or reverse mortgages have shown significant growth in recent years, however, they start from very low volumes, which means that they can continue to be considered as solutions of low weight in the real estate market.

Lastly, the increase in renting as a housing option in Spain stands out, a solution whose market not only covers 100% of the growth of housing in Spain between 2014 and 2020, but also takes part of the housing previously inhabited by their owners.

## 4. THE SOIL IN THE CAPITALIZATION PROCESS

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Land accounts for more than one third of the value of all real land assets, which is why knowing the elements that modify the value of land in the market is of great importance for understanding its role. Its value follows the same market rules as other goods; it is dependent on its relative scarcity: the greater the difference between scarce supply and ample demand, the higher its price.

Land which, as has already been discussed in previous chapters, is considered an asset by today's companies, appearing on the balance sheet of its owners generally in the form of long-term fixed assets. This is an internationally recognized form of accounting and is regulated in national accounting plans<sup>65</sup>, which leaves little room for other conceptions of the relationship that human beings may have with the land on which we depend. However, it presents particularities in the relationship between the state and the land holders, proposing different regulation models that include from tax figures for land tenure to those associated with its exploitation, and special regulation conditions.

The consideration of land as a capital asset is also shown in both professional and academic language, in the consideration of land plots or real estate as preferable assets to act as collateral, i.e., as a hedge over the

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fulfillment of other financial obligations (Liu et al. 2013). This element can be considered significant in the current consideration of real estate ownership, in that it reinforces its role as an exchangeable asset in the market that presents high security and stability in the face of threats of defaults on other financial transactions.

Under the asset concept, land is shown as a property that does not depreciate naturally, unlike the buildings and infrastructures that are built on it, it maintains a value independent of human action, and in this sense its study in this paper for the case of Spain becomes relevant. To this end, the behavior of the price of land is studied with respect to the main economic and social elements, such as the Gross Domestic Product (GDP), the population of the municipalities and the complexity of the economy. At the same time, two elements highly related to the financialization process are included in the analysis, such as the preferences of citizens when finding a home in the form of renting or ownership, and the relationship between individuals or legal entities in the acquisition of land, including the difference in absolute and relative prices.

#### **4.1. Introduction**

The valuation of real estate assets is an area that unites knowledge of different subjects, including aspects related to the environment, such as social, environmental or equipment aspects, aspects related to the locality, such as its economy, population or communication, as well as aspects related to the building, such as age, typology or uses (García Almirall 2007), which take into consideration the relationship with the market of geographical, architectural and technical elements. For this valuation, the land, conceived as a unique space on which the built heritage exists, acts as a determining element, affecting not only the final price, but also the uses and characteristics of the built properties. At a general level, it can be said that this is a problem of supply and demand in which all the variables mentioned have an influence as exogenous elements that modify the market equilibrium. Under this large number of factors, it is considered that among the main ones that can explain most of the variation in prices, these factors include: regulation, population growth, per capita income and employment growth (Black & Hoben 1985).

From the economic point of view, land prices evolve together with macroeconomic indicators, highlighting as an example the decrease in land prices with the 2007 crisis, when there was a reduction in the main variables (Liu et al.

2013) Notes that macroeconomic indicators have a direct impact on land prices, as well as in the opposite direction, the rise in land prices influences the prices of other assets, although to a lesser extent. It is worth noting that land valuations also present a significant temporal autocorrelation (Zimmer 2015), which evolves along with macroeconomic trends presenting a variable time lag.

In relation to the economy, public intervention can be included, in terms of its capacity to modify the environment, creating infrastructures that add value to the space, delimiting uses such as green areas or commercial spaces that increase it, as well as industrial zones that can modify it in different directions (Panduro & Veie 2013) (Wheaton 1993). In the same way that modifications in monetary or fiscal conditions have an impact on price formation, being the interest rate and inflation two significant elements.

From the sociological point of view, demographic aspects are taken into account, with population increases positively related (George 2012), the family configuration, its number of members or the phase of the life cycle of the population (Levy & Kwai-Choi Lee 2004). Elements such as cultural aspects (Borgoni et al. 2018), community generation, lifestyle, gaining progressively greater importance aspects of sustainability (Crosby et al. 2011) are also analyzed.

In relation to the business function, valuation is related to the search for opportunity for profit generation<sup>66</sup>, resorting both to a production cost perspective<sup>67</sup> and to one of market price comparison with similar homes and lastly to one based on the generation of value for the consumer<sup>68</sup> (Morri & Benedetto 2019). As mentioned in the previous chapter, this analysis has a strong dependence on regulation in its ability to change the costs of the firm as well as to influence revenue generation by varying the conditions under which the asset can be offered to the market. Regulation modifies citizens' decisions, tending to increase housing prices as well as varying their size, while it has the opposite effect of reducing land prices (Ihlanfeldt 2007).

The geographic issue is not only related to the location as a determining element, but also to other aspects such as the dimensions (Ritter et al. 2020) or uses of the plots of land. In this section, the growth of the cities towards

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<sup>66</sup> See: direct capitalization, discounted cash flows (DCF)

<sup>67</sup> See: approximation of reproduction or replacement costs.

<sup>68</sup> See: hedonic methods, multiplier methods or direct comparison.

multicenter and multifunctional models, which generate different points of high demand, thus distributing their price increase effect. Thus, land prices decrease as the distance to the critical point increases, although this reduction is seen in a non-linear way; linear estimates tend to overestimate the effect of distance (Colwell & Munneke 1997). These results present differences depending on the countries, for which international studies have been developed with examples in the United Kingdom, the United States (White & Allmendinger 2003) or China (Wen & Goodman 2013) (Du et al. 2011).

From the statistical point of view, the real estate valuation function is related to the valuation methods, in the search for the model that allows the most accurate possible estimation of the price that the market assigns specifically to each of the assets. In this valuation, multi-criteria methods appear as the main tools, resorting to hedonic prices based on the study of their characteristics (Rosen 1974) or neural networks as outstanding statistical tools. These tools make it possible to estimate the price elasticity of demand for different types and sizes of municipalities (Combes et al. 2018).

In summary, the study of real estate prices, including land prices, is subject to different types of conflicting variables, such as geographical versus non-geographical variables, those based on supply costs versus those based on the demand's willingness to pay, or social aspects versus market intervention. These issues can be assessed in turn from a static view, to calculate the conditions at a given time, or dynamic in the definition of variations together with changes in other elements.

#### **4.2. Methodology**

For the analysis of urban land prices, a mainly quantitative methodology has been followed, combining data from different sources in the form of land prices, macro magnitudes, complexity of the economy and on the tenure regime of real estate as shown in Figure 26.

Data on land prices are published by the Ministry of Housing and Urban Agenda in its 'Urban Land Price Statistics'. These statistics include the statistical results of the operations carried out on urban land classified according to the transactions carried out on the land, the value of such transactions, the areas transacted and the land prices. Disaggregating the data according to regional issues: at national, regional and provincial level, according to the size of the municipalities: in five categories starting from municipalities with less than 1,000

inhabitants in the lower category to those of more than 50,000 in the higher category, as well as according to the legal personality of the acquirer: physical or legal.

Precios del suelo				
Dimensión municipal	Renta	Complejidad económica	Personalidad legal	Régimen de tenencia
Estadística de precios de suelo urbano Ministerio de vivienda y agenda urbana	Macromagnitudes Instituto Nacional de Estadística	<i>Economic Complexity Indexes Observatory of Economic Complexity</i>	Estadística de precios de suelo urbano Ministerio de vivienda y agenda urbana	Encuesta de condiciones de vida Instituto Nacional de Estadística

**Figure 26** categories and data sources used for the land price study. Source: Prepared by the authors.

For the socioeconomic data used, the National Institute of Statistics (INE) was used. From which we have extracted values for surface area, population, density and Gross Domestic Product per capita (GDPpc), with the same levels of spatial aggregation shown for land prices.

Due to the consideration of the importance of the complexity of the economy in the formation of land prices, the data published by the Observatorio de Complejidad de la Economía (OEC) in its regional study for Spain have also been used, from which the Economic Complexity Index (ECI) segmented according to *ECI Trade*, *ECI Technology* and *ECI Research* are available.

Lastly, we have used data from the survey on living conditions, also recorded in the INE, in which the tenancy regimes of real estate properties are segmented according to the different age brackets of the owners.

At the time level, the data series for urban land prices have been downloaded on a quarterly basis between the first quarter of 2004 and the first quarter of 2023, allowing us to study the evolution of values over almost two decades, values whose main statistical measures are shown in Table 12. Regarding the relationship of prices with macroeconomic variables, those of the 4th quarter of 2022 have been used for the value of land, the annual ones of 2022 for population values and the annual ones of 2019 for those of GDP pc. For the complexity of the economy, the latest available data at regional and provincial level updated to September 2023 have been used. Temporal differences considered admissible for the work given the temporal stability of the values, largely due to the fact that, with the exception of land prices, they occur at a high level of aggregation.

Inhabitants	Min	Max	Media	State Dev.	NO.
$x < 1.000$	3,17	405,43	65,43	34,86	2.837
$1.000 < x < 5.000$	5,97	386,25	101,60	48,58	3.896
$5.000 < x < 10.000$	2,11	489,80	136,84	63,13	3.547
$10.000 < x < 50.000$	16,16	566,50	195,89	89,33	3.738
$50.000 < x$	25,71	1.542,46	368,08	220,73	3.347

**Table 12:** price per square meter of urban land by municipality size for national, regional and provincial data between 2004 and 2023, including the minimum and maximum values for the period, the mean, the standard deviation and the number of data for each municipality size. Source: statistics on urban land prices from the Ministry of Housing and Urban <sup>Agenda69</sup>.

For the analysis of the data, three sections have been worked on, firstly the relationship of the price of land with population aspects, the main element being the size of the municipality, followed by the socioeconomic aspects and finally the legal status of the purchasers.

### 4.3. Results

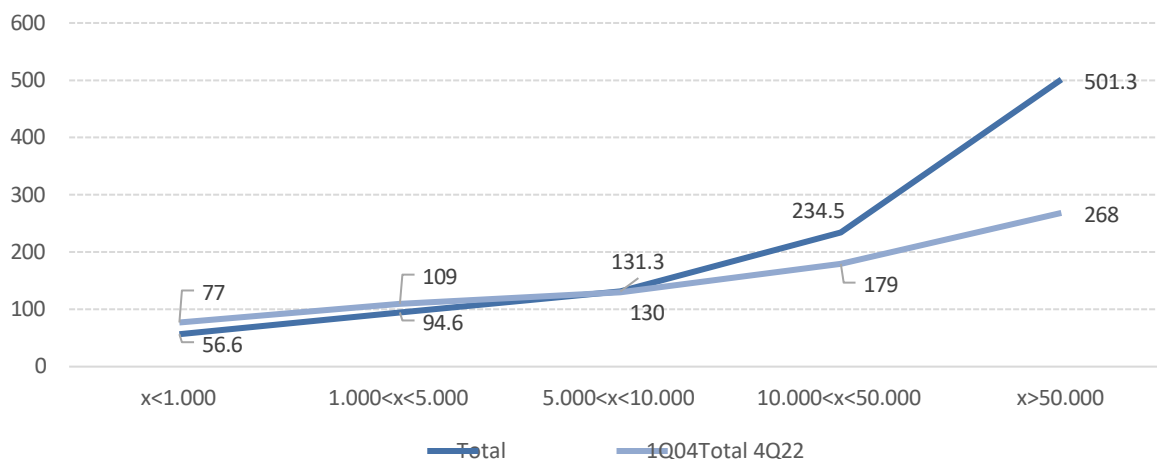
#### 4.3.1. Land Price and Municipal Dimension

The study of land prices according to the size of the municipality allows us to observe the evolution of the data during the period. In line with expectations, it can be seen that land prices in Spain are rising as the population of the municipalities increases. As the results in Figure 27 show, at the national level, a progressive increase in land prices is observed for the year 2022, which accelerates as the municipality grows. Those municipalities with a population of over 50,000 inhabitants show average prices 3.5 times higher than those of towns with less than 50,000 inhabitants.

1,000 inhabitants. This figure is significantly higher than that observed for 2004, when the prices of the municipalities with the largest populations were 8.9 times higher than those with the smallest populations.

In the temporal comparison, the role of the larger municipalities in the growth of land prices stands out, growing by 50% by the year 2022, a lower value than that of 2004 with 113%. On the other hand, the smaller municipalities show relatively stable values over time, with no differences being observed for municipalities of between 5,000 and 10,000 inhabitants.

<sup>69</sup> See 'Estadística de Precios del Suelo Urbano' at 'apps.fomento.gob.es'.

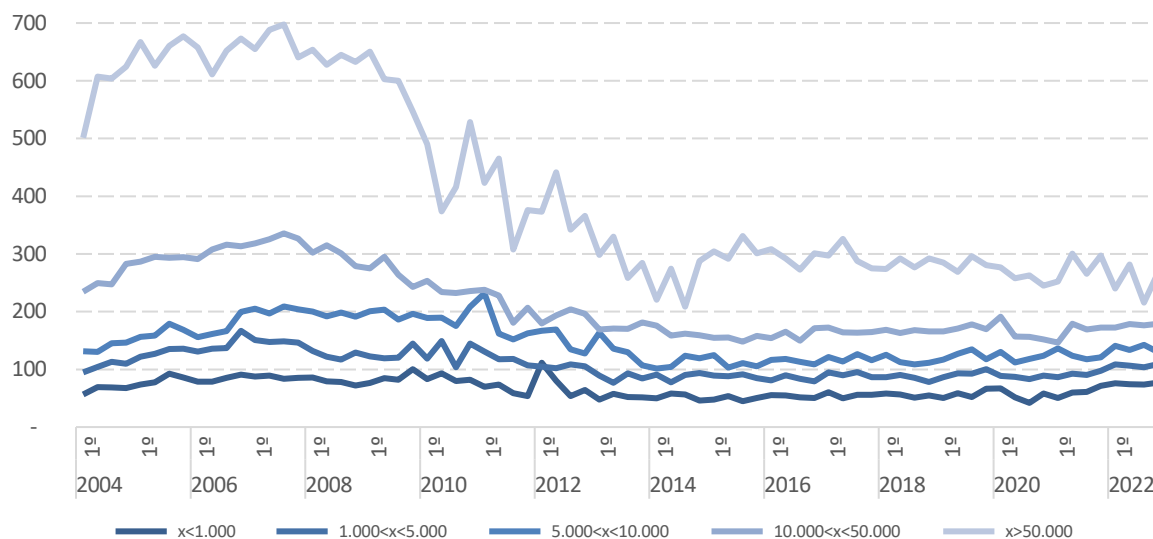


**Figure 27:** average land price in euros per square meter for the whole of Spain and by municipality size, comparing the first quarter of 2004 (1Q04) and the fourth quarter of 2022 (4Q22). Source: Prepared by the authors based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

The data provided show that land prices at the national level have not remained constant during the entire period (Figure 28), but rather we find two large separate periods.

On the one hand, if we focus on municipalities with more than 50,000 inhabitants, we can consider a first period between the second quarter of 2004 and the third quarter of 2009, when Spain was in the midst of the economic crisis derived from 2007 in the USA and exacerbated by the conditions in which the Spanish real estate sector found itself.

Throughout this period the average price is 645.4 euros per square meter. And a second period between the 4th quarter of 2014 and the 1st quarter of 2021 with prices again stable with an average of 286 euros per square meter, although with a slight downward trend. Between both periods there is a transition time in which the reported prices drop from the first situation to the second in what implies a drop of more than 50%, in an initially abrupt decline followed by a long period of more moderate and saw-shaped price reduction. It is also worth noting the oscillating nature that land prices have had since the second quarter of 2021, which is why such data have not been included in period 2 above.



**Figure 28:** Evolution of land prices in euros per square meter between 2004 and 2022 in euros per square meter. Source: own elaboration based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

This dynamic also occurs in the smaller municipalities, although with a less pronounced difference in prices between the two periods as the municipality is smaller, as shown in Table 13.

It can also be seen how in period 1, associated with significant economic growth with a boost in the real estate sector, prices are higher than in period 2, which occurs in the new upward cycle after the economic crisis. According to the data for the first period, the largest municipalities in the study had a price per square meter almost 8 times higher than the smallest ones, a figure that is reduced to 5.34 for the second period of the study.

	P1: 2Q04 - 3Q09		P2: 4Q14 - 1Q21		Reduction P1 - P2
	€/m <sup>2</sup>	Diff size <sup>1</sup>	€/m <sup>2</sup>	Diff size <sup>1</sup>	
x < 1.000	81	1,00	54	1,00	34%
1.000 < x < 5.000	131	1,62	88	1,65	32%
5.000 < x < 10.000	180	2,23	118	2,20	34%
10.000 < x < 50.000	296	3,67	163	3,04	45%
x > 50.000	643	7,98	286	5,34	56%

**Table 13:** average land prices in euros per square meter for the two most representative periods in Figure 1, as well as the level of reduction between the two periods 1. Increase in the average price of the period according to the size of the municipality, taking the smallest one.

as a base<sup>70</sup>. Source: Prepared by the authors based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

These results are in line for the given period and for the Spanish territory with the expectations set out at the beginning of this section. It is interesting to note the variation in the ratios between periods 1 and 2, showing a more significant correction in the municipalities with the largest population, which could mean that the previous valuation of synergies was above the market. Similarly, the increased use of information technologies can be considered as an aspect that works against the concentration of the population, being able to develop jobs traditionally located in highly concentrated areas in more isolated places.

### **Regional differences**

After studying the general behavior in Spain, the differences within the country can be observed through data disaggregated at the regional level. In this sense, a panel of land price data is available for the 17 Spanish autonomous communities for the period 2004 - 2022. For the analysis, data from the last quarter of 2022 have been taken and, given the stability of aggregate prices shown since 2014, the missing data have been completed with those existing in previous quarters in the five preceding years. Obtaining Table 14, for a total of 85 data, 72 corresponding to the last quarter, 8 previous and 5 absent.

It should be noted that Table 14, when showing market prices for the fourth quarter of 2022, presents data at a lower level of aggregation in which elements such as the morphology of the land or other characteristics of the municipality may condition the price to a greater extent with respect to the aggregated data at the country level shown previously.

Table 14 shows that for all the regions of Spain the price per square meter is increasing as the population of the municipality grows, with price growth starting at 90% for regions such as Cantabria (93.4%), Asturias (95.6%) or Comunidad Valenciana (96.3%), and reaching maximum values in Castilla y León (367.8%), Madrid (482.2%) and Navarra (506.2%). Together with the growth value, the initial value of the smaller municipalities is noteworthy, since in the cases of Catalonia, the Valencian Community and the Basque Country, the starting prices are

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<sup>70</sup> The data shown in the table have been calculated as the arithmetic average of all the provinces for the given quarter, which is why the results differ from those shown in Figure 1 for the national average. In both cases, price growth is observed as the population of the municipality increases.



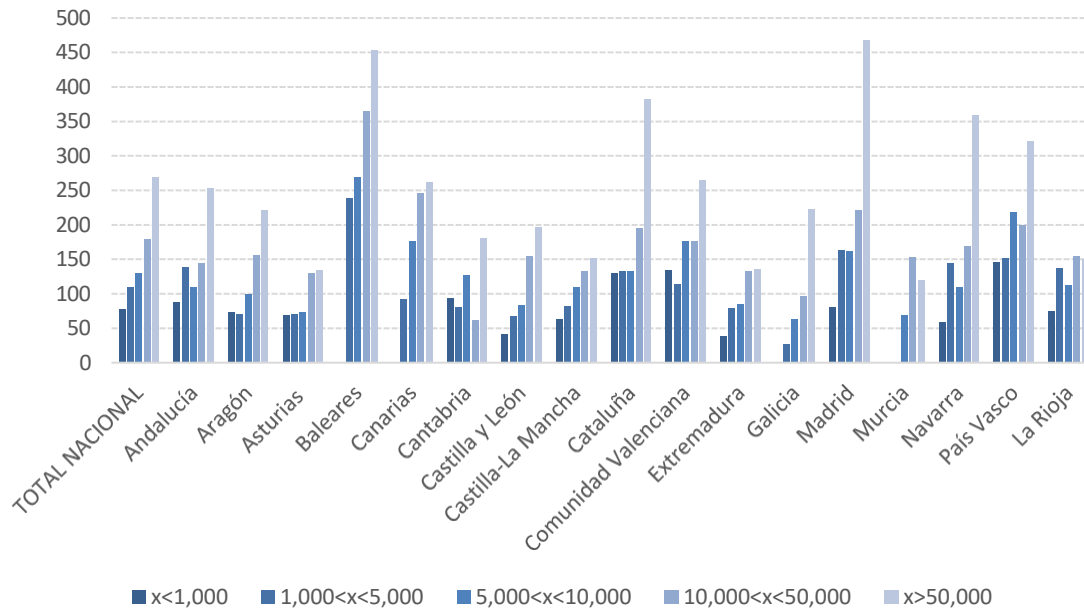
are significantly higher than the national average of 84 euros per square meter. These results corroborate at the regional level what is indicated for the country as a whole.

		1.000<x<5.000	5.000<x<10.000	10.000<x<50.000	x>50.000
TOTAL NATIONAL	77	109	130	179	268
Andalucía	88	139	109	145	253
Aragón	73	71	99	157	221
Asturias (Principality of)	69	71*	74	129	135
Balears (Illes)		238	269	364	454
Canary Islands		93*	176	246	262
Cantabria	94*	80	127	62	181*
Castilla y León	42	68	84	155	196
Castilla-La Mancha	63	82	109	133	151
Catalonia	130	133	133	196	382
Valencian Community	135	114	176	176	264
Extremadura	39	79	84	133	135
Galicia		26	64	96	222
Madrid (Community of)	80	163	162	221	467
Murcia (Region of)			68*	152	119
Navarra (Comunidad Foral)	59	144	110	169	360*
Basque Country	147	152	219*	199	322
Rioja (La)	74	137	112	154	151*

**Table 14:** average land prices in euros per square meter for the last quarter of 2022.

\*Data taken from previous quarters due to their unavailability for the selected: Asturias (2nd Quarter 2022 = 2Q22), Canary Islands (2Q2019), Cantabria (2Q21 + 2Q22), Navarra (4Q17), Basque Country (1Q22) and La Rioja (4Q21). Source: Prepared by the authors based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

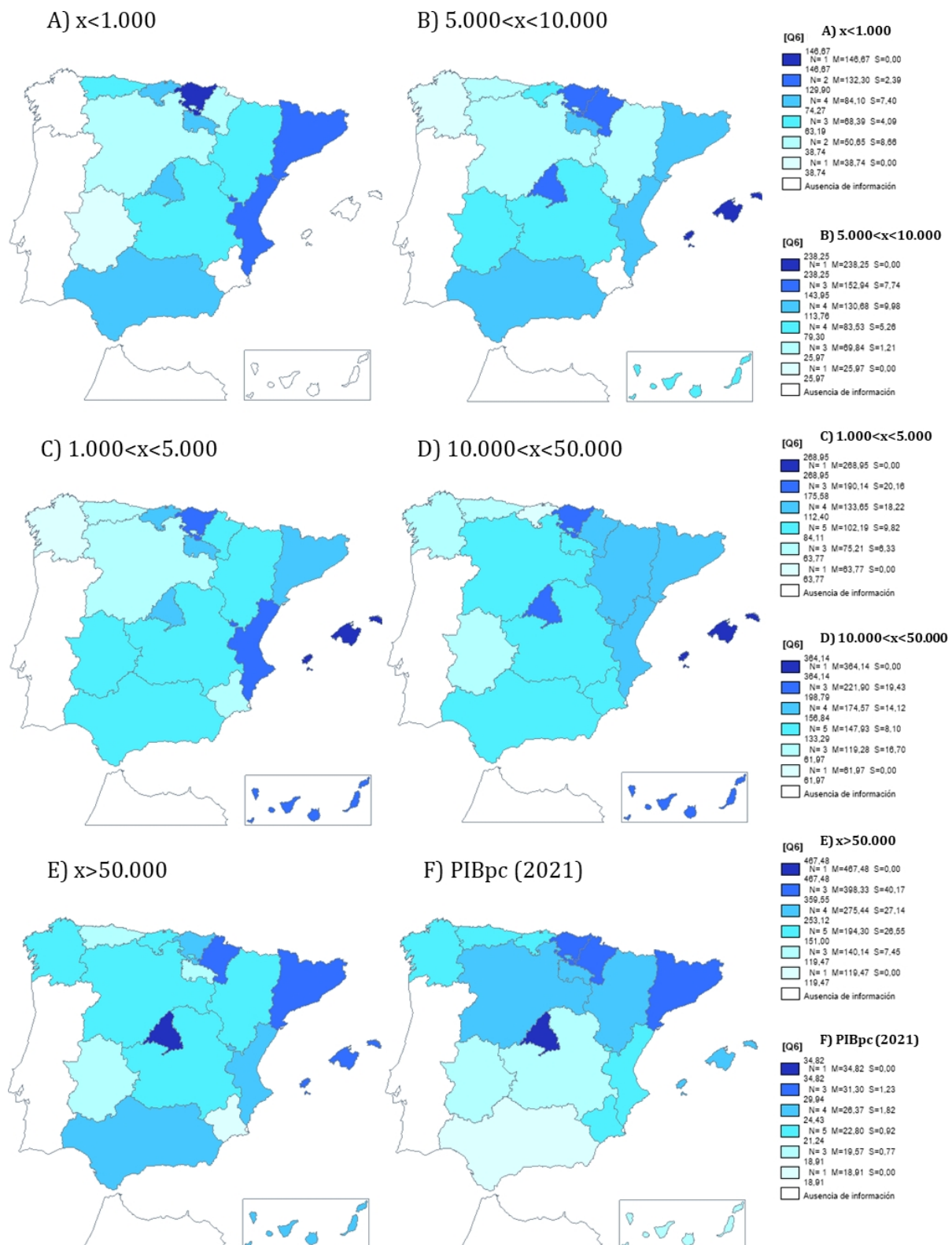
According to the graphical representation of these data, Figure 29 shows the increasing character of the prices associated with the population in the municipalities for all the autonomous communities. In the cases of Asturias, Baleares, Canarias, Castilla y León, Castilla-La Mancha, Cataluña, Extremadura and Galicia, the results are increasing for all the population increases studied. With respect to the other autonomous communities, in spite of presenting increasing land prices, these present punctual oscillations, as can be observed especially for Cantabria, due to the difference between the municipalities of 5,000<x<10,000 and those of 10,000<x<50,000, as well as for Murcia or La Rioja due to the fact that the municipalities of 10,000<x<50,000 present higher prices than those of more than 50,000 inhabitants.



**Figure 29:** representation of land prices in euros per square meter for the year 2022 broken down by region and size of municipalities, according to the information shown in Table X. Source: own elaboration based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

In relation to figure Y, the high generalized growth in prices for the highest population level is also noteworthy, with average growth of 49.73% over the previous range. It should also be noted that the smallest difference between the ranges studied occurs between the municipalities of between 1,000 < x < 5,000 and those of 5,000 < x < 10,000 with an average growth of 18.66%, but with both positive and negative oscillations.

The geographic distribution of prices is shown in Figure 30, with the information segmented in the different images according to the size of the municipalities. It can be seen the prominent role of the Balearic Islands and the Community of Madrid for all population levels, as well as the high or medium-high price of most of the autonomous communities of the Mediterranean arc. On the other hand, the non-coastal communities maintain a medium-low or low price for all the dimensions of municipality.



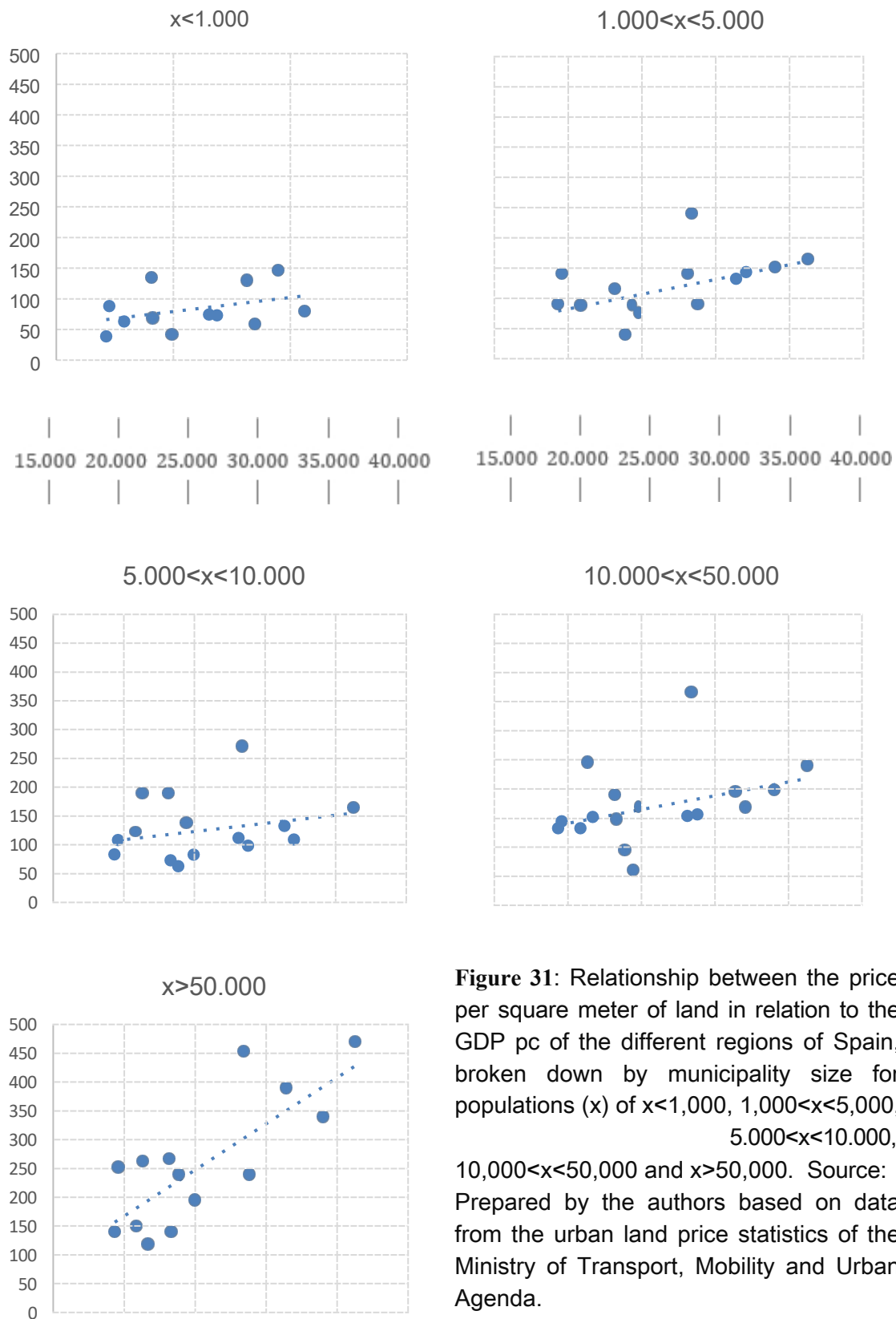
**Figure 30:** Geographical representation of the values under study. A, B, C, D, E: land price in euros per square meter for the year 2022 broken down according to autonomous communities for different *municipality sizes* =  $x$ . F: GDPpc 2021. Source: own elaboration, made with Philcarto.

#### 4.3.2. Land Price and GDPpc

In addition to the impact of the concentration of population in the municipalities on the purchase price of land, there is also the dependent impact of the existence of a larger market. As the most common indicator for market analysis, these prices can be compared with the GDP per capita of each of the regions. In this sense, it is to be expected that larger markets will translate into higher land prices than smaller ones.

As shown in Figure 31, there are positive relationships for all the population sizes analyzed, which implies that increases in per capita GDP are associated with increases in land prices. This implies that regions with higher income values have higher land price values associated with them. Of note in the relationship is the value shown for the Balearic Islands whose land prices are higher than expected for its GDP pc given the trend lines shown, a fact which, if eliminated, slightly modifies the results, allowing an increase in the R2. This is an atypical case

Increasing prices with GDP pc are shown to a greater extent in the results for municipalities with more than 50,000 inhabitants, where the results are also better distributed along the regression line with an R2 value of 57.85. This can also be seen in the fact that of the six autonomous communities with the highest GDP pc, five have the highest land prices, Madrid, the Balearic Islands, Catalonia, Navarre and the Basque Country, while the lowest land prices are found mainly among regions with lower income levels, such as Murcia, Extremadura, Asturias, Castilla-La Mancha, with La Rioja and Aragon being the only regions with incomes above the national average and lower land prices for municipalities with more than 50,000 inhabitants.

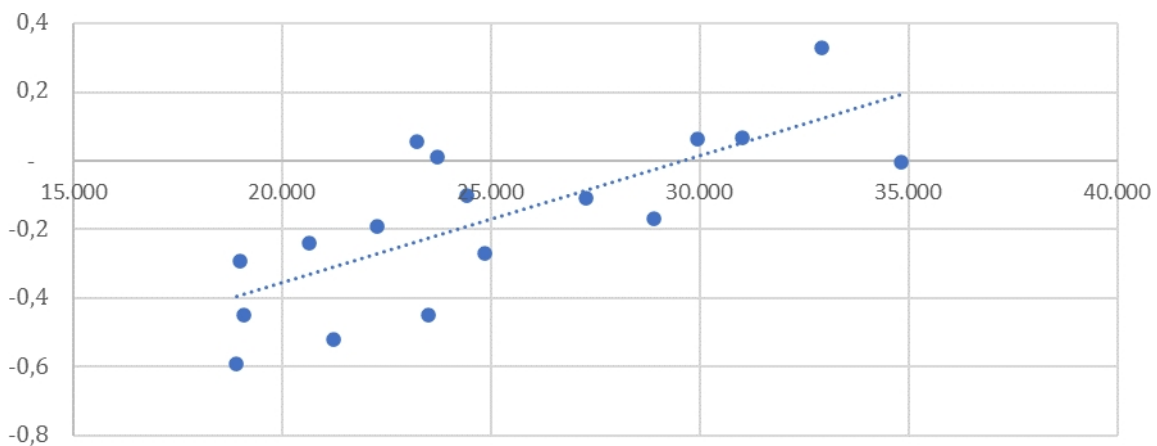


**Figure 31:** Relationship between the price per square meter of land in relation to the GDP pc of the different regions of Spain, broken down by municipality size for populations (x) of  $x < 1,000$ ,  $1,000 < x < 5,000$ ,  $5,000 < x < 10,000$ ,  $10,000 < x < 50,000$  and  $x > 50,000$ . Source: Prepared by the authors based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

### 4.3.3. The Complexity of Economics in Income Definition

Given the relationship between land prices and citizens' per capita income, it is worth reviewing the relationship between this income and the complexity of the economy for the regional case of Spain. This complexity, measured by the Economic Complexity Observatory (OEC), is an indicator that arises from the export profile of the region analyzed, taking into account the complexity of the supply of its products and services traded internationally; a higher value is associated with greater complexity of the region's economy (Hausman et al. 2005).

The OEC data show a correlation coefficient between GDP pc 21 and OEC Index 22 of 0.75, as shown in Figure 32. A high correlation value which implies that higher values of the index are associated with higher income levels for the region. With respect to the relationship between land price and the economic complexity index, it maintains a positive value, but it is a lower correlation. The highest value occurs for municipalities with less than 1,000 inhabitants with 0.42, while the lowest value is found in municipalities with between 10,000 and 50,000 inhabitants with 0.08.

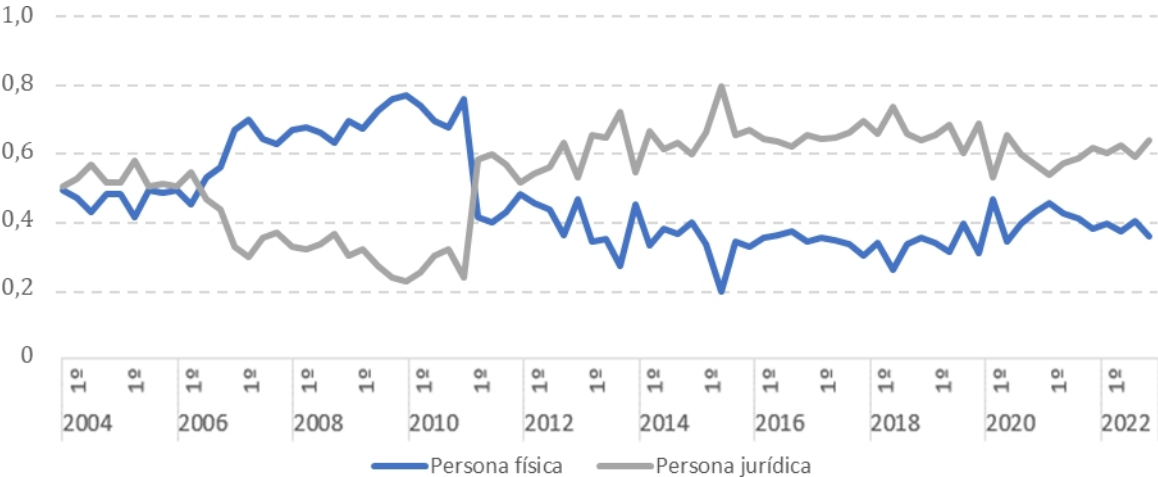


**Figure 32:** Relationship between the economic complexity index in relation to the GDP pc of the different regions of Spain. Source: own elaboration based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda and the Economy Complexity Observatory.

### 4.3.4. Value of Land Acquired by Individuals and Legal Entities

With respect to the agent acquiring the land, the data allow us to differentiate between individuals and legal entities, an aspect that I consider of great importance in this study since we are working with rights that could be considered absolute property rights over the land, although their possession may be highly conditioned by fiscal policy.

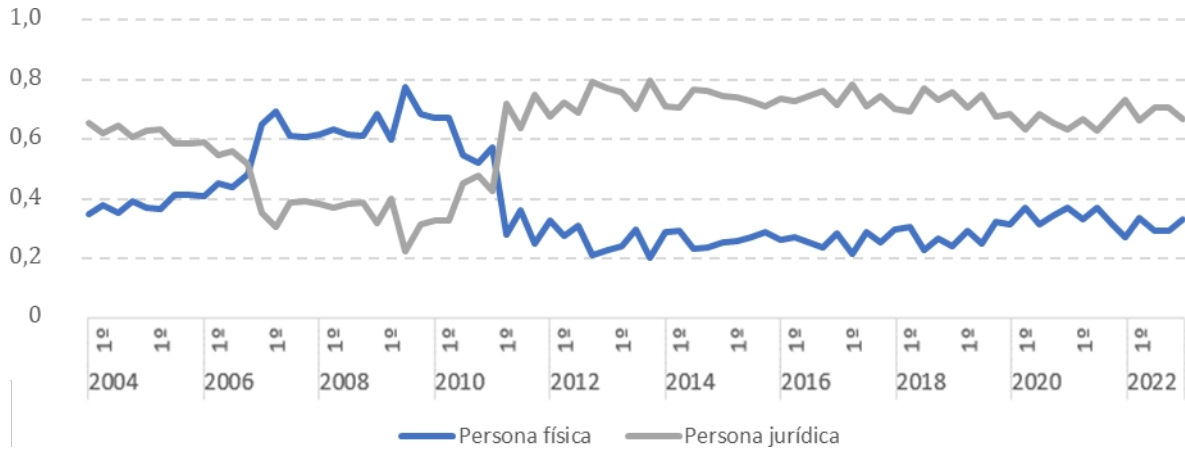
Considering first of all the surface area exchanged, Figure 33 shows that legal entities are currently acquiring considerably more surface area, with approximately 60% of the surface area transacted compared to 40% for individuals. This figure, however, has not had a linear behavior, but between the first quarter of 2007 and the first quarter of 2011 it reversed its behavior with purchases by individuals exceeding 60% at all times and reaching figures of 77% at the beginning of 2010. This situation implies that for the 77 quarters for which data are reported, on average, 48.22% of the surface area exchanged is purchased by individuals and 51.77% by legal entities.



**Figure 33:** Percentage value of the surface area of the transactions carried out according to the type of legal entity (physical or legal) acquiring the land for sale. The abscissa axis shows the 77 quarters starting at the beginning of 2004 and ending at the end of 2022. Source: Prepared by the authors based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

In terms of value, a situation similar to that observed in terms of surface area occurs, with a greater participation of legal entities in the market throughout the period with the exception of the period between the first quarter of 2007 (quarter 13) and the first quarter of 2011 (quarter 29) in which natural persons

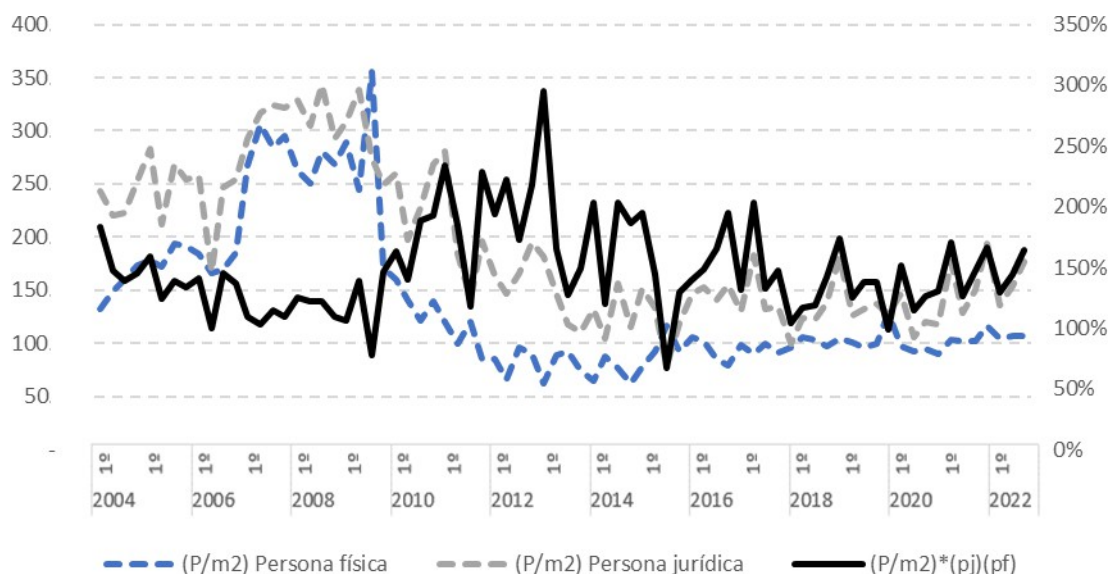
paid higher amounts for their space acquisitions. It is worth noting that since the second quarter of 2011, legal entities have accounted for more than 60% of the value of acquisitions at all times, with an average during the period of 71.62%.



**Figure 34:** Relative economic value of the transactions carried out according to the type of personality, physical or legal, that the space acquires, expressed in percentage terms between the two types of personalities. The abscissa axis shows the 77 quarters starting at the beginning of 2004 and ending at the end of 2022. Source: Prepared by the authors based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

With respect to the value of land exchanged, Figure 34 shows the existence of higher ratios than those shown in the case of surface area, with the value of land acquired by legal entities being significantly higher than that of land acquired by individuals. In this sense, land acquired by legal entities accounts for 53.76% of the space exchanged and 61.93% of the total value of the exchange. This data implies that the space acquired by legal entities has a higher value than that acquired by individuals. This situation leads to the results shown in Figure 35, in which it is observed how the purchase prices of legal entities are at all times higher than those paid by individuals, with the exception of two specific quarters, namely the third quarter of 2009 and the third quarter of 2015. On average, these exchanges show a price 39.09% higher for legal entities than for individuals, reaching a maximum of 195% higher for the first quarter of 2013 (value 37).





**Figure 35:** Square meter prices of acquisitions by individuals and legal entities. The ratio of the price of legal entities to that of individuals is highlighted. The abscissa axis shows the 77 quarters starting at the beginning of 2004 and ending at the end of 2022. Source: Prepared by the authors based on data from the urban land price statistics of the Ministry of Transport, Mobility and Urban Agenda.

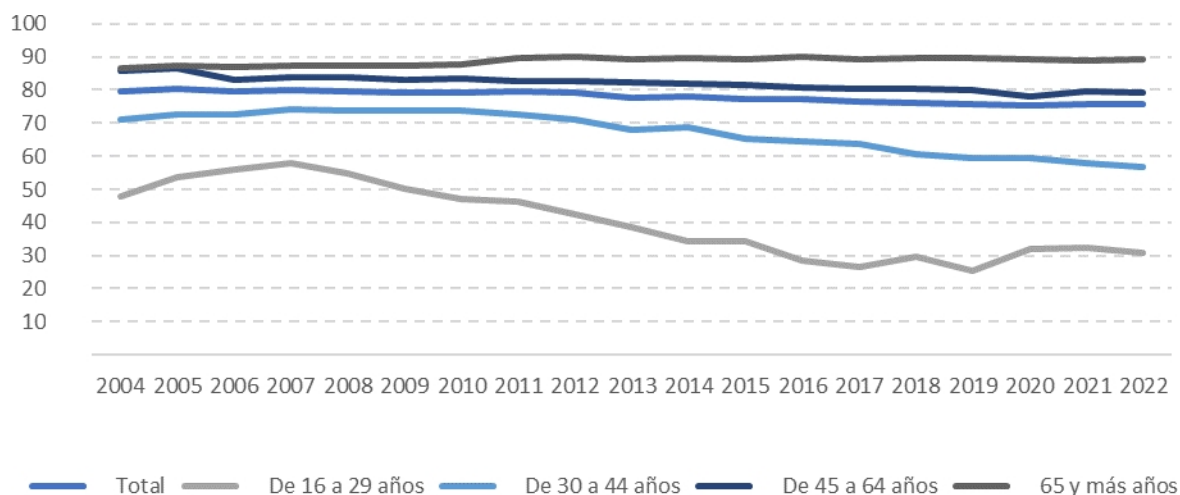
Although these results on the acquisition by individuals and legal entities can be considered as dependent on specific temporal conditions, and therefore may not be extrapolated to future times, they do indicate that there is currently a significant participation of legal entities in the acquisition of space in Spain. At the same time, by obtaining higher acquisition flows of legal entities than those of individuals, they lead to analyze the possibility that a transfer of space in the hands of individuals to legal entities may be taking place, an element of analysis for which it would be necessary to have data on the personality of the sellers, not only of the acquirers as in this case. This element could be analyzed in the future.

#### 4.3.5. Land Price and Home Ownership Regime

The tradition of acquiring the home on which to create a home is part of the Spanish culture; not in vain did the survey on living <sup>conditions</sup><sup>71</sup> indicate that in 2022, 89.4% of households made up of citizens over 65 years of age lived in a tenancy regime, a figure that has remained stable at over 86% since 2004. In contrast to this situation, there has been a general downward trend in the number of households living in tenure status, which has remained stable at over 86% since 2004.

<sup>71</sup> See: INE - 'Encuesta de condiciones de vida' (Living Conditions Survey).

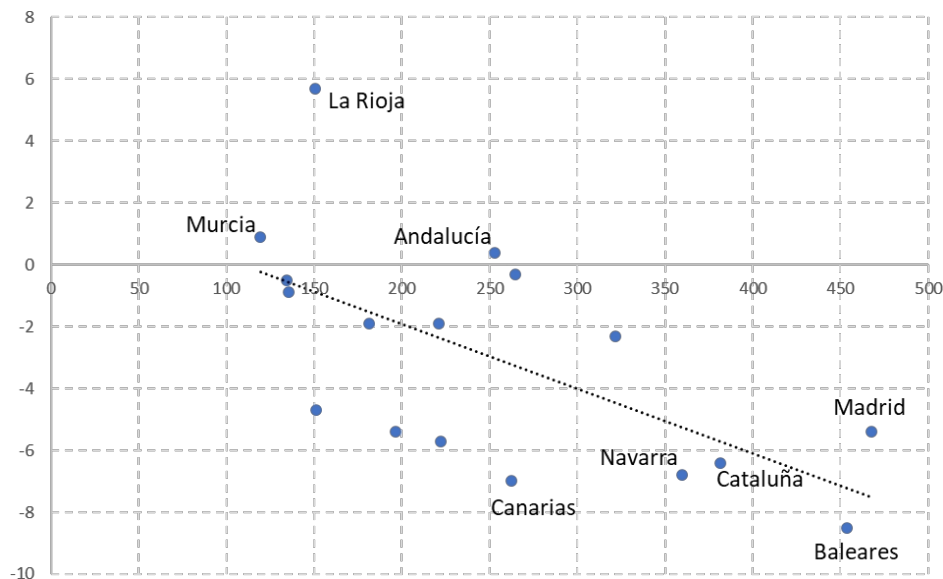
The data in Figure 36 show this evolution between 2004 and 2022, firstly, for households between 45 and 64 years of age, the tenure regime has dropped from 86.5% to 79.3%. The data in Figure 36 show this evolution between 2004 and 2022. First, for households between 45 and 64 years of age, ownership has dropped from 86.5% to 79.3%, which implies a drop of 7.2%. For households between 30 and 44 years of age, the starting point was 71.1% in 2004, dropping to 56.7% in 2022, with a 14.4% reduction in ownership. Finally, for younger households, between 16 and 29 years of age, ownership has dropped from 47.7% to 30.7%, which translates to 17%. These data corroborate that the progressive reduction in home ownership in Spain is a trend that affects young households to a greater extent than older households. This reduction has occurred in a context of exceptionally low reference interest rates for the period between 2009 and 2022, even negative rates. A condition that reduces the cost of investment and therefore makes it easier to afford the purchase of housing. However, this condition affects the entire population across the board and therefore favors investment by both individuals and legal entities.



**Figure 36:** age and household , evolution of the percentage of the population whose household is in ownership regime according to the age of the holders. Source: Living Conditions Survey of the National Institute of Statistics.

The situation faced by society is framed in a context of social evolution in which the conditions for mobility have increased considerably, both nationally and internationally, and which results from a combination of investment capacity, as well as the preferences of citizens who adapt their investment and expenditure structure under different criteria than those of previous generations.

After observing the data at the national level, differences can be observed at the regional level. Despite the fact that land tenure has fallen by an average of 4.5% between 2004 and 2022, it has behaved differently among the Autonomous Communities, with reductions of 8.5% for the Balearic Islands and opposite increases of 5.7% for La Rioja. Figure 37 shows the relationship between the level of land prices for the year 2022 for all the Autonomous Communities and the condition of increase or reduction of tenure. Thus it can be seen that the cases of Madrid, the Balearic Islands, Catalonia and Navarre, which have the highest prices, are also among the regions that show the greatest reduction in the number of owners of their homes. In contrast, Murcia and La Rioja, which are among the regions with the lowest land prices, show the largest increases in their ownership.



**Figure 37:** ownership and price , relationship between the price per square meter for municipalities with more than 50,000 inhabitants and the variation of tenure holders between 2004 and 2022. Source: Living Conditions Survey of the National Institute of Statistics and Urban Land Price Statistics of the Ministry of Transport, Mobility and Urban Agenda.

Considering the results obtained, the reduction in household ownership in Spain shows a continuous trend over more than a decade in which the country is tending towards the most widespread situation in Europe, where ownership has less weight in favor of rental housing. This trend favors aspects such as mobility, while at the same time diminishing security of tenure by adding the risks associated with the variation in real estate prices that renting presents.

#### 4.4. Discussion

The results shown are in line with those expected, according to which the price of land increases as the surrounding population increases, and also as the income of citizens increases, and as the complexity of the economy increases. To this must be added the effect of the progressive reduction in the number of homeowners in favor of renting, which is accentuated in regions where land prices are higher.

From a temporal point of view, the high correlation of the data throughout the entire period is observed, showing the impact of macroeconomic changes on land prices. Changes that are significantly higher for highly populated municipalities than those shown for smaller ones. This situation is in line with the literature in terms of a higher price elasticity of demand for the larger ones. Additionally, the results show that in both periods there is a relative stability of prices, an aspect that opposes the expectation of growth that should be associated with periods of economic growth.

From the point of view of the size of the municipalities, the increase in prices in the last available bracket, with more than 50,000 inhabitants, stands out. This increase has a generalized geographic impact for all regions except Murcia and La Rioja and is in line with the expected impact of market growth and the specialization of citizens as the population increases, a situation which justifies the price increase obtained for the Spanish case.

A municipal dimension that is also aligned with the income of each of the regions under study, thus a positive correlation is observed between land prices and GDPcpc whose trend is more pronounced and reliable as the municipalities have a larger population. In contrast to the expected correlation in the measurement of the complexity of the economy, the results show a lower value than that obtained for GDPcpc, while at the same time there is a high correlation between the two as independent variables, indicating that the information on the complexity available is amply reflected in the GDPcpc of the different regions.

The role of legal personality is the one that is most prominent in line with the results of chapter two, at this point the significant participation of legal entities representing approximately two thirds of the operations and a higher value of the amounts allows us to indicate that the acquired plots have a higher value, which can be considered significant in terms of the increase in the concentration of assets in their hands. At the same time, the lack of information as to the origin of the assets makes it impossible to determine whether a concentration of assets in their hands is taking place.

The Company is not aware of any increase in the participation of legal entities, as would be expected, or if, on the contrary, they have an equally significant participation in the sale of the assets.

The behavior of legal entities in relation to the economic cycle stands out here, as they reverse their participation in sale and purchase transactions during the recession period and the dates associated with the highest level of crisis. In the same way, the immediacy of the changes stands out, since very significant variations occur between two consecutive quarters. The stability of the values between 2011 and 2022 shows that the importance of legal entities in the acquisition of space is not a one-off issue but is stable over time.

With respect to the trend towards the substitution of property ownership by real estate leasing, the results are also in line with expectations, with a greater growth in leasing as land prices are higher. The fact of having higher prices conditions the capacity to afford the entry of housing, limiting the population willing to make investments and involuntarily contributing to a growth in leasing. The cases of Murcia and La Rioja as single-province autonomous communities once again show the opposite trend, together with the role of Andalusia in which the provincial behavior shows greater disparity.

In the analysis, age once again appears as a significant determinant of ownership of real estate assets. The fact that the decreasing trend shows such high results for the younger age group, from around 60% of owners in 2007 to half in 2022, shows a change in the configuration of society. This trend is also marked in the upper age bracket between 30 and 44 years old, showing a gradient in the appearance of results that can be considered foreseeable as the citizens who are getting older move from the lower age bracket to the next one. The decrease from 84% of people with home ownership to 87% is translated into a reduction of 17 points in 15 years, which translates into a trend similar to that shown for the lower band. The upper bands present more moderate reductions that nevertheless show a generalized trend with results aligned with those obtained for financialization, in that there is a substitution of ownership by renting, with a greater impact the higher the value of the land in the regions under study.

#### **4.5. Conclusions**

The results shown align the behavior of land in Spain with those studied for other parts of the world and with what is expected by the economic literature. In this sense, the data on population and income show significant differences both between regions and between municipality sizes. The fact that land prices are inversely correlated with household ownership stands out, in terms of the social impact that this can generate in the transformation of a society of owners into one of renters.

Together with this effect, the consideration of an increase in the role of legal entities in the economy is associated with the previous study on the transition towards a consumer society, in which land and real estate become assets for use in the hands of companies in their role of maximizing yield. It shows again the progressive replacement of direct ownership by ownership through corporate shares, in a different conception of investment already discussed in the previous section.

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## **5. FACTORS OF PRODUCTION AND THEIR OWNERSHIP**

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The previous chapters show how the housing problem has characteristics associated with numerous elements, such as location, population, property rights or the economic and social relations generated in its environment. In the analysis of the economic foundations of housing, two main characteristics are presented, the first in the form of its location on the planet Earth, and the second as a construction built for specific purposes. These are two distinct elements that present different properties when studied in their participation in economic activity.

Traditionally it has been considered the use of three Factors of Production (PF) in the form of land, labor and capital that combine to produce goods and services that are distributed and consumed in the market. The use of these three FPs acts as the basis of our current economic knowledge by shaping the institutions on which human action takes place, giving the location on Earth the consideration of the FP land, while understanding as FP capital the constructions made on it.

This definition of PF has remained practically unchanged throughout the history of economic science<sup>72</sup>, and was proposed as the economic foundation for the

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<sup>72</sup> Under consideration of the publication of Adam Smith's 'The Wealth of Nations' in 1776 as the starting point for the



conception of economics as a science.

The world population was estimated at one billion people at the beginning of the 19th century, with a limited consumption of natural goods such as coal, oil or natural gas, and continues today, when more than eight billion people inhabit the earth and the consumption of goods has multiplied to levels that generate concern about the sustainability of our relationship with the planet. This situation raises the need to study the validity of these PFs as fundamentals of the economy, that is, as factors of maximum aggregation that cannot be united under a superior category due to their different characteristics.

The classification of the PFs shows issues of first magnitude on citizens' access to housing; it conditions the concept of home ownership, it conditions the treatment of housing in the market, the prices of goods and services that allow the construction of housing or the final prices at which they can be acquired. Under these premises, studying the validity of what can be considered as classic PFs of the economy is necessary to contribute to a better understanding of the reasons that hinder the population's access to housing.

### **5.1. Introduction**

The soil, understood as the place that hosts the life of human beings, has been a source of concern since ancient times. The Old Testament records the role of the Jubilee year as the year of recovery of <sup>property</sup><sup>73</sup> based on the concept of solidarity of the people of Israel and the consideration of ownership of the land by <sup>God</sup><sup>74</sup>. (Aristotle 340 B.C.) in the 'Politics' deals with the problem of land ownership by commenting on previous legislation that:

"prohibit the acquisition of as much land as one wants"<sup>75</sup> or "prohibit the sale of property" or commenting on the role of the legislator in its objective to seek "equality in property".

Elements that raise two fundamental questions that have been maintained throughout history and that continue to concern citizens, such as the united consideration of land and the buildings built on it, as well as its relationship with the definition of citizens' <sup>property</sup> <sup>rights</sup><sup>76</sup>.

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<sup>73</sup> Understood as ownership of family lands and buildings

<sup>74</sup> (Bible 1972) See Leviticus, 25, 8-17

<sup>75</sup> See Politics, book II, other political theories: Phaleas of Chalcedon.

<sup>76</sup> See (Tocqueville 1984), p. 27: 'Since citizens began to own land by means other than the feudal system [...] no discoveries were made in the arts, nor were there any advances in commerce and industry that did not create

At the dawn of what is now economic science (Ricardo 2010) published in 1817 'Principles of Economic Policy' in which he showed how private ownership of land had become a generally adopted issue, indicating that:

*"Rent is that portion of the produce of the earth, which is paid to the landlord for the use of the original and indestructible powers of the soil"*

Statement that shows the property customs already in place at the time and mentions the unique characteristics of the land with respect to other types of properties. It includes elements such as the rent of the land, the *landlord* or the permanence of the land over time.

The importance of land is shown as a timeless condition of human existence. It stands out in the analyses produced during what can be considered as the origin of economic science, with the role of Adam Smith, Robert Malthus or the aforementioned David Ricardo in the context of the first industrial revolution, but whose role evolves in later studies until it is practically relegated between the last third of the 19th century and the beginning of the 20th century, when the interest in the study of economics shows a broader spectrum that includes issues such as economic systems, the separation between macroeconomic and microeconomic disciplines or the search for the combination of efficiency and equity.

The last two centuries can be considered as those of greatest change in the living conditions of human beings, having gone from a population of around one billion people to a population eight times larger, evolving from an economy in which agriculture occupied the vast majority of the population to one in which it has been relegated to a proportion of less than five percent in developed countries. In addition, material well-being has grown from subsistence conditions to the consideration that part of the world lives in conditions of an 'Affluent Society'<sup>78</sup>. At the same time as these changes have taken place, the principles on which economic relations between all members of the economy are based have remained stable. These principles were subject to continuous debate in the eighteenth and nineteenth centuries, but their discussion has lost weight in the face of other issues, and they have come to be understood as generally accepted concepts.

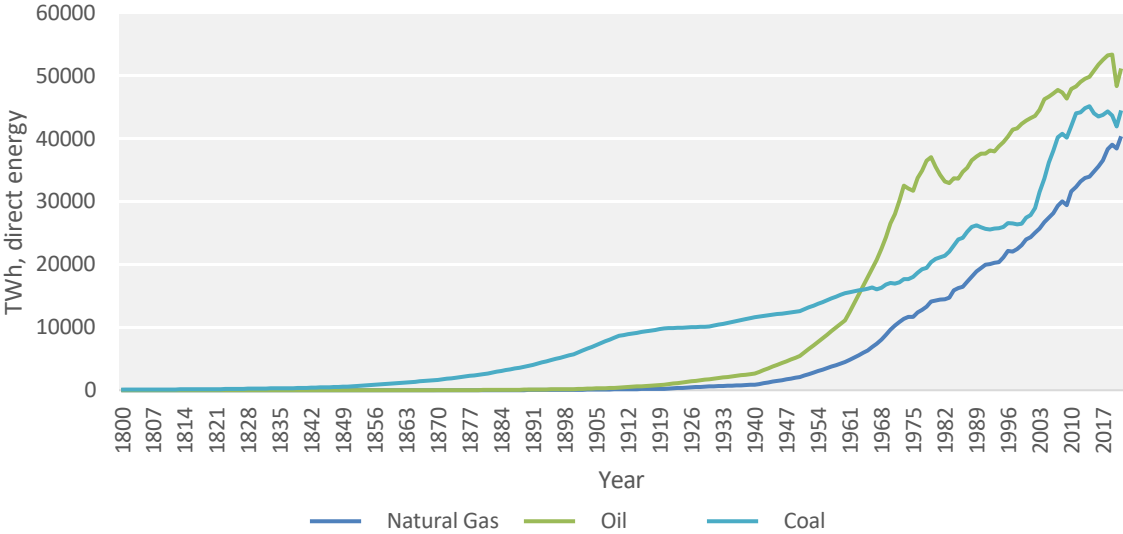
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as many new elements of equality among men'. See also his study on the role of inheritance in the evolution of land concentration or distribution, p. 65-67.

<sup>77</sup> Trad. Lib. author: 'rent (of land) is the portion of the produce of the land which is paid to its owner for the use of the original and indestructible powers of the soil'.

<sup>78</sup> See John Kenneth Galbraith's 'The Affluent Society'.

Considering a surface area of 510 million square kilometers, 29% of the earth's surface is land, while the rest is made up of oceans. Of this emerged surface, 71% can be considered habitable, which means that human beings have 106 million square kilometers at their disposal to develop their lives. The fact alone that we have gone from one to eight billion people on Earth implies a reduction in the space available to cover the needs of each person from 1.06 to 0.13 square kilometers, an estimate that is reduced to around 0.1 square kilometers<sup>79</sup> for a population that is estimated to exceed 10 billion people<sup>80</sup> in the present century.



**Figure 38:** Annual evolution of energy from primary sources, coal, oil and gas, measured in TWh. The omitted data have been estimated as arithmetic mean between the previous and subsequent available. Source: own elaboration based on data from ourworldindata.org.

Along with population growth, there has been an increase in the consumption of citizens. Figure 38 shows the evolution of energy consumption from the three main non-renewable primary sources, coal being the first of the three to be introduced into the economic system, followed by oil, whose consumption began to grow in the 1860s, and natural gas in the 1880s. Energy consumption has increased hand in hand with economic growth, with a turning point in fuel consumption in the 1950s, after World War II.

<sup>79</sup> Considered as a maximum situation, taking into account that not every habitable area is desirable, as well as the fact that population trends lead to an increase in the role of cities.

<sup>80</sup> According to data from the United Nations *World Population Prospects 2022*, the world population is projected to reach 9.8 billion in 2050 and 11.2 billion by 2100.

fossil fuels, mainly oil and gas. Both aspects, population and consumption, translate into an unprecedented increase in demand for the planet's resources.

Given the differences in resource consumption, the question arises as to whether the economic fundamentals commonly used as a starting point for 1800 are still representative of the economy of the 21st century, adequately representing the relationships of human beings with each other and their interaction with the planet. From these conditions the question arises as to the validity of the classical classification of PF in the form of land, labor and capital.

With respect to the land, its relationship with elements such as its surface, the constructions built on it, the raw materials that can be extracted or the living beings that inhabit it deserves special consideration.

To the above is added the problem of land ownership from a socioeconomic point of view, whose debate seems to have remained attached to the concerns of classical economists, leaving unanswered the consideration of (Marshall 1920) defining it as the most 'exciting and difficult'<sup>81</sup> in economic science. Conceptions of emotion and difficulty that in the passage from the nineteenth to the twentieth century would remain in the background in favor of other concerns of thought, which led land ownership to be considered as a market asset that in general can be exchanged under conditions similar to those of any other asset. Although it presents particular treatments in different regions of the planet, such as specific tax policies or limitations on its acquisition by foreigners, it maintains its general essence as an asset, that is, as a capital good, as shown in this paper.

The issue could be summarized in the words of (George 2012) in 1879:

*"There is a rapidly growing feeling that the tenure of land is in some manner connected with the social distress which manifests itself in the most progressive countries"*

Countries where high levels of public intervention currently coincide.

In contrast to previous chapters that relied on data analysis to obtain results on the research questions, this chapter relies on

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<sup>81</sup> Marshall's "Principles of Economics" published in 1890, Book IV, Chapter II, "*The fertility of Land*", where he indicates on the ownership of land that "*It is the foundation of much that is most interesting and most difficult in economic science*".

<sup>82</sup> Trad. Lib. author: 'There is a growing sense that land ownership is connected to the social unrest that manifests itself in the most progressive countries'.

an ongoing review of the literature through historical analysis of a selection of the most significant publications in economics related to PF.

## **5.2. Historical Review of the Factors of Production**

Economic thought has been working on the existence of three PF since Adam Smith wrote the 'Wealth of Nations'<sup>83</sup>, namely: land as the originating factor, human labor and capital as the factor of production produced. These three PF are associated with their respective remunerations, in the form of land rent, labor rent (wages) and capital rent (interest and profit). It can be said that current economic thought is based on this classification of factors of production and their rents.

An extension of the historical perspective to earlier times allows us to consider different treatments of the classic PFs. In the first place, savings in societies prior to the Enlightenment (18th century) were limited in their conception of contribution to the economy and to the increase in production; in this sense, the concept of assets that can be used today by any company has a broader component in terms of continuous increase in productivity than what could be understood then, which allows us to consider that agrarian economies posed a market limited for the great majority of the population to two PF: arable land and the work dedicated to it.

A second aspect of PF is the consideration of labor as capital, people could be the property of other people and therefore the fruit of their labor as well, which translates into slavery. In this sense slavery is but an example of 'human capital' conceived as the right of ownership over human beings, not as it is understood today in relation to the competencies of a person to perform a task, such as training or skills. A third aspect can be seen in the consideration of non-market capital, in the form of accumulation for military or similar purposes, which involve the dedication of productive factors for purposes that do not have the objective of increasing future production.

According to the above aspects it can be seen how during the last 300 years we have evolved from a model that for most of the population the economy was limited to the combination of land and labor for subsistence and in which there could be rights of some people over others to one in which savings in the form of capital has come to play a major role in production and in which ownership of people has ceased to be a right. A drastic change that, without

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<sup>83</sup> Adam Smith 1776

However, it is based on the same criteria of PF Land, Labor and Capital that were used at the time and on which it could be asked whether they continue to underlie the relations of today's economy<sup>84</sup>. One could question not only their representation in today's economy, but even their adequacy to the concepts of human action and human property based on the principles of freedom.

It is generally accepted that economic science starts with the publication of 'The Wealth of Nations' in 1776 by (Smith 2001), a work in which the PF structure described above and the question of land ownership are repeatedly raised as the basis of economic thought:

"In that rude and primitive state of society which precedes both the accumulation of capital and the appropriation of land, the proportion between the quantities of labor necessary to acquire the various objects is the only circumstance which furnishes a rule for exchanging them. "<sup>85</sup>

To continue to study the effect of increased land ownership

"Once land becomes private property, [...]. Its rent is the first deduction of the product of work on the land "<sup>86</sup>

And of the increase in the capital stock:

"As soon as capital has been accumulated in the hands of individuals, some of them will naturally use it to put laborious people to work-

Chapter VII introduces the classic formulation of PFs, stating:

"It is in the interest of all those who employ their land, labor and capital in bringing to the market... "<sup>88</sup>

The use of PF and its consideration of property are maintained throughout the work, starting from them he studies the relationship between their availability and income by considering the positive and negative effects that variations in demand have on them. From here he dedicates chapters VIII to labor rents, IX to capital rents and XI to land rents, as a result of the application of these productive factors to the production of goods and services.

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<sup>84</sup> The role of other PFs raised in economics can be considered here, among which the role of the Entrepreneur that is discussed later as well as other elements whose final influence has an impact on factor productivity, without being PFs in themselves, see (Brynjolfsson & Hitt 1995).

VI. 'Of the parts of which the price of goods is composed'

VIII. 'Labor wages'

VI. 'Of the parts of which the price of goods is composed'

<sup>88</sup> Chap. VII. 'Of the natural price and the market price of goods'.

economic activity. It is on the basis of these factors that the rest of the analysis is based, which allows him to influence the concepts of accumulation or division of labor.

Considering the milestone of Adam Smith's work for the development of economic science, his structure of PF can be considered a foundation of the current economic system, which has kept the concepts almost unchanged for about 250 years of the development of science. It can be understood that Adam Smith does not create the concepts, but writes down the situation in which the economic relations of the time, as well as those of the preceding epochs, were developing.

As an example of previous works can be used the work 'Essay on the nature of trade in general' by (Cantillon 2021), published in the fourth decade of the eighteenth century, which gives great importance to the study of land as a source of economy and life, mainly in the chapters between X and XVII, among which chapter XII is worth mentioning:

"Everything in a State depends mainly on the arbitrariness, the ways and manners of living of the landowners, as I shall try to make clear throughout this *Essay*."

In which he shows the role of land while highlighting the property rights existing at the time and their effects on the creation of the market. In the work he develops the relationship of the products of the land with the rural and urban markets, always finding the land as the source of the wealth of society:

"In short, all the inhabitants of a State derive their livelihood and advantages from the landowners' fund, and are dependent."<sup>89</sup>

"The independence conferred by land ownership only benefits those who retain possession of the land."

"Landowners are the only individuals naturally independent of a state."

All this is analyzed from the perspective of two PF, land and labor, in which savings are relegated to a secondary role in the work, more linked to possessions in precious metals than to the development of advanced means of production for the time. From Cantillon's work, we can also highlight the sentence contained in chapter XVI on land ownership:

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XIII. 'The circulation and barter of goods and merchandise, as well as their production, is carried out in Europe by businessmen at their own risk' (Chapter XIII).



"If each landowner, in a State, had only a small portion of land, similar to that which is usually destined to the work of a single settler, there would hardly be any cities; the inhabitants would be more numerous and the State richer if each of these owners occupied in useful work the inhabitants who find their livelihood on their land. "<sup>90</sup>

The problem of land ownership is observed here from the historical point of view, it is the traditional owners in the form of farmers, landowners or nobles among others who have the power over the land and therefore over the basis of the means of production of society. It shows a social division according to access to land ownership.

In 1762 he writes (Rousseau 2017) 'The Social Contract', in which he deals with the problem of land ownership from the legitimacy of the first occupant as a worker seeking his subsistence, not so as an indefinite owner of the land regardless of the purposes of it.

"In general, in order to authorize the right of the first occupant over any portion of land, the following conditions are necessary: first, that this territory is not yet inhabited by anyone; second, that it is occupied only to the extent necessary for subsistence; and third, that possession of it is taken, not by a vain ceremony, but by work and cultivation, the only sign of ownership which, in the absence of legal titles, must be respected by others "<sup>91</sup>.

In his work he adds an element that is differential with respect to the previous vision, using repeatedly the concepts of public, social or general vision in a relationship of land with foundations of the common good. In 1754 (Rousseau 1923) he had already written in the 'Discourse on the Origin of Inequality among Men' that:

"The first man to whom, fencing a piece of land, it occurred to say this is mine and found people simple enough to believe him was the true founder of civil society."

As well as:

"When the ancients [...], implied that the distribution of land had produced a new species of right, that is, the right of property, different from that resulting from natural law "<sup>92</sup>

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<sup>90</sup> Ch. XVI. 'The more work there is in a State the richer it naturally considers itself to be.'

<sup>91</sup> Chapter IX. 'Real domain'.

<sup>92</sup> Part two

(Sieyès 1991) writes in 1789 'What is the third estate?' a work that shows once again the relationship of land ownership with the social organization of the time by highlighting the errors in the creation of the assemblies of notables as a search for solutions prior to the French revolution, in a situation that defines land as a source of political power instead of social class as the still prevailing argument of the time:

"The members of the provincial assemblies were summoned in their capacity as proprietors, and not as clerics, nobles or commoners "<sup>93</sup>.

The last contribution corresponding to the 17th century is the role of Malthus (Malthus 1970) in his 'Essay on the Principles of Population' written in 1798, from which we can mainly extract his conception of land as the sustenance of human beings and with it the limitation of land in feeding growing numbers of people. With a secondary role of the factor of production capital in a world governed by the combination of land and labor.

It can be seen how land ownership appears in the texts as a source of life and wealth for its owners in societies that were still eminently agricultural, with land being the main form of existing wealth, while at the same time there was a generalized defense of individual property. This condition was already in full transformation at a time of important changes that gave industrialization in England an increasingly important role, in which the complexity of the economy increased and new institutions were developed. These transformations brought with them a debate on land ownership, generally combining a work/cultivation criterion to justify the appropriation of previously unowned land. At the same time, the embryo of the socialization of land under the power of the state can be observed, either on the occasion of a modernization of the property structure, as well as under the consideration of land as a state good that should be socialized.

Already in the 19th century (Ricardo 2010) wrote his work 'Principles of Political Economy and Taxation' in which he again questions the appropriation of land, under the consideration that it is a question of

*"Rent is that portion of the produce of the earth, which is paid to the landlord for the use of the original and indestructible powers of the soil "<sup>94</sup>*

As it appears in Chapter II in which he discusses the properties of land as opposed to what he considers other natural assets such as water or air about

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<sup>93</sup> Ch. IV. 'What the government has tried and what the privileged propose in favor of the third estate'.

II. 'On rent', Free translation Author: 'Rent is that portion of the produce of the land which is paid to the owner for the use of the original and indestructible powers of the soil'.

where there is no such appropriation. Ricardo here delves into the differences between better and inferior land, a debate that continues in chapter IV with the role of land as the generator of the natural price from which the successive prices of all goods are derived. From David Ricardo's work we can highlight his unique analysis of land, its rent and the land tax<sup>95</sup>. He deals with the separation of land rent from the owner's rent on the basis of existing investments in stock, in what becomes one of the main problems in posing the difference between a good considered social with respect to an investment process that leads to an improvement in the profitability of land. Also valuing the difference between the different types of land and the difficulty to determine an adequate tax that represents the particularity of the land and covers the state's costs. It can be seen here how the conception of land as a social good is integrated in Ricardo's reasoning, as well as the importance given to the development of a transversal tax system that would impose the obligation to contribute to the different types of known yields.

(Proudhon 1983) published 'What is property?' in 1840, in which the problem of land is dealt with again, stressing its common ownership, and considering that the income that can be obtained from it is dependent on the work assigned to it. It is worth mentioning here the criticism of the so-called first farmers, who are considered to be responsible for the situation of the time because:

"did not foresee the consequences of the transformation of the right of individual possession into absolute ownership"<sup>96</sup>.

In the same section Proudhon goes on to address the problem of the need to use land and gives society the:

"right to fix the conditions of ownership".

In what he considers a compensation, not a lease, for the use of land as a common good and seeking that people not only have the instrument with which to work through their time, but also the material with which to do so through their access to land. Proudhon also raises the concept of complexity of society by indicating that:

"There is not a man who does not live on the product of an infinite number of different industries."<sup>97</sup> Indicating in turn that.

"a product cannot exist without others, an isolated industry is impossible".

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<sup>95</sup> Chap. X. 'Land-Tax'.

II, Sec. 3 'Of the civil law as the foundation and sanction of property'.

<sup>97</sup> Ch. III. Sec. 8<sup>o</sup>. 'That in the order of justice, labor destroys property'.

This highlights the importance of the development of societies with increasing degrees of interrelation and therefore of complexity that can satisfy people's needs.

In 1848 they write (Marx & Engels 2023) in the 'Communist Manifesto', which ends Chapter II 'Proletarians and Communists' indicating as the first measure aimed at communist revolution:

"The abolition of land ownership and the application of all land revenue to public purposes. "<sup>98</sup>

Two decades later in 1867 (Marx 2014) he writes 'Capital' where he puts forward the conception of a two-factor economy in which there is a labor-capital confrontation and in which there is a treatment of capital as a factor of production oppressor of labor in an unequal relationship between the two factors. A contribution to economic thought that promotes the two-factor conception, placing land on a second level as a form of capital, highlights here the historical study of the process of capitalization of land in England in chapter 27, in which it goes from small free owners of the fifteenth century to large landholders of the nineteenth century through a process of concentrations, expropriations and legal modifications, led to:

*"They conquered the field for capitalistic agriculture, made the soil part and parcel of capital. "*<sup>99</sup>

In the midst of the development of Marx's ideas and once the first volume of 'Capital' had been published, the marginalist revolution of the 1970s was reached, with the contributions of Jevons, Walras and Menger, in what can be understood as a moment of transformation of economic science. Along with the study of the theory of value and the foundations of microeconomics, work continues on the classical PF model (Menger 2007), when analyzing the laws governing higher order goods in his work 'Principles of Economics' published in 1871, studies separately the PF:

*"The Value of the Services of Land, Capital, and Labor in Particular "*<sup>100</sup>

In a section in which he maintains the classic analysis of land with a focus on the differences in the productivity of different plots. It is worth noting the differentiated use of land and land services in his texts, indicating in turn that land services and land services are not the same.

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<sup>98</sup> As the first of the eleven measures proposed as generally applicable for advanced countries

<sup>99</sup> Free Trad. Author: 'they conquered the countryside for capitalist agriculture, making it an integral part of capital'.

<sup>100</sup> Free Trad. Author: 'The value of land, capital and labor services in particular'.

The land is subject to the same rules as those for machinery, tools or housing.

The contemporary work of (Jevons 1911) 'Theory of economic policy', also published in 1871, contributes to economic science with an important mathematical contribution from a similar line of study of value to that used by Menger. This analysis of value can be seen in his theory of income in chapter VI when he says that:

*"It is not the rent of land which determines the price of its -produce, but the price of the produce which determines the rent of the land "*<sup>101</sup>

In addition, Jevons continues to give academic support to the three-factor model of production by devoting specific chapters to labor, land rent and capital.

At the end of the decade of the marginalist revolution appears the work 'Progress and Misery' by (George 2012) in 1879. This book sets out the reasons for the different evolutions of the level of income and its unequal distribution in the also unequal distribution of land ownership. George, after analyzing the behavior of the economy, names his book VI 'The remedy', in which he first studies what he considers six main measures of social discussion and their inability to solve the problem of misery, considering that they only have the possibility of mitigating, but not of solving the real problem, at the same time that they distance the possibility of resolution. To move on to the next section in which he considers 'The real remedy' in which he indicates that

*"Necessarily follows that the only remedy for the unjust distribution of wealth is in making land common. "*<sup>102</sup>

From this point on, he dedicates his efforts to analyze the foundations and application of a remedy that takes the form of a land tax, a tax that makes it possible to replace other types of taxes existing at the time, while at the same time promoting an increase in incentives for the exploitation of land. At this point, George's work can be considered a milestone that opened the door to a type of tax with connotations different from those that were being implemented in most developed countries.

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<sup>101</sup> Free Trad. Author: 'it is not the rent of the land that determines the price of its production, but the price of production that determines the rents of the land'.

<sup>102</sup> Free Trad. Author: 'It implies that the only remedy for the distribution of wealth is to convert land into common property'.

Six years later, (Mill 2009) he publishes his 'Principles of Economic Policy', in which he deals once again with the problem of land ownership, defending in the first chapter of book II, that:

*"The institution of property, when limited to its essential elements, consists in the recognition, in each person, of a right to the exclusive disposal of what he or she have produced by their own exertions."*<sup>103</sup>

Given that the land has associated labor and capital that allow it to provide higher levels of agricultural productivity, he considers exclusivity for its exploiters to be lawful. He then concludes the chapter by stating:

*"With regard to the land [...] he is morally bound, and should, whenever the case admits, be legally compelled to make his interest and pleasure consistent with the public good"*<sup>104</sup>.

With respect to PF Mill begins by studying the requirements of production, using 'Appropriate natural objects' instead of mentioning land as an all-encompassing PF. In this way, he mentions the limitation of precious metals or coal, as well as land, while at the same time differentiating land according to its quality and indicating that in the most developed countries for the time available arable land is scarce, a situation that does not occur in the newly colonized countries where it is a practically unlimited resource.

Another five years later, in 1890, he published (Marshall 1920) 'Principles of Economics', a work in which, more than 100 years after 'The Wealth of Nations', he continues to devote an entire section (book II) to the study of PF, which on this occasion he lists as

"land, labor, capital and organization". With regard to the study of land, Marshall resorts to the classical concepts of land fertility or diminishing returns to deal with the problem. Although he mentions the role of mining or construction, he ends up retreating to land productivity from the agricultural point of view that still predominates in the mentality of the time. Noteworthy here is his consideration of the problem of land ownership, of which he indicates that:

*"It is the foundation of much that is most interesting and most difficult in economic science"*

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<sup>103</sup> Trad. Free Author. 'The institution of property, when limited to its essential elements, consists in the recognition of each person of the availability of that which he has produced by his own means.'

<sup>104</sup> Trad. free Author. 'in relation to land [...] the (landowner) is morally bound to make his interest and pleasure are compatible with the public good'.

<sup>105</sup> Book IV. Ch. II. trad. lib. author: 'It is the foundation of much that is most interesting and difficult in the science of economics'.

He proposes the consideration of <sup>organization</sup><sup>106</sup> as a PF, a contribution that, although not totally novel since Menger mentions it in the form of 'entrepreneurial activity', stands out for its total linkage with the three classic PFs to develop a proposal of four PFs, in which the factor called 'entrepreneur' or 'organization' appears as an economic concept, instead of as an *input* received by the company or market to generate its supply.

Well into the twentieth century he published (Fisher 1907) his study '*The Rate of Interest*', which despite not explicitly dealing with PF as the main elements of this study, stands out for the use of land as a capital good, as shown in:

*"Since capital is productive, it seems self-evident that an investment of \$100 in productive land, machinery, or any other form of capital will receive a rate of interest proportionate to its productivity."*<sup>107</sup>

This consideration is repeated in:

*"Any capital-wealth, such, for instance, as land, railways, factories, dwellings, or food."*<sup>108</sup>

Here he also highlights the consideration that in the society of the early nineteenth century there were four groups of people, which were considered exclusive, such as workers, entrepreneurs, capitalists and landowners, about which he indicates that for his time in which social classifications have varied:

*"But, in fact, the entrepreneur is almost invariably a "capitalist"; i.e. is the owner of other capital than land; the "capitalist" is frequently a landlord, or vice versa; and even the laborer is to-day often a small capitalist."*<sup>109</sup>

In 1936 Keynes' 'General Theory of Employment, Interest and Money' was published (Keynes 1965), a work that was a milestone both for its historical moment and for the subsequent study of economic science. Since its publication, a line of thought has been opened in the search for the best interventionist tools to guide the economy towards economic growth through fiscal policy, public spending and regulation.

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<sup>106</sup> It is worth mentioning here the factor of production "Entrepreneur" or "Entrepreneurial", which is mentioned in numerous texts as the fourth factor of production in the economy. See the concept of "*Entrepreneurial Activity*" in (Menger 2007)'s 'Principles of Economics', p.160-161, the "*Organization*" as the fourth agent of production in (Marshall 1920)'s 'Principles of Economics', p. 84, or the "*Entrepreneurial Function*" in 'Capitalism, Socialism & Democracy' in (Schumpeter 2018), Ch. XII, p. 131-134.

<sup>107</sup> Ch. II. P. 12. trad. lib. author: 'Since capital is productive, it seems evident that an investment of \$100 in productive land, machinery, or other form of capital will receive a rate of interest proportionate to its productivity'.

<sup>108</sup> Ch.II. p.14. Author: 'any assets, such as land, railroads, factories, housing or food'.

Author: 'In fact, the entrepreneur is almost invariably a "capitalist"; that is, he is the owner of capital other than land; the "capitalist" is often a landowner, or vice versa; and even the worker is nowadays often a small capitalist' (p. 230).

achievement of specific objectives desired by the political authorities. In his work the conception of land as a capital good is not discussed, the main mentions appear in chapter XVII, which deals with the 'Essential properties of interest and money', mentioning aspects such as the value of land based on its liquidity, the interest on mortgages contracted or the relation of interest to the possession of land<sup>110</sup>, in what can be considered an acceptance of land as an investment good to be owned. Land appears here as a capital good subject to conditions similar to those of any other capital. The doubt as to the proper treatment of land has disappeared, the consideration of the problem of land ownership, which Marshall considered to be the most interesting in economic science, has also disappeared, to become just another capital good. Given the importance of Keynes' work for the development of later economic thought, the discussion of land ownership loses interest for new researchers.

Four years after Keynes' work, the Austrian economist published 'Human Action' (Mises 2021), a radically different work in which he recovers the study of the classical foundations of economics. In it he devotes an entire section (XXII) to the study of 'The Original Non-Human Factors of Production', in which he indicates:

"Land, in an economic sense, is only a factor of production, and the laws that determine the price of land are the same as those that determine the prices of all other factors of production."<sup>111</sup>

Where he talks about the depletion of natural resources such as mines or oil fields, as well as land as a 'living room' and preferences for spaces ranging from the most connected to those with the best views. On PF, Mises maintains the structure of four categories in the form of land, labor, capital and entrepreneur<sup>112</sup>, however, he uses the concept interchangeably to speak of factors or sub-factors. In his analysis of the prices of higher order goods in chapter XVI he states:

"It is not the consumers nor the owners of the means of production - land, capital goods and labor - but agile and speculative businessmen who move the market by seeking personal profit in price differences"<sup>113</sup>.

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<sup>110</sup> Ch. XVII. 'The high liquidity premiums formerly attached to land ownership and now attached to money'.

<sup>111</sup> Chap. XXII. p. 752.

<sup>112</sup> A question already referred to by Menger, Marshall or Schumpeter.

<sup>113</sup> Ch. XVI, p.397



This work is also a milestone in that it gives academic justification to the individual as the economic agent from which the study of science starts, but at the same time maintains the foundations of analysis in the classical structure of PF.

With Mises' work, the decade of the forties opens, in which important contributions appear with different links to the Austrian school of economic thought. (Schumpeter 2018) publishes in 1943 his work 'Capitalism, Socialism and Democracy', a text that uses the study of PF and land ownership in its role in the conformation of Economic Systems.

"Let us consider what would appear to most socialists [...]. Our scheme can obviously not imply that a 'land rent' is to be paid to any landowner. "<sup>114</sup>

He goes on to say:

"All that is mercantile or capitalist in the rent of land, both from the economic and sociological point of view, and all that may please the advocates of private property (private rent, rents, etc.) has been entirely excluded. "

Finally, it is worth including his study of entrepreneurship together with the concept of 'creative destruction' as a work that gives further support to the consideration of the entrepreneur as a factor of production.

A year later, in 1944, 'The Road to Serfdom' was published by (Hayek 2020), a work also associated with the study of economic systems in the search for a free society. A freedom that appears linked to the need to have private property, without differentiating between the ownership of the goods of labor and savings with respect to the goods prior to the existence of the human being. Although he does not expressly mention the problem of land ownership, he does use it in his comparison with privileges existing in previous societies, as he shows in chapter VI on planning and the rule of law:

"It would indeed be privilege if, for example, as was sometimes the case in the past, the ownership of land were reserved for members of the nobility."

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<sup>114</sup> Ch. XVI, p.330.  
VI, p.143

In allusion to the contemporary contrast in which the private ownership of land could be acquired by any citizen, thus depriving it from being treated as a privilege.

The consideration of the existence of three PFs is also shown in (Hazlitt 1946) 'Economics in a Lesson', a work whose importance is recognized for its role in the diffusion of economic thought and for its orientation towards the general reading of people with less economic knowledge. He emphasizes the continuity in the analysis of PFs by indicating in chapter XI dealing with 'Whom do tariffs protect' how "labor, capital and land" vary their productivity according to the tariff criteria treated.

In 1948 Paul A. Samuelson published the first version of 'Economics', a work noted for its consideration as a reference for university studies throughout the world since its publication, an aspect that has an implication in the form of laying the foundations for the development of economic thought. Its foundations maintain the existing elements since Adam Smith, as shown in Chapter I, which deals with the 'Central Concepts of Economics' in which the inputs and outputs of the process of economic transformation are studied, indicating:

*"Another term for inputs is factors of production. These can be classified into three broad categories: land, labor, and capital."*<sup>116</sup>

It then goes on to develop each term individually. This enumeration of the three PFs is repeated throughout the text, among which it is worth mentioning chapter XVI on 'Taxation and Public Expenditure' in which, after indicating that governments must pay for their programs, he goes on to say that 'under the flow of taxes, the government really needs is the scarcity of land, This phrase, stated from the point of view of direct diversion of resources from the market to the public sector, can also be understood from the indirect point of view of taxing PFs to generate income to pay for the amounts incurred by the public sector.

The line of thought that emerged from Keynes had a new exponent in the American economist (Galbraith 2012), who published in 1958 'The Affluent Society', in which he continues to deepen the need for state intervention. In it he mentions in chapter V the solution proposed by Henry George indicating:

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<sup>116</sup>Ch. I, p.9, Author: 'Another term for inputs is factors of production. These can be classified into three general categories: land, labor, and capital.'

"It was too drastic a remedy, if not applied [...] the consequence would be continued poverty combined with growing inequality and increasing insecurity "<sup>117</sup>.

To later find its alternative in chapter XXI, indicating that:

"The solution consists in a tax system that automatically places at the disposal of the public authorities a pro rata share of the growing income, so as to serve public purposes. "<sup>118</sup>

Both sentences published in the same work support the analysis in this paper, firstly, because the opinion on the solution provided by George does not have negative connotations, but is eliminated from his analysis for reasons of feasibility, and secondly, because it supports the alternative in models that promote market intervention.

Friedman's 'Theory of Prices' (Friedman 1972) reflects the evolution of the thought economic in relation to land as FP:

"This tripartite division was undoubtedly a consequence of the social problems of major importance at the time when the classical theory was developed [...]. In most situations now of importance, land, in any meaningful economic sense, is indistinguishable from the other forms of capital. "<sup>119</sup>

We can see how the study of economics has evolved from classical thinking, in which works asked questions about the fundamentals of economics, defining its basic elements and interrelationships, to more advanced issues such as the return on investment, the search for economic optimums, growth, inequality, distribution, market failures or public intervention to remedy them. Economics seems to have taken over the classical foundations and has been taking its debate to new questions, as well as new visions of the issues previously analyzed in the 19th century. Among the issues already studied by economists such as Mises or Hayek appears the problem of freedom versus intervention, an area in which one can also find the contributions of (Friedman 2022) in 1980, who dedicates his work 'Freedom to Choose' to combat the growing role of public intervention in the economy with a main mention to the absence of incentives and the separation between objectives and results of the public sector, which causes the inefficiency of interventions. He highlights the set of solutions that he provides in his

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<sup>117</sup> Ch. V, p.67

<sup>118</sup> Ch. XXI, p.261

<sup>119</sup> Ch. XI, p.246

chapter 10, all of them related to the reduction of taxation, the liberalization of internal and external trade, or aspects such as currency stability and inflation. In its recommendations on taxation, it mentions its proposal for a replacement amendment in which it includes a difference in tax treatment when indicating:

"The word person shall exclude corporations and other legal persons. "<sup>120</sup>

Bringing a differential element associated with a more developed world in which there is a high capacity to separate the mercantile activity from the private activity of human beings, and to a greater extent to separate the properties associated with mercantile uses from those destined for private uses.

It can be seen how among the classical authors there is a conception of land as a good of society that cannot be exclusively appropriated by any person, in what becomes a confrontation with the status quo of the time in order to, as will be seen below, dilute the academic debate among other interests to which a greater social interest is granted, among which public policies and the distribution of income and wealth stand out. This moves the economic debate away from its roots in order to study problems and their corresponding solutions under the umbrella of intervention. From this point on, the treatment of PF is maintained in academic manuals, in which the formulation of land, labor and capital is repeated over time.

The 'Curso de Macroeconomía' of (Bajo & Monés 2000) indicates the PFs in its formulation.

traditional:

"These resources (usually called factors of production) comprise natural resources [...], the services provided by the labor force, and the means of production produced or capital. "<sup>121</sup>

In the handbook 'Macroeconomics' by (Abel & Bernanke 2004):

"The two most important factors of production are capital [...] and labor [...]. However, in modern economies, production often responds significantly to variations in the supply of other factors, such as energy or raw materials. "<sup>122</sup>

This assertion, as later reflected in the Production Function, simplifies the aggregate PFs to two, putting the PFs of nature at the next level.

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<sup>120</sup> Ch. X, p.385

<sup>121</sup> Ch. I, p.14

<sup>122</sup> Chap. III, p.70

In a handbook such as 'Economic and Organizational Environment for Engineers' (Morales & Núñez 2022), the FP structure is maintained, indicating that:

"These are in fact the basic productive factors defined by classical economists:

- Land,
- Work,
- Capital"<sup>123</sup>

Recovering the concept in the analysis of the 'Concept of Enterprise and Entrepreneur':

"(In enterprises) factors of production (land, labor and capital) are combined to create goods and/or services. "<sup>124</sup>

In short, the classical PFs formulated at the end of the eighteenth century continue to be used as the basis of economics, their study and ownership being relegated to questions considered more urgent, such as economic growth, productivity, employment, savings, inflation or capital formation (Abel & Bernanke 2004).<sup>125</sup> This situation can be seen as the result of a formulation of market relations, with the functioning of the economy providing the basis for the explanation of PFs, instead of the description of the natural foundations of PFs being the origin of their classification. At this point the question arises as to the adequacy of the concept of capital, together with its yield, as a form of ownership of all the goods found on earth. This is the moment when the questions enunciated intensely in the 19th century, which could be summarized as: What economic foundation defends the exclusive and indefinite ownership of land and its yield in the form of capital assets?

### **5.3. Characteristics of the Classic Factors of Production**

As has been observed, land, labor and capital have underpinned economic thought since its conception as a science. They have been shown as a definition of the elements on which the economy can act in the form of *inputs*, assimilating the uses and customs of previous societies and shaping the current economic structure. It is on the basis of them that the accounting of institutions is formulated, that the

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<sup>123</sup> Chap. III, p.57

<sup>124</sup> Part II, Ch. XI, p.184

<sup>125</sup> Chap. III. P.69

conditions of their ownership or that public intervention is regulated. This classic conception can be seen in Marshall's enumeration of PF (Marshall 1920)<sup>126</sup>:

- **Earth:** as the forces with which nature gratuitously helps human beings. Their remuneration has traditionally been conceived as Earth Rent.
- **Work:** as the dedication of human beings to economic matters, either through manual or mental effort. Whose remuneration is the salary.
- **Capital:** understood as any accumulated provision for production and profit. With interest or profit as remuneration formulas according to the investment conditions.

	<b>Earth</b>	<b>Job</b>	<b>Capital</b>
Origin	Assets of the nature	Human effort	Savings
FP Produced	NO	NO	YES
Fruit of human action	NO	YES	YES
Income generated	Land rent	Labor income (Salary)	Income from capital (Benefit, interest)
Financial Consideration	Assets (Balance Sheet)	Cost (Cost Account Results)	Assets (Balance Sheet)
Taxation	Depending on your owner	Job	Capital

**Table 15:** Basic characteristics of classic PFs . Source: Prepared by the authors.

Table 15 summarizes the basic characteristics of classic PFs, indicating their origin, their status as a factor of production produced, their existence as a result of human action, the definition of their income, their location in the financial statements of companies and their taxation.

Land is considered as a PF that groups together all the goods of nature, which is why it exists independently of human action, i.e., without having been produced by it. Ownership of land makes it possible to obtain income from it, with ownership appearing on the balance sheet of the financial statements, while income appears on the income statement. The taxation of land varies according to the concept in question and its owner. For example, the lease of an urban plot of land is taxed differently if its owner is a natural person or a legal entity, as well as according to the uses to which it is put.

<sup>126</sup> Book IV, Ch. I, p.84

With respect to FP labor, its origin is human dedication to economic activities, which implies that it is the result of human action. Human beings obtain an income from work in the form of a salary for such dedication, which appears as a cost in the income statement for the person who has contracted the work. The income from work is subject to taxation by the individual who performs it.

In the case of capital PF, it appears as savings invested in economic activity, it is therefore a PF produced by human action. Its application makes it possible to obtain an income in the form of profit or interest, depending on the type of investment made. As a form of investment, capital appears on the assets side of the balance sheet of its owners. Its income appears as return on capital.

### **5.3.1. Capitalization of Production Factors**

This classification of the three PF accepted from the economic criterion faces a greater complexity in its contact with the market. Every PF subject to forms of property is under a concept of capitalization, whether it be labor, whose capitalization has traditionally been associated with slavery, or land, whose capitalization is part of today's economy.

The classic PF land enters the production system through its economic valuation and obtains a rent from the land. If the land is available as property, it will be valued in monetary terms just like any other asset, it will have been acquired under the same market conditions as other assets and will therefore behave to all intents and purposes as capital<sup>127</sup>. In the event that the availability of the land is not in the form of ownership, but as a lease to another owner, it will produce a rent that will ultimately act as rent for the land of the final owner, becoming a profit for the accounts of that owner. In this case the behavior would still be similar to that of any other capital investment. In other words, under the current consideration of productive factors, land ownership is subject to valuation in economic terms and behaves similarly to capital ownership in terms of its role in the balance sheets of companies. Under this consideration land and capital come to be understood under the same consideration of FP capital, being the profitability of the investment the parameter that allows to choose between both investments (Fisher 1907). This situation can be considered as a general behavior in the economy, affecting the private capital of citizens and

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<sup>127</sup> See example of the case of China (Cheng et al. 2021) (Xu et al. 2018) in the conception of the political need to intervene land ownership seeking to reconcile efficiency in land distribution with protection against its capitalization.

companies, as well as to public capital from other institutions and states that can obtain resources from the lease or sale of existing lands (Peterson 2006).

In opposition to the previous case and understanding capital goods as produced PF, any element that is not the result of an incorporation to the production process could not be understood as a capital good. In this sense, elements that are part of the PF land, such as an empty plot of land, a mine or an oil well, could not be understood as capital goods, in the same way that agricultural animals could not be understood as capital goods.

#### **5.4. Formulation of the Factors of Production based on their Characteristics**

As has been indicated, the PF land presents significant differences between the elements that compose it: a wasteland, an oil well, or an animal in the wild present unique characteristics that cannot be studied under the same criteria. Thus, a wasteland is an empty space whose dimensions and characteristics can be used for the development of an economic activity, an oil well is a material good in its natural state that can be extracted for its incorporation into the economy, and a wild animal is a living being under which there is no property right.

##### **5.4.1. Space**

The first is Space, a factor that for traditional economic uses could be understood in the form of surface on earth, but that, as human beings reach places outside our planet, requires a more complete and general definition. It is economically more appropriate the definition given in the RAE "Extension that contains all existing matter". Regardless of whether it is considered as a surface or a volume, in economic terms it implies the place where an economic activity takes place. Space is the starting point for the following economic factors, so that it is the place where other natural resources will be located, where work will be carried out or where capital will be found.

If, in order to simplify the analysis, we currently consider only the surface of the earth in the 'economic' space, according to data from the *Encyclopædia Britannica*<sup>128</sup> we would be faced with a clearly delimited productive factor that has 510,064,472 km<sup>2</sup>, of which approximately 71% is covered by water and the remaining 29% by land. This land surface in turn presents notable differences such as the altitude with respect to sea level or the climate in the region.

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<sup>128</sup> See: [britannica.com/place/Earth/](http://britannica.com/place/Earth/)



The economic uses that can be made of it vary from place to place, which leads to a different valuation of the economic uses that can be made of it.

From an economic point of view space is independent of the existence of other productive factors in it. Their existence can modify the conditions of space, making it more or less attractive for economic functions, but such existence will have a beginning and an end. Terrestrial space is not immutable from an economic point of view, it is subject to continuous transformations under the effect of the forces prevailing on earth. Natural events such as the movement of tectonic plates or the action of volcanoes can modify the availability of such space, increasing or decreasing it. Human actions have also made it possible to create new land spaces where previously the surface was covered by water. Although significant transformations may occur, history shows how human economic life has developed in a world with a certain stability in which the space on the surface of the earth has remained reasonably stable.

The only economic space over which human beings have had power for most of history has been the surface of the earth. The concept of economic space acquires a new dimension from the beginning of aviation, going from being a surface in the traditional conception to a volume. Instead of the consideration of surface, there is a spatial connotation at the moment when an economic event can take place in a volume, regardless of whether it occurs at a distance of meters or kilometers above the earth's surface. At this point, the activity of drones, helicopters or airplanes moving at different altitudes above the surface can be considered. The development of regulations on altitudes or flight corridors includes the concept of volume to the space production factor.

Returning to the economic conception, space acquires value as the market develops on it. A space in an unlimited plain<sup>129</sup> (George 2012) presents no competition for the first settler but shows great competition when a city has been built on it. In the same way that a settlement on another planet such as Mars would not present competition at present, but may present competition as technology can reduce and even normalize the current difficulty of accessing it. This concept of volume of economic space acquires a higher connotation when overcoming the link of the human being to the earth and being able to move and be in outer space or to reach other celestial bodies. From the moment that places outside the earth are accessible, one is in a position to add these places to the economic space of the human being. The fact of being able to reach them implies the

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<sup>129</sup> Ch. XIX, p.122

The fact of being able to carry out economic activities on them and therefore they acquire economic meaning even before any human being has access to them. At this point it is worth noting the ability of human beings to apply current economic considerations to goods that are currently beyond their reach, as shown (Virgiliu 2000) when considering the United Nations as the only body capable of delivering property rights in outer space.

#### **5.4.2. Inert Matter**

Inert Matter is any material form other than a living being. Although it is initially distributed in space, its place does not keep a previously defined order and its present situation does not require that the previous or future situation be maintained. It can be said that the fact that a good of nature has remained for prolonged periods in the same place does not bind it indefinitely to the same place. From an economic point of view, material goods are susceptible to change their location, and are likely to do so when they are used as a factor of production in the economy. Whether we are dealing with resources that are highly linked to a space, such as hydrocarbons or minerals, this linkage will be casual and may be the result of modification under natural or artificial conditions. Inert matter has traditionally been considered a capital good despite having unique properties compared to other goods in this category. The role of the aforementioned hydrocarbons stands out due to their importance in the current market, as well as the role of water (Dales 1968). These are goods that are part of human economic activity. In cases such as that of water, they are basic for human life, while in most cases their use is dependent on needs, which makes them all susceptible to be used for the achievement of human beings' purposes. From this point of view, it is necessary to define the relationship between society and Inert Matter. We are faced with a relationship in which the human being has the capacity to transform Inert Matter, at the same time as he has the capacity to estimate the situation in which the relationship with the rest of nature's goods will be in the future.

Inert Matter enters the current economic system at the moment of its discovery, based on the acceptance that the system works on the basis of a social agreement that generates a human right over nature. From that moment it becomes an economic good, forming part of the stocks over which the human being has the capacity to make decisions. The conception of stock of Inert Matter on Earth, as in any other celestial object, makes it susceptible to be used in the economic process. The starting point is given in the absence of property,

both of the individual and of the institutions created by him, including states, such property is not given either to the juridical individual or to the juridical collective (Bigo 1968)<sup>130</sup>.

The importance of Inert Matter in the economy is not only related to human needs, but the concept of sustainability has also gained importance:

*"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*<sup>131</sup>

This concept presents different treatments depending on elements such as the renewable/non-renewable ratio or the externalities generated by the consumption of a given Inert Matter. When facing the situation of renewable and non-renewable, in the case of renewable resources, consumption at a rate equal to or lower than the renewal rate guarantees future generations the availability of this resource to satisfy their needs. The case of reusable resources works in the same sense in that once they have been made available to the economic flow, they can be used repeatedly through a process of recycling. In opposition, non-renewable resources present the limitation that the only criterion of sustainability is the absence of their use, since any level of current use limits the possibilities of future use.

#### **5.4.3. The Living Beings**

As opposed to the condition of stock of Inert Matter we find ourselves with that of flux proper to living beings that exist for a very reduced time in comparison with that of the universe and of the majority of the forms of Inert Matter that surround us. In the present distinction of PF it is worth mentioning the consideration of living beings as an independent entity due to the fact that their characteristics pose fundamental differences with respect to space and Inert Matter. Although the present work is not intended to develop the analysis of the characteristics of this productive factor, due to its importance it is worth mentioning some elements.

By observing living beings as an independent factor of production in the economy, they can be given a specific treatment and a debate on their economic consideration can be developed. Under this situation, the relationship of human beings with the rest of living beings has presented different conditions of ownership. In the

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<sup>130</sup> Part two, p.54

<sup>131</sup> Brundtland Report, 1987. Chap. II, 'Towards Sustainable Development', Trad: 'Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs'.

Nowadays, agricultural animals generally live under the ownership of people who are responsible for their care and maintenance, and the life of these living beings without their caretakers can become unviable. At the same time, there are other animals that continue to develop their lives without any link of belonging to people, being independent and self-sufficient, i.e., they live outside the functioning of the market. This link of ownership makes it possible to differentiate living beings already integrated into the economic system from those that are not.

The next question is the passage from living being as an entity independent of the economy to living being as a factor of economic production. This aspect, as occurs with Inert Matter, is produced when society accepts the delivery of the rights over this being to certain persons in exchange for a consideration for society. From that moment on, the living being and its descendants become subject to the property rights of the corresponding legal person, who is responsible for it, in what can be understood as a process of capitalization.

**5.4.4. Summary Table of Production Factors**

Under the described conditions, the resulting PFs are: Space, Inert Matter, Living Beings, Labor and Capital, maintaining the characteristics indicated for Labor and Capital as classical PFs, but having to develop those proper to the three PFs of nature as they appear in Table 16 .

	<b>Space</b>	<b>Inert Matter</b>	<b>Living Beings</b>
Prior to human action	YES	YES	YES
Existence	Indefinite	Indefinite	Temporary
Extinction by use	NO	YES/NO	YES/NO
Capitalization of PF	NO	YES	YES
Income generated	Usage	Transmission of property	Transmission of property
Temporariness of rents	Periodical	Timely	Timely

**Table 16:** distribution of the Earth PF under the analysis carried out in the form of Space, Inert Matter and Living Beings. Source: own elaboration.

In all cases these are PFs prior to human action, which implies that none of them is a produced PF. Space poses an expectation of indefinite existence for economic terms, it is not subject to extinction conditions due to its use, nor does it require a capitalization process to become part of the market, which allows for an

generation of periodic income to the company based on the contractual rights granted.

For Inert Matter, its existence is mostly indefinite from the economic point of view, it can be subject to extinction of its uses as it occurs in the example of fossil energy sources, due to which its capitalization is required to be able to be used. In the capitalization process there is a timely transfer of ownership.

With respect to living beings, they are subject to a limited life, their economic uses may be subject to extinction due to their use (e.g. vegetables, livestock for final food) or not (e.g. fruit trees, livestock for dairy products). For their exploitation, the transfer of ownership is necessary, a situation that occurs occasionally.

These differences lead to propose the distribution of the Earth PF in three independent PFs in the form of: Space, Inert Matter and Living Beings as shown in Figure 39.

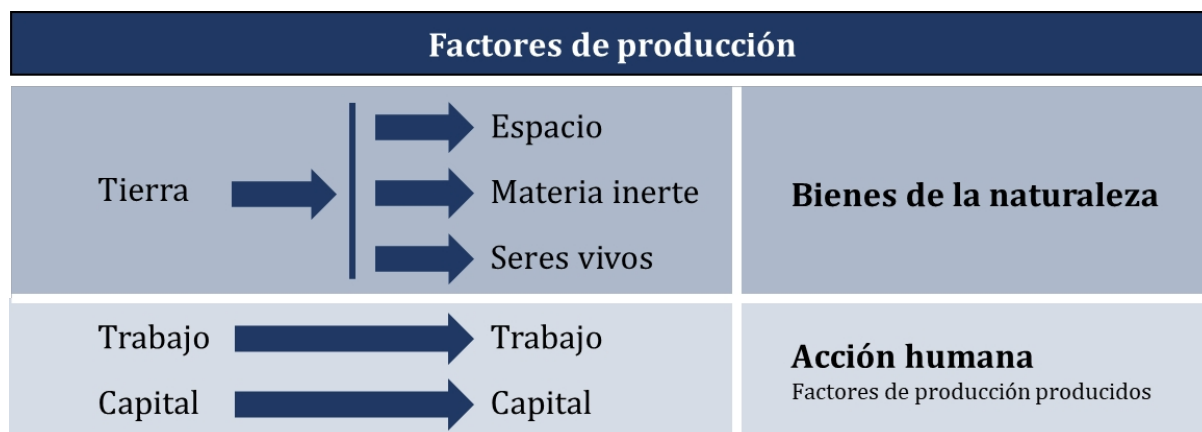
Space, Inert Matter and Living Beings existed prior to the human being, so they are not produced PFs, but primary PFs whose property is not supported in the sense mentioned by (Mill 1885):

*"The institution of property, when limited to its essential elements, consists in the recognition, in each person, of a right to the exclusive disposal of what he or she has produced by their own exertions, or received either by gift or by fair agreement, without force or fraud, from those who produced it."*<sup>132</sup>

Since they all exist prior to human action, no one can own them prior to their entry into the economic system.

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<sup>132</sup> Book. II, Ch. VI, p.200, Trad. Lib. Author: 'The institution of property, when limited to its essential elements, consists in the recognition of each person of the right to the exclusive disposal of that which he has produced by his own efforts, or received either by gift or fair agreement, without force or fraud, from those who produced it'.



**Figure 39:** representation of the traditional PF structure and those shown in the production function reflected in the document. Source: own elaboration.

### 5.5. The Ownership of the Factors of Production

Space, Inert Matter and Living Beings in the wild are PF that have not been produced by anyone; they are not produced PF, which means that they cannot be susceptible to private property without limiting the conditions of freedom<sup>133</sup> of the rest of the citizens. Granting a citizen indefinite ownership over these natural PFs without generating a market consideration to the rest of society implies a "limitation of the life project of others", or what amounts to the same thing, a reduction of their freedom.

It is necessary to analyze the way in which these PFs generate rents and the foundations that define their ownership, bearing in mind the importance of establishing a system of ownership that allows the PFs of nature to be placed in the hands of the entire planet, rather than capital (Soto 2000)<sup>134</sup>. In contrast to the labor and capital PFs that maintain their definition based on the classical criteria, in which it is necessary that there has been a coercive power of states or individuals (Acemoglu & Robinson 2023)<sup>135</sup>, Space, Inert Matter and Living Beings are differential elements with respect to the classical analysis whose rents must be developed<sup>136</sup>.

<sup>133</sup> (Benegas Lynch 2015) 'Freedom is reciprocal respect', p.10.

<sup>134</sup> Chap. VI, p.236

<sup>135</sup> Ch. XII, p.408

<sup>136</sup> See the current consideration of the ownership of factors of production in (Rothbard 1962), p. 559: 'One distinction between wages and land rents, then, is that the latter are capitalized and transformed into interest return, while the former are not.'

### 5.5.1. Ownership of Space

Space is necessary for the realization of any human activity. It requires defining the property rights that precede the economic activity on it, which implies the temporary cession of social rights to individuals for the sake of its exploitation<sup>137</sup>. This temporary cession of rights can be made under a consideration from the interested party to society, which is deprived of carrying out any other activity on the space in favor of the person who can get the most out of it. What is indicated here implies that any space is subject to an auction process in order to determine the person who is willing to give it the most profitable use in the market, allowing in turn to obtain the maximum possible income for the company. Under this situation, it is the market that continuously assigns the value to the space, which will lead to a highly demanded space for reasons such as its high traffic or the buying attitude of citizens.

In these conditions it is the market under the criteria of supply and demand that determines the prices of all available spaces, it is a right based on a contractual agreement to lease a space to the company with the objective of being used for economic exploitation, a lease that fixes from the beginning the economic and temporal conditions and that obliges the return of the space in the same conditions existing at the time of the beginning of the rights.

This situation leads to several problems under which the market must offer solutions, the most important of which are:

- Investment in fixed assets over space
- The temporality of law
- Ownership of rents

With regard to the problem of the investment made on the space, this investment, understood as an economic exploitation activity, carries with it a temporary amortization process that shifts the problem to this economic dimension. As long as citizens require to rent temporary accommodation, the market will find the means to generate the profitable supply of such accommodation in time and form, in the same way that an investment in an agricultural plantation could be made taking into account the costs associated with the availability of the land and the investment made over time, costs which by the laws of the market will be passed on in the generation of prices.

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<sup>137</sup> It can be seen the dissatisfaction with the current model of capitalized land associated with the neoclassical economic model as indicated by (Czyżewski & Matuszczak 2016). In this case the proposal is based on the consideration of FP Space, without valuations of the participation of subsidies that modify the natural equilibrium of the market under efficient conditions.

and on the viability of farms, aiming at a new market equilibrium.

Division	Group	Maximum period
Agriculture, livestock and fisheries	Fruit trees, citrus and vineyards	50
	Olive grove	100
	Wharves and loading and unloading facilities	34
Energy and water	Land dedicated exclusively to landfills	50
	Hydraulic, pumping and mixed power plants	68
Extraction, transformation of non-energy minerals and by-products of the chemical industry	Wineries and cellars	68
Commerce, hotels and restaurants. Repairs	Gasoline and lubricants sales at gasoline stations service: Underground tanks	34
Transportation and communications	Surface Rail Transportation: Tunnels and grading	100
	Subway rail transport: constructions civilians	100
	Operation of highways, roads, bridges and tunnels toll	100
Common elements	Rest of civil works	100

**Table 17:** Compilation of headings of long-term amortization periods based on the data included in the Annex to the table of amortization coefficients of RD 1777/2004, of July 30, 2004, approving the Corporate Income Tax Regulations. Source: Prepared by the authors based on the RD.

In relation to the time problem, it becomes a question of determining the amortization periods of the investments made on the space. Thus, the delivery of rights over a space in which a complex infrastructure is built may require a longer amortization period, while in the case of an industrial building, fractions of such period may be required. It is through the amortization process that sense is given to the generation of profitability of the space, being for the company the combination of maximum rents with minimum terms the one that provides the greatest value, being able to put back on the market under updated conditions the spaces whose rights are exhausted. As a guideline value, the depreciation tables for assets currently in use in Spain can be used, as set out in Royal Decree 1777/2004 of July 30, 2004, approving the Corporate Income Tax Regulations, which includes a table of representative values with



longer periods for different groups in Table 17. Terms of a maximum of 100 years are shown for the operation of infrastructure, civil works or agricultural plantations such as olive groves, which would imply an annual amortization of 1% of the value of the right over the space acquired.

Under the aforementioned allocation of rights, it is the market in its efficient condition that allocates the maximum rent of space and therefore allocates the productive factor.

Having considered the above points, it remains to analyze the ownership of the rents generated, which, as a social good prior to human action, belong to society and should be delivered to it. The question exceeds the objectives of this paper, and requires discerning between different aspects, among which are included:

- **Spatial:** the rent of the space is representative of the community that is located around the space as the source of the value of the space, or it belongs to all citizens of the land as a whole.
- **Distribution:** the total amount generated must be given aliquotly to all citizens, or, being the result of the community's action, it must be destined to community purposes. It should be noted that the community is subject to the spatial conditions of the previous point.
- **Management:** in case they are destined to community purposes, what aspect legitimizes the citizens who are in charge of the management of the society's revenues.

In this section it is worth highlighting the wide range of possibilities for future studies, including, among others, incentives for investments with rapid amortization to the detriment of others that require more time, aspects such as the decrease in the profitability of maintenance as the term of the rights is reduced, the conditions for improving the space based on investments in assets whose durability is greater than the amortization periods or the rights of first refusal on spaces whose assignment ends so that the existing economic activity can be maintained under the updated market prices.

### 5.5.2. Property of Inert Matter

With respect to Inert Matter, the question is different from that of space in that it is not a question of a transfer of the right of property of use, but of a delivery of said factor of production indefinitely, that is, a capitalization of the factor of production that at the moment in which it is delivered becomes part of the capital of the person who owns it and can use it for whatever purposes he wishes. An indefinite sale that behaves as an element of creation of the market, which implies that in the

When society accepts the delivery of this common good to the market, the market expands the quantity of goods on which it acts.

As a source of market creation, the volume of Inert Matter in its different forms will determine both the size of the market and the company's income. The market is subject to society's decisions on the amount of Inert Matter to be incorporated. These decisions have implications in different directions:

- Firstly in the generation of market prices, causing for example an expected price increase in conditions of supply restriction or on the contrary a price decrease in case of an increased introduction of Inert Matter.
- Secondly, in the form of society's income, on which the maximum level of income could be estimated according to the available supply and demand conditions.
- And thirdly, it incorporates a criterion of sustainability of the ecosystem in which the human being lives when acting on the source, an aspect that is dealt with in the section on 'Sustainability of the Factors of Production'.

Under these three criteria, price formation and the generation of social income are relegated to the sustainability of the ecosystem. A sustainability that analyzed from an exclusively economic point of view, allows the availability of the different forms of Inert Matter in the creation of the future market.

### **5.5.3. Property of Living Beings**

The question of the introduction of living beings into the market bears similarities with what was stated for Inert Matter; when property rights are handed over to certain persons, they become assimilated as capital goods for their owners, goods will develop a market behavior in the search for their profitability under the application of other PF. This search for profitability does not enter here in the adequate care of living beings, but in the impact that the profitability of the factors will have on them.

This may be considered the treatment of an agricultural element such as a fruit tree or an animal in a livestock production, these are living beings to which a set of PF is dedicated with the objective of generating profitability, so that the market will be expected to provide them with maintenance, offer them a space on which to develop their existence, transport them the complex elements necessary for their growth, the capital in the form of machinery that increases their productivity or infrastructure and buildings that will increase their productivity, or the capital in the form of machinery that increases their productivity.

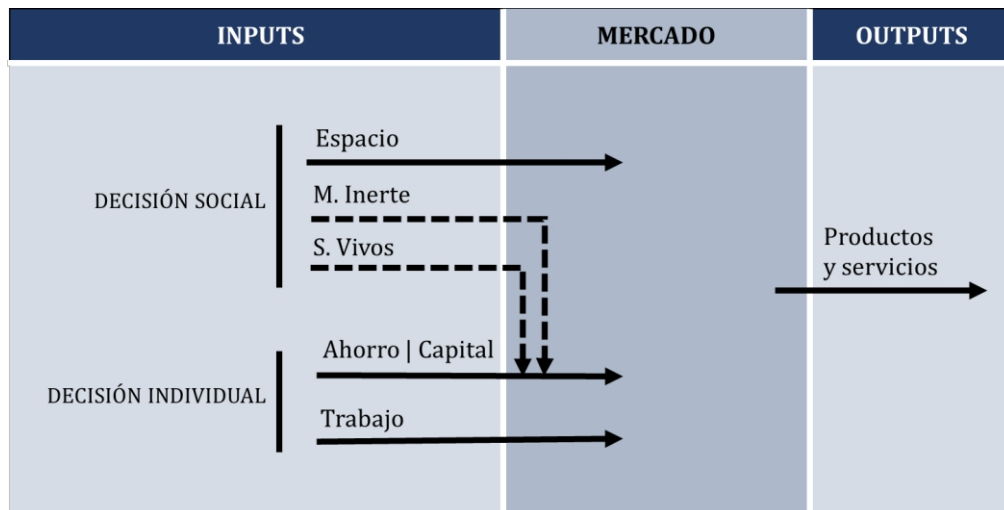
also influence their living conditions. The market will only offer such PF if it obtains from the living being a rent that covers its use. In the absence of such an expectation of income, one would expect greater difficulty in transporting the necessary goods, less time invested or less protection against any type of external agent attacking the living being.

In this sense, considering a current situation in which plants and animals whose maintenance as PF is profitable for society are already under property rights, it is mostly a matter of previously capitalized factors. In contrast to this situation, the role of the oceans stands out in that life in them develops in conditions more in line with freedom and relative independence from the economy. Thus, any action of exploitation of the oceans could be understood as the appropriation of an animal that is under the responsibility of society in favor of the property rights of its captor, passing on to society as a whole the rents derived from those rights. Rents subject once again to conditions of distribution under the same principles as those enunciated in the previous cases.

### **5.6. Capitalization of Nature**

Under the above considerations, neither inert matter nor living beings are directly part of the economic system of human beings, but do so as a decision of appropriation over nature. A decision that is necessary inasmuch as human beings need both to exist and to cover their needs. Every good that is exchanged in the economic system is composed of materials from the Earth. In the same way that any service is given in a concrete space surrounded by different forms of matter and living beings.

Inert matter and living things must enter the economic system under human action. Natural goods in the form of inert matter and living beings are extracted from nature for consumption as direct or intermediate consumer goods, or for their contribution to human development through the creation of capital stock. Given the need for both PF to be part of the economic system, the existence of a market creation mechanism is required that delivers the property to the legal person that allows the initiation of the process of economic exploitation of the PF. This mechanism turns the PF into a capital good. Thus, the stock of capital in the form of goods from nature can be considered as capitalized nature: nature that has undergone different transformations until it reaches a current form that can be used repeatedly over time for economic purposes.



**Figure 40:** Representation of productive factors in the form of inputs that are introduced into the market for the generation of products and services. Source: own elaboration.

The consideration of market creation differs from others used for the reduction of externalities, as referred to in (Pearce 2004); it is not developed from the vision of a new market, but from the conception of the contribution of defined quantities of natural PF to the global market. Examples of market creation can be the extraction and commercialization of minerals for energy creation or the capture of marine animals for food. In both cases a good is being extracted from nature whose existence is independent of human action, becoming a new factor of production as an asset of its owner. Figure 40 exemplifies the creation of the market in the role of inert matter and living beings represented by a broken line in the process of capitalization. The market is thus organized on the basis of the input of different PF in the form of *inputs*, which through the decisions of individuals in the market make it possible to obtain the corresponding *outputs* in the form of products and services for consumption and savings.

## 5.7. Conclusions

We live in a world in which the economy depends on a combination of two PF: labor and capital. In which economic science considers the existence of three PF: land, labor and capital. And in which the study developed proposes the existence of five PF with different characteristics: Space, Inert Matter, Living Beings, Labor and Capital, as shown in Table 18.

Economic development in a two-factor world allows for the indefinite ownership of elements prior to human action, limiting the relationship of human beings with the

environment. In this way, a large part of society can have restricted access to areas of land while at the same time observing the consumption of natural resources without receiving any compensation in return. In contrast to the two-factor conception, the model proposed allows basing the economy on a relationship between human beings and the environment that recognizes work and investment, while respecting the access of all human beings to the PFs prior to human action. The model works mainly on the auctioning of rights over the PF of nature, including concepts that are fundamental to the functioning of markets, such as the capitalization of nature or the creation of a market for Inert Matter.

Finally, work is done on the separation of legal persons from the concept of society, with states and other institutions being legal persons that use the resources of the economy.

	<b>Space</b>	<b>Inert Matter</b>	<b>Living Beings</b>	<b>Job</b>	<b>Capital</b>
Origin	Stock Nature	Stock Nature	Stock Nature	Seres Flow Humans	Stock Seres Humans
Property (economy)	Society	Society	Society	Individual	Person (legal)
Result of human action	NO	NO	NO	YES	YES
Capitalizable	NO	YES	YES	NO	YES
Living being	NO	NO	YES	YES	YES/NO
Rentals	Space Lease	Capitalization Inert Matter	Capitalization Living Beings	Labor Income	Income from Capital

**Table 18:** VET proposal in the economy . Source: own elaboration

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## 6. THE PRODUCTION FUNCTION

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The Production Factors (PF) of the economy can be grouped under an equation called the Production Function.<sup>138</sup> This is an algebraic formulation used both for aggregate elements, among which the classical PF of the economy in the form of land, labor and capital stand out, and for microeconomic analyses that relate the *inputs* of particular companies in search of their productive efficiency. The Production Function was first proposed by (Wicksteed 1894), indicating that:

*"Its mathematical form forces its definiteness and its boldness upon us, makes us realize what we are doing in assuming it and therefore gives us pause."* <sup>139</sup>

The Production Function has become a basic tool for explaining the fundamentals of the economy and the relationship between them. It makes it possible to separate the remuneration associated with each factor by identifying the individualized contribution of each factor. It is a formulation associated with neoclassical models of economics that contributes to the mathematical development of the science, developing elements such as total and marginal factor productivity. From the microeconomic approach it has become a source of the development of the theory of supply by producers, being

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<sup>138</sup> All production functions are expressed in the form in which they have been written by their respective authors, respecting their formulation and indicating in each case the meaning of each element.

<sup>139</sup> Prefatory Note, p.3. Author: 'Its mathematical form imposes its definition and clarity, allows us to realize what we are doing when we assume it and, therefore, makes us reflect'.

necessary basis for the calculation of the cost function and allowing to optimize the quantities of the different factors under the business decisions.

According to the macroeconomic approach, the Production Function adds to the technical issues others of great importance such as educational issues, according to which students of economics take the Function as a basic tool for their academic training, as well as moral aspects in the involvement of public institutions on the optimization of production for the achievement of social objectives. These issues cause that the definition of the Production Function of the highest level of aggregation of the PF is considered of great relevance in the analysis of the present work.

### 6.1. Introduction

In contrast to the classic model of land, labor and capital, today's economy is based on the use of only two PFs, namely, labor and capital (Gaffney 2004). Both are interrelated to shape the goods and services produced with a greater or lesser proportion of each of them. In this way, we can still count on goods/services that are very labor-intensive, such as consulting or computer development, or others that are very capital-intensive, such as computer server companies or the maritime transport of goods. Capital, conceived as invested savings, functions as a cumulative factor of production, in which new investments are based on those made in previous periods, making an ever <sup>larger</sup> stock of capital available.<sup>140</sup> It is this accumulated capital that makes it possible to increase the <sup>productivity</sup><sup>141</sup> of labor to obtain greater production and therefore greater satisfaction of citizens' demands.

This foundation of current economic thought coincides with that existing in economics textbooks at both the introductory and advanced levels, whether they have a general vision or are dedicated to specific studies. These are manuals used at the educational level that form the basis of economic thought, among which the one initially published by Samuelson in 1948 (Samuelson & Nordhaus 2009), in which the Production Function appears in form, can be taken as a reference document:

$$Q = AF(K, L, R) \quad 142$$

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<sup>140</sup> For the explanation, it is considered that investment is higher than depreciation and therefore the stock is in growth conditions, an assumption that is given under the expectation of an economy that increases its complexity.

<sup>141</sup> For the case of Spain, see (Coscolluela Martínez 2010).

<sup>142</sup> Chap. XXV, p.503



Where (Q) is *output*, (A) technology, (K) capital, (L) labor and (R) natural resources.

In the face of the importance given to the role of land in the economy (Malthus 1970), technological development and the growth of capital made it possible to avoid the limiting factor of land. From this assumption arose the neoclassical formulations of the Production Function in which the two PFs used are labor and capital, leaving the function in the form of:

$$Q = F (K, L) \quad 143$$

(Solow 1956) used the neoclassical production function in his 'Contribution to the Theory of Economic Growth', in which the:

*"Technological possibilities are represented by a production function*

$$Y = F (K, L) "$$
 144

This formulation has been maintained in the teaching of economics; in the teaching of macroeconomics there is a generalized use of aggregate Production Functions that use the PFs of the appropriate dimension, that is, at their maximum level of aggregation, considering these functions as those corresponding to the general study of economics, not to the study based on the neoclassical lines of thought (Georgescu-Roegen 1970).

The manual (Mochón 2009) 'Introduction to Macroeconomics', in the first chapter the production function is used:

$$y = f(L, K) \quad 145$$

Total production being a function of labor (L) and capital (K) respectively, a function in accordance with what is expected by the economic literature previously analyzed.

(Abel & Bernanke 2001) 'Macroeconomics' uses the function:

$$Y = A F(K, N) \quad 146$$

In this case, total production is dependent on productivity (A), as a function of capital (K) and the number of workers (N), a function similar in its fundamentals but which uses a constant associated with the existing technology at the time of use to consider the expected increase in factor productivity.

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<sup>143</sup> Chap. XXV, p.508

<sup>144</sup> Trad. Lib. author: 'The technological possibilities are represented by the production function  $Y = F (K, L)$ '.

<sup>145</sup> Ch. I, p.6

<sup>146</sup> Chap. III, p.71

Third, the manual of (Bajo & Monés 2000) '*Curso de Macroeconomía*', indicates the production function as:

$$Y=Y(N, K) \quad 147$$

With income as a function of labor factor (N) and capital factor (K), along the same lines as those used above.

Or lastly, in '*Advanced Macroeconomics*' by (Romer 2006) which begins in Chapter I with Solow's growth model by stating the production function:

$$Y(t) = F(K(t), A(t)L(t)) \quad 148$$

This implies that for a given period (t) production will be a function of capital (K), labor (L) and technology (A). As can be seen, the same fundamentals are used for the four macroeconomics textbooks, with differences in the consideration of elements such as technology or time.

In the case of microeconomics manuals, their production functions are developed on the basis of disaggregated PFs, such as specific raw materials, energy consumption, use of machinery or labor time, an aspect that does not avoid the consideration of land, labor and capital as aggregate PFs. This situation translates into an enumeration of the classical PFs in order to subsequently formulate the Production Function in microeconomic terms without identifying these factors.

Friedman's '*Price Theory*' (Friedman 1972) shows an individual production function:

$$x_i = f_i(a, b, c, \dots) \quad 149$$

In which each individual (i) uses different quantities of PFs called (a), (b), (c)... in order to obtain a product (x). As mentioned in the previous chapter, Milton Friedman studies in the same book the PFs by reducing the three classical ones to what he considers the two of today's economics<sup>150</sup>.

The '*Principles of Microeconomics*' manual by (Bort 2010), in its chapter II on 'Economic goods and productive factors' speaks of land and labor as originating productive factors, as well as capital as 'produced factor of production'. He then formulates the Production Function:

$$x = f(v_1, v_2, v_3, \dots, v_m) \quad 151$$

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<sup>147</sup> Chap. III, p.60

<sup>148</sup> Ch. I, p10

<sup>149</sup> Chap. V, p.122

<sup>150</sup> Ch. 11, p.246

<sup>151</sup> Chap. XI, p.117

In the (Varían 2010) manual 'Intermediate Microeconomics', it also mentions in its chapter XVIII that the PFs:

"are usually classified into broad categories: land, labor, capital, and raw materials" <sup>152</sup>

Maintaining the structure of the traditional three-factor analysis, but adding raw materials, a natural element in a microeconomic analysis due to its great impact on the business production process in its disaggregated conception. A Production Function is proposed in the form:

$$y = f(x)$$

$$y = f(x_1, x_2)$$

In which the PFs are shown as (x) and the final production is shown as (y).

For (Morales & Núñez 2022), after listing the classical PFs, the same formulation is used with different denominations of inputs (v) and outputs (x), being the Production Function:

$$x = f(v_1, v_2, \dots, v_n) \quad 153$$

In summary, compared to the three traditional PFs defined in economics textbooks, we find that at the time of their mathematical formulation they are reduced to a simpler aggregate factor production function (Gaffney 2008) in which, in general, only the two factors mentioned, labor (L) and capital (K), are available, omitting the implication of the production factor land, implicitly associated with a form of capital:

$$x = f(L, K)$$

This is a function similar to the one used by (Solow 1956), in which only those factors that obtain returns are considered, which implies counting only returns to labor and capital employed. Since it is considered here that technical changes do not offer a 'yield of technical change' but an increase in the yield of the respective capital or labor, they are not considered for this study of the Production Function. It should be noted that the capital element includes everything that is not considered labor according to (Friedman 1972). capital, including land, mineral deposits etc. It is also a division in accordance with that existing under the prevailing financial criteria, in which there are, in general terms, two PFs: labor, as a factor of individual property and which appears in the profit and loss account as

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<sup>152</sup> Ch. XVIII, p347

<sup>153</sup> Part I, Chap. III, p.58

The capital, which appears in the assets of the company as everything that can be possessed, and the capital, which appears in the assets of the company as everything that can be possessed. As soon as a factor of production is susceptible of being acquired indefinitely in exchange for an economic consideration, it becomes a capital asset. It becomes a current investment with the objective of being able to have future returns.

Labor, as the fruit of human effort, becomes the factor of production that is not possible to possess under current economic criteria; the possession of labor would be associated with the possession of the person in conditions that could be assimilated to those of slavery.

Along with these production functions, there are others with particular formulations, such as the one developed by Marshall, published by Whitaker and referenced by (Mishra 2007) in the form of:

$$P = f(L, E, C, A, F) \quad 154$$

In which production (P) is a function of labor (L), efficiency (E), capital (C), technology (A) and soil fertility (F). This is a combination of elements with different characteristics, in which efficiency, technology and soil fertility do not act as PFs but as multipliers whose contribution has been subsequently captured in the formulated PFs themselves. Technology is the only element included as part of different production functions.

Or, taking up the analysis of (Wicksteed 1894), which uses the function:

$$P = \Psi(L, C) \quad 155$$

According to which the resulting product (P) is a function of land (L) and a factor linking Capital and Labor (C), of which it indicates:

*"...and therefore the return to the last dose fixes the rate which will satisfy capital-plus-labour, and the excess or "surplus " return to the earlier increments constitutes the amount that the land owner is in the position to claim as rent"*

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In summary, it can be seen how the Production Function has remained attached to the classical PF as a form of representation of the economy, reducing its formulation to a combination of labor and capital in which, according to (Robinson 1953) land was formulated as part of capital:

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<sup>154</sup> p.13

<sup>155</sup> p.24, uses  $\Psi$  as 'function of'.

<sup>156</sup> p.14, Trad. Lib. Author: 'therefore, the yield of the last dose fixes the rate which will satisfy capital plus labor, the excess or surplus yield to the above increments constitutes the amount which the landowner is in a position to claim as rent'.

*"The capital goods in existence at a moment of time are all the goods in existence at that moment. [...]. The characteristic by which " goods " are specified is that they have value, that is purchasing power over each other" <sup>157</sup>*

This formulation is preceded by the consideration that:

*"the production function has been a powerful instrument of miseducation. " <sup>158</sup>*

Given the formulation of the PFs in the previous chapter as Space, Inert Matter, Living Beings, Labor and Capital, it is necessary to formulate a new Production Function that includes them, seeking a mathematical formulation that provides simplicity and clarity in accordance with Wicksteed's initial objectives, while at the same time contributing to a clear definition of the particularities of each PF that simplifies its positive relationship with education.

## 6.2. Reformulation of the Production Function

A production function that poses a more elaborate model than the one used at the beginning in its simplified version of  $x=f(L,K)$  showing in turn the complexity of the relationships between the productive factors proposed and the unique characteristics of each one of them. Under these conditions, the treatment of the PFs prior to human action: Space, Inert Matter and Living Beings does not fit originally within the capital production factor (K), at the same time that, given the concepts developed throughout the previous chapter, they cannot be grouped in a single PF Earth.

The result is an economic model based on the relationship of five PF: Space, Inert Matter, Living Beings, Labor and Capital. Differentiated on the basis of their unique characteristics regarding their existence, ownership, possibility of accumulation and remuneration.

- **Space, S (*Space*):** space, as the <sup>surface</sup><sup>159</sup> on which economic activity takes place. A space that existed prior to the human being and that is necessary for the development of life and therefore of economic activities. Being prior, it has not arisen from work or savings, but is in principle independent of the action of human beings.

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Author: 'The capital goods existing at a given time are all the goods existing at that time. [...]. The characteristic by which commodities are specified is that they have value; purchasing power of one over another.'

<sup>158</sup> p.81, Trad. Lib. Author: 'the production function has been a powerful instrument of diseducation'.

Although such space is initially considered as surface based on its dependence on the earth's surface, it is necessary to consider space as volume, in the consideration that the human being has been able to build on the earth's surface, excavate beneath it, dive, sail the sky, reach "outer space" and even the surface of the moon. Also under the expectation that the accumulation of achievements will lead to new planets and from them to new horizons of the universe. As opposed to the appropriation of the earth by individuals or institutions raised in (Pop 2000).

In the economic sense, space is considered as such, independent of the matter or life found therein. Being prior but necessary for the economy, its relation to economic activity must be to the benefit of the whole economy, so that the remuneration for its use must accrue to the whole economy.

- ***Inert Matter, M (Inert Matter)***: Inert Matter, as a substance with mass occupying space in a given form and under given conditions, is considered here as Inert Matter in any form. From an economic point of view it could be understood as any material extracted from the soil of the earth. As a necessary factor for the economic activity that exists prior to it, its use and income must result in the benefit of the whole economy and not of parts of it.
- ***Living Beings***: all living beings<sup>161</sup> that populate the planet or universe, over which intelligent life has the capacity to influence, even to the point of making it dependent on human action in the form of breeding, sowing, cultivation or feeding. Life that makes its way in the absence of economic activities, but that can become a factor of production totally dependent on the economy, with the capacity to make it grow or eliminate it on the basis of economic decisions. A nature that therefore presents a dual consideration, as prior and independent of human action, but as dependent on human decisions for its development in economic terms.
- ***Work, L (Labor)***: work as the result of time spent by human beings for economic purposes, which contributes to the development of goods and services demanded by society. A work in which the decision on duration and intensity depends on the human being himself who performs it and for which he is remunerated through wages.

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On this point and in relation to space as a terrestrial surface, different considerations arise on which it is necessary to consider the relationship of the economy with space. In the first place, because this terrestrial surface is in continuous evolution, so that surfaces above sea level can be created or destroyed on the basis of issues independent of the human being. Secondly, because of the capacity to build and therefore to create surfaces above and below the earth's surface.

<sup>161</sup> Living beings are in turn divided into plants and animals, for which the particularities of their economic consideration can be considered in each case. In the case of plants, it is worth mentioning an example of the treatment of wood, in its living consideration of nature associated with the tree to which it belongs, but in its consideration of use as a material once the tree has been cut down and used for other economic activities, presenting in turn limitations with respect to its consideration as a material due to its reproducibility.

- **Capital, K (*Capital*):** capital as a result of society's savings, of the accumulation of other productive factors for the creation of productive goods. The decision of saving and productive investment falls on each human being, and therefore it is he who is remunerated through the income of capital, regardless of whether this income is given under conditions of certainty (interest) or uncertainty (profit).

The aforementioned PFs configure an economy with a new, more complex production function that reflects the uniqueness of each one in the form of:

$$x = f(S, M, B, L, K) \text{ }^{162}$$

A combination of factors that identifies the contribution of each one, and allows its adequate remuneration in the form of rent of space, capitalization of Inert Matter and capitalization of living beings, as well as work (salary) and capital (profit/interest) to individuals. At the same time it allows to study the particular conditions in the form of limits to their existence, maintenance needs or contribution to the stability of the ecosystem, valuing the benefits and damages that may occur in each case.

### 6.3. Conclusions

The Production Function is a valuable tool for economics as it allows the identification of the variables involved in each analysis. From the macroeconomic point of view, the Production Function has traditionally been used, which reflects the maximum aggregation of the PF in the form of land, labor and capital. Given the results of the previous chapter it has been necessary to propose a reformulation of the Production Function in the form:

$$x=f(S, M, B, B, L, K)$$

This Production Function not only allows the identification of the PFs from the point of view of economic theory, but also contributes to the visualization of the relationship of the different PFs with the current economy.

As discussed in the following chapters, the formulation of the Production Function invites questions about the treatment of each PF in corporate finance, its impact

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In contrast to the model of five productive factors developed, we could consider the existence of other factors whose conscious participation in the economy is the result of human development. In this sense, we could study the condition in which science grants the status of productive factor to other elements such as, for example, the electromagnetic spectrum. In such a way that it not only structures its economic use, but also leads to a more adequate study of its remuneration. The question is thus to identify whether the properties of this factor of production could be differentiated from the rest of the factors, demanding its individual consideration and the adequate allocation of its rents.

on the sustainability of the planet, the treatment given to space as a home for human beings or the participation of states in the income of each PF.



## **7. THE FACTORS OF PRODUCTION IN THE FINANCE**

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The study of PF is associated with the analysis of the characteristics on which they are based, among which the conditions of ownership and rents stand out as differentiating elements. As has been shown in the Production Function, the economy currently works on two PF, labor and capital, all forms of economic resources other than labor having been reduced to capital.

The existence of international accounting standards<sup>163</sup> to which the twenty largest national economies in the world, representing more than 80% of the world's GDP, are associated demonstrates the existence of a global consensus in this field. This consensus is the result of a globalized world in the financial sector, which has made it possible to develop International Accounting Standards (IAS) that have contributed to the globalization of investments, allowing all investors to have homogeneous and complete information on corporate actions at a global level. A single international market on which analysis can be performed,

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<sup>163</sup> IFRS Accounting Standards. Used by 168 territories according to the organization's own data as of December 2023.

forecasts or comparisons between companies in order to maximize the profitability of investments.

Existing accounting standards have allowed the development of Financial Statements (FS) that can be considered associated with the Neoclassical Production Function of the market expressed in the previous section, according to which there are only two types of PF, labor and capital. In the FS the PFs proposed as Space, Inert Matter and Living Beings are part of capital, being represented every form of real estate or resource coming from nature as capital of its owner, which implies its consideration as an asset.

These are regulations structured according to accounting elements, which, as far as PFs of nature are concerned, develop their own standards. IAS40 deals with 'Investment Property', which is stated as "held for rental income, capital appreciation or both", and then gives examples of investment property in the form of land, buildings or real estate under <sup>construction</sup><sup>164</sup> valued according to the fair value and cost models. IAS41 dedicated to 'Agriculture' indicates that a "Biological Asset is a living animal or plant" over which economic benefits are expected to flow to the <sup>entity</sup><sup>165</sup>.

As analyzed in section 2, companies use the most convenient criteria among the options available for their financial objectives in order to maximize profitability for their shareholders. These criteria range from accounting to corporate aspects, being able to distribute their assets among different legal entities according to the best conditions for maximizing the profitability-risk ratio, a situation possible through operations such as mergers, spin-offs or acquisitions.

Understanding the treatment given by the economic system to PF is based on understanding how they are accounted for. To do this, it is necessary to study the concepts under which they appear in the financial statements, differentiating mainly whether their accounting is associated with property rights or commercial contracts for use. This means whether they appear as assets in the balance sheet of companies or, on the contrary, as costs in the income statement, in the form of acquisition or leasing of the productive factor, and who is the final owner of the PF.

This section studies the relationship between PFs and financial statements. We start from the relationship with labor and PF produced (capital), to move towards the primary factors analyzed in this work in the form of Space, Inert Matter and Beings.

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<sup>164</sup> Reflected in IAS40, 8. Document referenced in IFRS1, D7 & D9C.

<sup>165</sup> Reflected in IAS41, 10.

Vivos, elements which, as indicated above, are currently in the financial form of equity.

### 7.1. Introduction

In Spain, accounting is regulated by the General Accounting Plan <sup>166</sup> which includes in its preamble the objective of "international harmonization based on European Union regulations", which in turn is based on the adoption of the aforementioned IAS<sup>167</sup>. A standard that in turn is dependent on the role of the states in its development, as shown by the very name of the *International Financial Reporting Standards* (IFRS), which includes the concept of Nation as the basis for the development of accounting standards.

The consideration of Nation presents implications on the PFs of the economy, the United Nations takes up the problem of 'Land and Human Rights' indicating that:

*"National laws, policies and customs usually determine how land is used, controlled and transferred."* <sup>168</sup>

This situation implies that the PF Space is dependent on the decisions of the different states. This condition is repeated for the case of natural resources, as shown in the:

"Considering that any measures in this respect must be based on the recognition of the inalienable right of every State to dispose freely of its natural wealth and resources in accordance with its national interests, and on respect for the economic independence of States,"<sup>169</sup>

The set of elements described above gives <sup>states</sup><sup>170</sup> the ability to arbitrate the consumption and use of nature's PFs, allowing the possibility of offering property rights to the market under the conditions they determine, which turns them into <sup>assets</sup><sup>171</sup> of their holders. The asset side of a balance sheet includes all the

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<sup>166</sup> See: Royal Decree 1514/2007, of November 16, 2007, approving the General Accounting Plan. "BOE" no. 278, of 20/11/2007.

<sup>167</sup> See: COMMISSION REGULATION (EC) No 1126/2008 of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council.

<sup>168</sup> See: 'Land and Human Rights, Standards and Applications', United Nations, 'Land and Human Rights, Standards and Applications', United Nations

<sup>169</sup> See: General Assembly Resolution 1803 (XVII) of 14 December 1962, entitled 'Permanent sovereignty over natural resources'.

<sup>170</sup> See (Locke 1981) p.39, para.50: 'It is evident, therefore, that men agreed that the ownership of land should be divided in a disproportionate and unequal manner; that is, independently of society and covenant; for where governments exist, it is the laws that regulate that possession.'

<sup>171</sup> RAE. Definition, 8: 'Set of all goods and rights with monetary value that are owned by a company, institution or individual.'

properties of the legal entity concerned in the form of investment property (IAS40), agricultural elements (IAS41), or intangible assets in the form of both deposits and exploration (IFRS6). In addition, FPs of nature may appear in the form of inventories (IAS2) of the company to be marketed.

These statements hand over decisions on land as a classic FP to the different states, giving the corresponding political authority the capacity to decide on the exploitation of their national resources. Thus, states become owners of land that they can offer to the market, property in Spain being understood as a right of "use, enjoyment and exploitation thereof"<sup>172</sup>. This condition is reflected by (Azpitarte 2018) in his statement:

"In Spanish urban planning law there is nothing like a property right in which the owner is the sovereign of that which he owns."<sup>173</sup>

Thus we observe a combination of two elements that coexist in the current economic system, on the one hand the figure of the state as owner and responsible for all the goods of nature appears, while at the same time in the market the rights over these PF are associated with the concept of capital. This situation leads to review the Production Functions enunciated in Chapter VI, starting from the classical function:

$$x = f(L, K)$$

The problem lies in the consideration as capital of all goods other than labor, which means that in an economy in which the available goods are under property rights (Rudden 1994)<sup>174</sup>, i.e. as assets, a citizen without capital can only count on his labor to develop his life, the main problem of this condition being the need to live in a space and to have a minimum amount of inert matter and living beings at his disposal. The capacity to develop life as a function of access to energy can be exemplified in the correlation between quality of life and energy consumption (Alam et al. 1991).

The situation can be exemplified in the case of informal settlements (Segura and Linera 2022), where millions of people live in an economy also referred to as informal that does not grant property rights or allow recourse to financial markets to make basic investments for their lives. Conditions arise in which citizens have only their work to get out of the informal economy.

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<sup>172</sup> Art. 12, Royal Legislative Decree 7/2015, of October 30, approving the revised text of the Law on Land and Urban Rehabilitation.

<sup>173</sup> Ch.9, p.122

<sup>174</sup> In dealing with the question of property in the form of wealth: '*As an investment each individual object is treated in terms, not of its own inherent qualities, but of its opportunity cost. This last function betokens an important fact: as an item in a portfolio every thing can be changed or converted. Nothing is unique.*'

This in turn produces unique working conditions that affect young people, women and people with low levels of education to a greater extent (Mazumdar 1976), a situation that negatively affects the possibilities of economic growth (Barro 2001). In view of this situation, public intervention has been used as a means of hoping for the social improvement of the population that does not have access to the different forms of capital, for which arbitrary intervention by the public sector in the formal economy is resorted to.

The problem of inequality not associated with human action is the consideration that capital PF encompasses PF that do not present the qualities to be so, it is not only a matter of access to formal property (Soto 2000)<sup>175</sup> , but of first giving access to the PF of nature or its yields to citizens who are currently in informality. It is at this point that the Production Function proposed in the previous chapter:

$$x=f(S, M, B, B, L, K)$$

The one that proposes the independent consideration of the PF Space, Inert Matter and Living Beings with respect to capital, for which the behavior of each PF must be analyzed with respect to the existing financial models.

When looking at the items that may appear on the assets side of a balance sheet, one finds items with large differences (e.g., plots of land, vehicles, fruit trees, machinery, buildings, stocks, rights to raw materials, metals or manufactured products), which relate elements of natural capital (Gylfason 2001) to other forms of capital derived from human action. Despite their particularities, all elements are currently owned by the legal person at the time they appear on the balance sheet. In this situation, it is possible to separate the elements that are linked to land, which would imply separating real estate from movable assets, so that land, plantations, infrastructure or buildings have the form of real estate, while machinery, vehicles or stocks behave as movable assets. In turn, separating their classification according to whether they are found naturally or are the result of an economic investment of other productive factors, we obtain that space or rights over raw materials are shown in a natural state, while all other goods appear as the result of a process of economic transformation from the original *inputs*.

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<sup>175</sup> Ch.6, p.217

## **7.2. Classic Factors of Production in Financial Statements**

First of all, the role of the two PFs present in the classic Production Function in the Financial Statements should be commented.

### **7.2.1. Equity in Financial Statements**

The capital PF is represented in the company through the fixed assets of the balance sheet, its reflection in the income statement is made through a process of amortization or depreciation of the same. It is produced as an accounting adjustment of the loss of capital value over time. Capital, whether in the physical form of machinery, means of transport or in the form of intangible assets such as patents, appears in the form of non-current or fixed assets with a vocation of permanence in the company. Together with fixed assets, there are other assets such as current assets and available assets, which also acquire the form of property of the company, in this case under its short-term vocation. This differentiation between the short and long term is associated with the concepts of business operation and investment, regardless of the type of asset in question.

It is common to find separate ownership and use of assets; one company may lease capital from another, a situation that is exemplified in general leasing models or in others such as machinery or vehicle *leasing*, in which case the capital appears on the income statement of the lessee company instead of on the balance sheet. However, there will be a legal entity that is the ultimate owner of the capital asset, which will be the one in which it appears as an asset on its balance sheet.

### **7.2.2. The Factor of Production Labor as a Capital Good**

Currently, PF labor appears in the financial statements as a cost element in the income statement. The cost of the investment in labor for each person is recorded in the corresponding period and its value is reflected in the income statement. As a general rule, if the cost is associated with the earning of revenue, it is a variable cost, while if it is part of the structure of the company, it is recorded as a fixed cost.

Their participation in the company is not reflected in the balance sheet. The fact of appearing as an asset would imply the company's ownership of FP labor, a fact that could generally be considered to be associated with forms of slavery. As a general rule, the balance sheet may show balances in the form of debts owed by the company to the worker or by the worker to the company, which are nothing more than temporary mismatches between the income statement and the company's cash flow, but which have no effect at the level of ownership.

This situation in which it is globally accepted that the worker cannot be part of the company's balance sheet is an exceptional situation in history. The abolition of slavery appears as a social response of the last two centuries, an aspect shown by (Piketty 2014) when illustrating how slaves represented approximately one third of the patrimony of American society in 1770<sup>176</sup>. The ownership of another human being implies its conversion into an asset of the owner and therefore coming under a concept of capital, in the terminology previously used for other productive factors could be considered a capitalization of the human being, thus reflected for the case of Brazil by (Rodrigues et al. 2015) under the epigraph of "*mobile and livestock assets*"<sup>177</sup>. The fact that human labor has ceased to take the form of capital and the study of the historical process followed to abolish slavery are shown to be a source of knowledge on the way forward to deal with to the other productive factors based on their properties as PF.

This consideration of slavery is also shown in the data of the *Slave Voyages Consortium*<sup>178</sup>, which shows that in the year 1776, the same year in which Adam Smith indicated that the PF are land, labor and capital, it could still be considered that the three productive factors could take the form of capital. A total of 277 ships are recorded in the year transporting human beings across the Atlantic as slaves to serve in different parts of America, showing that of the 78,426 embarked, 69,724 disembarked. This data implies that at the time some citizens could own the space of land on which they carried out a commercial activity, as well as the people who worked in that activity and any machinery acquired to intervene in it. Being an owner, he was in a position to buy or sell both space, such as Inert Matter, and human beings as capital at his discretion. By 1776, the situation indicated above placed land and people in the fixed assets of the balance sheet, in the same place as any type of machine or means of transport used for exploitation. In 1833 the 'Slavery Abolition Act'<sup>179</sup> was enacted for all slaves in the British colonies, a fact that transformed the Atlantic slave trade. The abolition of slavery in the American Civil War<sup>180</sup>. As early as 1948, the United Nations Universal Declaration of Human Rights<sup>181</sup> established that all people are born equal in dignity and rights.

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<sup>176</sup> Ch. 4, p.178

<sup>177</sup> Trad. Lib. Author: 'Movable and immovable assets'.

<sup>178</sup> See databases at: [slavevoyages.org](http://slavevoyages.org)

<sup>179</sup> August 28, 1833

<sup>180</sup> 13th Amendment to the U.S. Constitution: Abolition of Slavery of January 31, 1865. Source: 'National Archives'.

<sup>181</sup> Article 4

Currently, the ownership of human beings is legally abolished, but data from the International Labor Organization <sup>indicate</sup><sup>182</sup> that around 50 million people live in conditions of slavery, forced labor or forced marriage. In both cases, this implies the ownership of a human being in the hands of another, a situation that can continue to be represented as capital.

The path described shows the evolution of a society in which people have come to recognize the rights of freedom of all individuals, shifting the relations between them from property conditions to contractual ones, respecting the agreements reached between the parties under conditions of freedom. In short, the human being has been eliminated from the balance sheets of individuals and companies, and payment for work done has been recorded in the profit and loss account.

### 7.3. Nature's Factors of Production in Financial Statements

The PFs of nature mentioned above, conceived as Space, Inert Matter and Living Beings, are prior to human action and therefore their role in the financial statements is discussed below.

When it comes to the use of PF in the market, there are two distinct aspects:

1. **Corporate action:** the introduction as elements of the company's production and value generation chain under conditions of certainty, considering an expectation of the purchase value equal to the value at the time of sale.
2. **Speculative activity:** under the expectations of revaluation of the asset during the period of time in which it forms part of the company's balance sheet in the sale and purchase process. It may generate a profit/loss for the company regardless of the generation of value for the company, a result that will be transferred to the income statement as a variation in the price of assets. Speculative activity is not studied under positive or negative considerations per se, but in the Austrian economic sense (Kirzner 2011)<sup>183</sup>, as a market response to a profit opportunity in a spontaneous coordination process. Which implies that speculation becomes a natural element of the market that contributes to reduce price variations, so that any

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<sup>182</sup> See: 'Forced Labour and Forced Marriage', Sept. 2022, p.19.

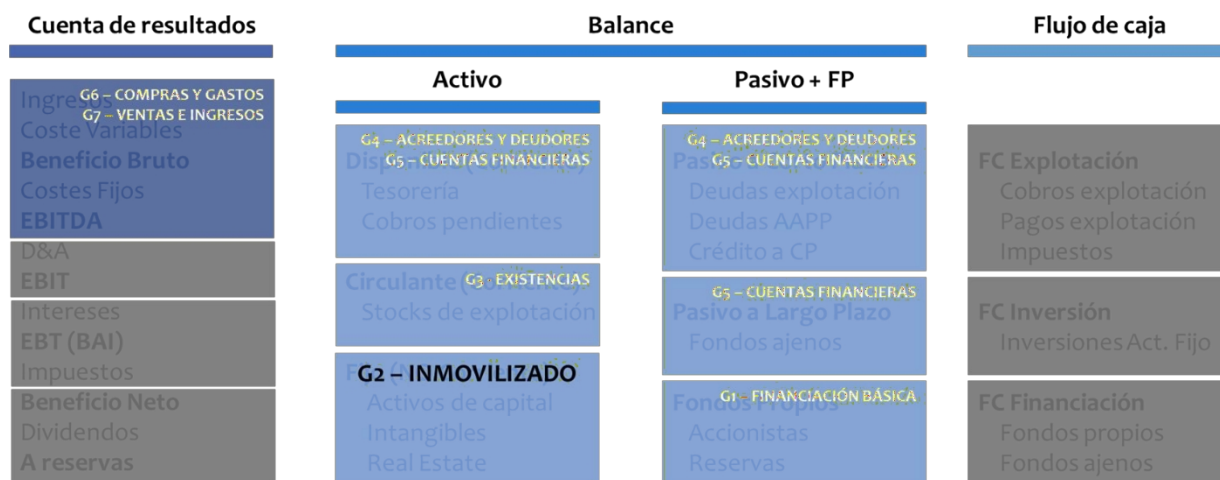
<sup>183</sup> See: Appendix, p.339, 'Speculation as an Aspect of Intertemporal Markets',



analysis and response to speculation decisions should be based on market mechanisms, not on market regulation decisions.

For the three PFs of nature, there can be both exploitation and investment uses. The uses linked to direct exploitation as <sup>stocks</sup><sup>184</sup> which can be exemplified in intermediation such as buying and selling real estate assets, raw materials or livestock, while the uses linked to investment are generally more associated with real estate assets thanks to their capacity to generate periodic rents for their use, as well as different living beings thanks to their capacity to offer returns based on the products they generate (e.g. fruit or milk) without entailing the loss of the asset.

This distribution of PF is associated with the accounting of the countries, as can be seen in the case of Spain in the General Accounting <sup>Plan</sup><sup>185</sup>, according to which the different groups of accounts are reflected in the financial statements as shown in Figure 41. This shows Group 2, fixed assets, with the incorporation of assets such as those treated as real estate, raw materials or living beings, thus being investment goods that allow the generation of income instead of being considered as elements available for exploitation in the market.



**Figure 41:** Location of the different groups of accounts according to the PGC approved in RD 1514/2007. Source: Prepared by the authors

<sup>184</sup> IAS2, 'Inventories'.

<sup>185</sup> Royal Decree 1514/2007, of November 16, 2007, approving the General Accounting Plan.

### 7.3.1. Space in Financial Statements

Currently, space appears mostly in the financial statements in the form of fixed assets<sup>186</sup>, located in the same place as other capital items such as machinery or intangible assets such as patents. The space appears in the balance sheet together with the interventions made on it, which may take the form of housing, stores, infrastructure or others, identifying both the value of the space and the associated real estate capital. As with other fixed assets, its use appears in the income statement in the form of depreciation of its value, which is not necessarily due to the actual depreciation of the asset, but is the result of an accounting adjustment that assigns a value of use over time.

Space is currently shown accounted for in the form of capital, which implies that the economy treats different forms of capital and space similarly despite the fact that they have different characteristics and fundamentals discussed above. In turn, as was shown for the capitalization analysis of the real estate sector, in the case of both capital and space, extraordinary changes in value are shown in the income statement as a revaluation or devaluation of capital, with a direct impact on the company's profit. That is, the change in value of an asset can affect operating income in the same way as sales revenue, with the difference that the former is an event unrelated to the company's operations and has no associated costs, while the latter is the business activity itself and will be subject to the variable costs of providing the asset or service in question.

Under this accounting format the space acts equivalently to capital, is located in the same space on the balance sheet as property reflected in fixed assets, and the same accounting adjustment is made to the income statement in the form of amortization/depreciation, thus becoming a capital asset subject to market conditions for capital investment, but nevertheless subject to different characteristics.

In contrast to this conception, space as an independent FP appears as a good of society that does not conceive indefinite ownership as currently proposed. The economic consideration of space as a social good allows it to be leased to legal persons who can make the best use of it in the market. At this point it loses its function as an asset, to become a contractual right of use for maximum bidding in the market, this implies that it appears as a cost in the profit and loss account of the holder of its rights.

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<sup>186</sup> IAS40 'Investment Property'.

The main element of the situation described for the PFs is the change in the identification of the land, as well as the constructions built on it, from the form of asset, as shown in Figure 42 in the balance sheet (box 2), to replace its behavior by that of use, being reflected in the income statement in (box 1).

Cuenta de resultados	Balance		Flujo de caja
	Activo	Pasivo + FP	
Ingresos			
Coste Variables			
<b>Beneficio Bruto</b> <b>1</b>	<b>Disponible (Corriente)</b>	<b>Pasivo a Corto Plazo</b>	<b>FC Explotación</b>
Costes Fijos	Tesorería	Deudas explotación	Cobros explotación
<b>EBITDA</b>	Cobros pendientes	Deudas AAPP	Pagos explotación
D&A		Crédito a CP	Impuestos
<b>EBIT</b>	<b>Circulante (Corriente)</b>	<b>Pasivo a Largo Plazo</b>	<b>FC Inversión</b>
Intereses	Stocks de explotación	Fondos ajenos	Inversiones Act. Fijo
<b>EBT (BAI)</b>	<b>Fijo (NO Corriente)</b>	<b>Fondos Propios</b>	<b>FC Financiación</b>
Impuestos	Activos de capital	Accionistas	Fondos propios
<b>Beneficio Neto</b>	Intangibles	Reservas	Fondos ajenos
Dividendos	Real Estate <b>2</b>		
<b>A reservas</b>			

**Figure 42:** Simplified structure of a company's financial statements showing the two elements mainly discussed in the section, 1: Sources of the company's costs and expenses. 2: Current and fixed assets of the company. Source: Own preparation.

The role of the public authorities in the definition of this treatment of space as an asset stands out. This activity can traditionally be considered as a transfer of land ownership in exchange for a consideration, as in the cases of the reconquest of the Iberian Peninsula, the colonization derived from the discovery of America<sup>187</sup>, the processes of Spanish disentanglement (Rueda 1997)<sup>188</sup> or the conquest of the West<sup>189</sup>. At present, this activity continues to be carried out with special emphasis on the

<sup>187</sup> See the case of Mexico in (Prem 1992), p.448: 'Property was acquired through several procedures, the documentation for which is uneven. At first usurpation was common, reflecting the conquest, the arbitrary rule of the First Audiencia, and the slow implementation of a legal system in the colony' (Prem 1992, p.444): 'Property was acquired through several procedures, the documentation for which is uneven.'

<sup>188</sup> See p.29: 'Disentanglement known as "de Godoy" was related, as will be usual from then on, to the problems of the Treasury', or. p.44: on Mendizábal's plan 'the resources derived from the disentanglement process would be used to keep the debt as low as possible', or p.71: 'In greater or lesser proportion according to the periods, there is a point on which all (politicians) agree: to take advantage of the disentanglement to increase the coffers of the State and its institutions'.

<sup>189</sup> See 'Library of Congress' at loc.gov: 'Indian land for sale: get a home of your own, easy payments. Perfect title. Possession within thirty days. Fine lands in the West' showing the sale as an action of the U.S. Department of the Interior in 1911.

developing countries, including land leasing and land sales (Cuffaro & Hallam 2011) (Von Braun & Meinzen-Dick 2009)<sup>190</sup> (Evers et al. 2013)<sup>191</sup>.

### 7.3.2. Inert Matter in Financial Statements

For most companies Inert Matter appears in the financial statements as a consumption of goods in the income statement. Those goods that are consumed in the generation of revenue for the period are shown as variable costs. These goods may be an intrinsic part of a product sold, such as the materials from which a final product is manufactured. They can also be the cost of raw materials consumed in the process, which may include the raw materials used to supply the energy used.

In the case of Inert Matter, its assets can also be found in the balance sheet, as current assets stored awaiting to be consumed in the company's sales generation. Whether in the form of raw materials in their natural state, in the form of intermediate products in the manufacturing stage or finished products according to the company's objectives, they will be found as current assets of the company.

Due to their social importance, examples of energy sources such as oil, coal or natural gas can be considered here, which are acquired by the company at a certain point in time when they become part of the balance sheet. From that moment on, they are consumed or sold, with both their cost and the corresponding income appearing in the company's income statement and the associated profit.

As opposed to assimilation as capital from its origin, the conception of Inert Matter as PF of society entails the need for a social decision of introduction into the market by means of the commented mechanism of market generation. This decision becomes the process of capitalization of the Inert Matter that passes through the auction process to form part of the capital of its acquirer, at which point it acquires the current form of capital.

Given that, as shown in Section IX, the capitalization process is associated with the market supply under conditions of sustainability of the Inert Matter PF, it is also worth assessing the political role of Section X in which fiscal policies are confronted with the rents generated by nature's PFs, and the taxation of the

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<sup>190</sup> Examples of news reports on transactions between public and private agents can be seen, indicating that 'Many governments, either directly or through state-owned entities and public-private partnerships, are in negotiations for or have already closed deals on arable land leases, concessions, or purchases abroad'.

<sup>191</sup> See p.2, 'Speculation over the increasing value of arable land is a major driver of foreign land acquisitions, involving not only private investors but also banks, governments, and sovereign wealth funds'.

maintenance in the Inert Matter PF asset as a less bad form of taxation with respect to others more generally used.

### 7.3.3. Living Things in Financial Statements

The treatment of living beings can be considered similar to that stated for Inert Matter, being in this case associated with the concept of 'biological assets'<sup>192</sup> from their investment point of view. Under the asset concept can be seen the examples for livestock, forestry or vineyards<sup>193</sup> that currently appear in the balance sheets of their owners.

In contrast to the case of the Inert Matter PF, whose reserves can be considered independent of human action, the Living Beings PF, as it exists today, is highly dependent on the market; a decrease in its size would jeopardize the very existence of the PF. This dependence means that they require continued consideration as an asset.

The changes produced under the Living Beings PF treatment are thus associated with life forms that have not been previously capitalized, which significantly reduces the impact with respect to the effects indicated for space and Inert Matter. It is however the case of living beings in the oceans that presents the greatest possibilities for implementation as part of life in the global commons (Schrijver 2016)<sup>194</sup>, an aspect that includes both sustainability criteria and criteria for generating income for society<sup>195</sup>.

### 7.4. Nature's Factors of Production Balance Sheet

The section raises the question about the financial statement implications of the ownership rights of nature's PFs and the rents generated. The problem that arises is about the moment at which these assets are considered to be part of the market, the moment at which the word ownership of society becomes meaningful. The existence of a reserve of inert matter (e.g. oil or natural gas) or of living beings in their natural habitat (e.g. a school of fish) is initially alien to human action, which limits its consideration as property. Activities such as the exploration process or the

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<sup>192</sup> IAS41, 'Agriculture

<sup>193</sup> Audit Report of Bodegas Riojanas, SA, p.11, 'The Group includes in Property, plant and equipment, under the classification of biological assets, the value of the vines owned by the Group. This fixed asset is depreciated on a straight-line basis over the estimated useful life of the vines, which is 17 years'.

<sup>194</sup> Spaces that include 'the high seas, the deep seabed, outer space, the Moon and other celestial bodies, as well as the polar regions, which can be considered global commons since no national entity has the ability to claim exclusive jurisdiction over them'.

<sup>195</sup> Rents that are, however, significantly lower than those that can be generated from leasing space. as well as inert matter, see FAO: 'Illicit fishing costs the world up to US\$23 billion a year'.

The discovery of such natural goods already raises the consideration of the relationship of human beings with them. Their existence does not imply their participation in the market, although it may have an influence on the market decisions of the agents; knowledge about the possibility of using them in the future market modifies the current market.

This dilemma raises the question of the appropriateness of drawing up a balance sheet on what could be called nature's assets (Friedman, G. 2001)<sup>196</sup> (Barbier 2008). The fact that a balance sheet carries a meaning of asset and therefore of property implies the capitalization of the resource prior to its commercialization on the market. A property different from that of (Boyce 2001) in indicating that natural assets include:

*"the land on which we live and grow our food and fiber; the water we drink and use to irrigate crops, generate electricity, and dispose of wastes; the atmosphere that envelops our planet; the fish in the ocean, the trees in the forest and all other animals and plants, wild and domesticated; ores, minerals, and fossil fuels; and the energy of the sun..."* <sup>197</sup>

A phrase in which the consideration of asset (property) is given to all the goods of nature, equating wildlife to the domestic life of animals, or minerals in their natural state to those that are extracted and stored for use. Under the consideration of asset, it can be understood the property of the human being over all goods on Earth or outside of it. In contrast to this definition, the change from nature to asset implies its consideration as a PF and therefore its capitalization and entry into the market.

The elaboration of a PF balance sheet of nature under market conditions entails a pre-market mercantile treatment of nature's goods, but also allows structuring the available information by means of widely known financial tools.

The differentiation between the realization of the balance at the national or global level is based on the consensus among states on the permanent sovereignty of natural resources<sup>198</sup>, a consensus that does not reduce the differences in access to resources by human beings according to the state in which they are located, which promotes the elaboration

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<sup>196</sup> See: 'Society makes property. Economic systems are defined by what they allow to become property, and the extent of property varies enormously.'

<sup>197</sup> Trad. Lib. Author: 'the land on which we live and farm; the water we drink and use to irrigate crops, generate electricity and dispose of waste; the atmosphere that envelops our planet; the fish in the ocean, the trees in the forest and all other animals and plants, wild and domesticated; minerals and fossil fuels; and the energy of the sun...''

<sup>198</sup> See (Soros 1999) p. 195: 'Our international agreements are based on state sovereignty and states are guided by their own interests'.

of global balances that allow comparisons between per capita *stocks* at different levels of aggregation.

#### **7.4.1. Rents from Nature's Factors of Production**

The participation in the market of nature's PF entails the generation of rents, which have periodicity for the use of space while they are punctual for the capitalization of Inert Matter and Living Beings. Given the model proposed, these rents appear as income of the society, which implies an aliquot participation of all members of the society, an aspect that raises an independent accounting unrelated to the national accounts.

#### **7.5. Conclusions**

Social problems such as inequality or the existence of informal economies are usually blamed on Capitalism as an economic model, however the basis of the problem lies in the definition of capital as PF. The reformulation of PF as well as of the Production Function raises the revision of the conditions under which these factors are accounted for in order to move from concepts of economic theory to generate impact on real markets.

The proposed changes in the consideration of capital PF entail the need to consider the publication of balance sheets in which the natural assets of the national societies, or preferably of the global society on the PF of nature, are included. Under this reporting model it would be possible to work under market conditions on such factors, including the leasing of space to society or the capitalization of Inert Matter and Living Beings in the process of capitalization of nature.

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## **8. THE HOUSEHOLD IN THE FACTORS OF PRODUCTION**

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The formulation of the PFs made takes up the real estate problem at the junction of space and capital as the most interesting and difficult of economics (Marshall 1920). In a society where two-thirds of the world's capital is in real estate,<sup>199</sup> half of it in the form of housing and other buildings, the concept of space as a separate PF poses major management problems in the market. In developed countries, available space can be considered to be mostly capitalized through buildings as well as agricultural and other investments. Given the economic impossibility of separating such investments from the land on which they are located, the problem arises as to the consideration of PF, either as space or as capital.

The consideration of built land as FP Space for which all agents can bid for contractual rights allows for greater dynamism in the economy and a better allocation of FP for the most efficient uses that the market can offer. However, it poses problems in relation to the application of capital on the land; given that any investment made is lost at the end of the agreed term an investment crowding out effect can be expected. From the point of view of the citizen's household it raises the problem of the commoditization of housing by offering it

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<sup>199</sup> See McKinsey Global Institute, p. 11, 'The Rise and Rise of the Global Balance Sheet'.

The company's financial situation has been temporarily and periodically evaluated, eliminating aspects linked to the generation of wealth, security or the family.

As opposed to being considered as space, built-up land is nowadays in the form of a capital FP in a two-factor world. It is a form of asset that combines the indefinite duration and scarcity of land with the high durability of the investments made on it. Real estate assets pose high security in a dynamic world where investments face high risks, irrespective of the purposes of the investment.

From the objective of acquiring a home, the guarantees of owning a real estate asset have contributed to the development of a large housing stock under conditions of continuous improvement of its quality and services. Given the increase in available capital in the world, this situation presents challenges under the threat of increasing capitalization of the real estate sector; both land and buildings. Under this situation, the reduction of profitability in the capitalization process by separating the rent from the investment necessary for the acquisition of assets leads to an increase in the difficulty of access to housing and therefore an increase in renting, either as a preferable option for a large part of the population or under the imposition of the market.

This chapter analyzes the role of real estate under the PF structure exposed, emphasizing the difference between individuals and legal entities based on the linkage of their activity to the market in order to advance in the study of the home as an element that brings security and stability to human life.

### **8.1. Introduction**

The condition of land as a capital good is considered by authors such as (Marx 2014), or (Harvey 1982) while in other cases it is given the consideration of *commodity* (Polanyi 2001), both concepts acting in line with the consideration of financialization of the economy worked on in the previous sections according to which land is an asset of its owners. This is a treatment in which the concept of asset can be considered as a result of human creation, as it is collected (Christophers 2016):

*"land is itself a political-economic creation, which is to say that it does not exist as a concept outside of political economy"* <sup>200</sup>

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<sup>200</sup> p. 135, Trad. Lib. Author: 'the earth is itself a political-economic creation.'

Under this concept of property as a social institution<sup>201</sup>, this paper studies the space-capital relationship given the significant implications it has on the functioning of markets, among which are the relationships:

- **Home - market:** home is associated with the concepts of security and family (Somerville 1997) in a context in which habits of care and relationships are developed (Power & Mee 2019), while the market is associated with those of risk and profitability, an issue largely related to the legal personality of the individual by mostly joining the concept of home to the activity of the natural person and the concept of market to the activity of the legal person.
- **Efficiency - equity:** given that the concept of efficiency implies the operation of markets in free competition, while equity stands out here from the point of view of equitable access to nature's PF, elements that are dealt with in greater depth in Chapter X.
- **Property - right of use:** from the point of view of the concept of property (Bigo 1968) partially expresses the problem in the work 'Property'<sup>202</sup> by seeking a separation between first class or family property and second class property linked to the market. In the same line appear the contributions of (Friedman, G. 2001) when confronting historically the sanctified property rights with respect to the instrumental ones<sup>203</sup>.

The problem of land ownership as posed in different ways by (George 1879) or by (Marshall 1920) is in turn divided into several problems depending on whether the classical production function is used or the one developed in the present work. By separating the FP Earth into Space, Inert Matter and Living Beings, the ownership and rents of each of them are identified independently. Under the exposed production function, it is necessary to study its behavior in relation to the elements that govern the economy at present. In this area, its relationship with the different forms of legal personality stands out, as well as the impact from the accounting and financial points of view.

Although the characteristics of PFs are independent of the person using them, it is necessary here to mention the different types of legal persons that can be found in the economy. Individuals or natural persons subject to the laws of the

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<sup>201</sup> A concept that, as far as land is concerned, is in line with that put forward by (Proudhon 1983), or more recently by (Ward 2002). However, ownership is raised under conditions associated with agriculture, which occupies a smaller proportion of society, which raises new questions about the adequacy of these criteria in today's economy.

<sup>202</sup> Part Two, p.79

<sup>203</sup> p. 3, '*such instrumental arguments do not sanctify property; they do not make it an end-in-itself*'.

nature<sup>204</sup> and legal persons as institutions created for the fulfillment of certain objectives<sup>205</sup>. The consideration of legal persons as created institutions includes numerous subtypes of institutions, ranging from the traditional for-profit company, the self-employed person carrying out a commercial activity, banks, foundations, non-profit organizations, associations or public institutions (Monreal 1930). All of these legal entities operate in an interdependent society and, to the extent that they are governed by market conditions, they exist on the basis of their capacity to respond to the needs and desires of consumers.

The joint consideration of natural and legal persons, as: persons, legal persons or persons with legal personality, does not imply that both are the same, which is why we can resort again to the considerations of (Mill 1959) on the need for continued study and verification that the bases of our economy continue to respond to the relations between all agents in society. In this sense, the observation of economic behavior between natural and legal persons allows us to make a general separation between human actions for themselves or for the market, with natural persons engaged in consuming to cover their needs, while legal persons are engaged in generating the corresponding supply. It is not a rigid separation that limits, for example, the activity of natural persons to the demand for products and services; activities such as artistic creation proper to natural persons can become a mercantile activity, whether intentionally or not.

However, in relation to the PFs of the economy, it is necessary to study the unique characteristics that define natural and legal persons. In order, based on their similarities and differences, to assess the suitability of offering similar treatment to both types of legal personality with respect to the ownership and use of the PF Space as is currently the case. The reason for this is that both types of persons present unique properties both in their creation, life expectancy, modification of the basic elements and above all in their function.

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<sup>204</sup> Civil Code, art.29

<sup>205</sup> Civil Code, art.35

## 8.2. The Legal Personality in the Factors of Production

Natural persons and legal persons<sup>206</sup> are not created equal, a consideration that can be given to all natural persons among themselves (Friedman 2022)<sup>207</sup>, their creation process, changes or life expectancy are aspects that present great differences that have a scope from the economic point of view.

Considering first the process of creation, to date, the physical person (the human being) is born naturally, its characteristics and genetics are also the result of nature. He is born as a dependent being, which he will continue to be for a good part of his life, not being considered a full capacity to act until he reaches the age of 'majority'. In opposition, companies (and in general legal entities) are created by the express wish of their founders, under this wish and compliance with legality can be defined the initial conditions on which they will be governed. Two elements stand out here in the economic scope of companies:

- **Equity:** or the shareholders' investment in the company to carry out the objectives entrusted to it. In principle in the form of money, although it can be made in other different forms that can be valued in money, such as land, buildings, machinery, patents or technological developments.
- **Its corporate purpose and by-laws (purposes):** these frame the company's business as well as the conditions under which it will be governed from the time of its foundation.

Once created, natural and legal persons are also subject to different conditions. While the human being is limited to its qualities, the company has the capacity to vary its condition over time. From the situation initially agreed at the creation of the company, the persons in charge of the administration have the power to propose to the owners changes in the capital as well as in the corporate purpose or in the bylaws, so that the initially created business entity is moldable to the existing needs at any given time. Likewise, companies are susceptible to changes in the form of mergers or acquisitions<sup>208</sup> in accordance with the regulations in force at the time and place. Actions that are alien to human nature.

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<sup>206</sup> In the justification for the difference, the ownership of rights by legal persons is mentioned in (Gómez Montoro 2002)

<sup>207</sup> Ch. 10, p. 385, 'The word person shall exclude corporations and other legal persons'.

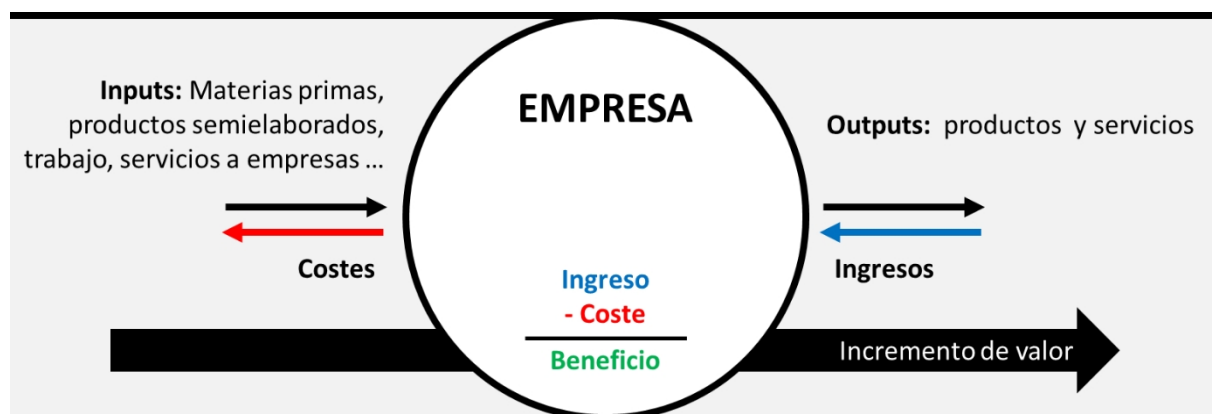
<sup>208</sup> See data in BCG's October 26, 2023 publication 'M&A Is Looking Up After Bottoming Out', which indicates 'Through the end of August 2023, year-to-date, companies had announced approximately 21,500 deals with a total value of \$1.18 trillion'.

With respect to life expectancy, the object of a company is the search for profitability (Friedman 1970). In the absence of profitability, they become a cost for shareholders and, unless there are expectations of change, they head for closure. Under these conditions, the life horizon of companies is a variable that depends mainly on how long they have been of use to their shareholders. Given that there is no value or reference range in the life of a company, as occurs with human beings (childhood, youth, adulthood, old age), there are data on these variables<sup>209</sup> in the National Institute of Statistics for Spain<sup>210</sup> or in Eurostat for the European Union<sup>211</sup>, data that appear humanized as births and deaths of companies.

### 8.2.1. Legal Personality in the Market

Legal entities are institutions created by human beings for the fulfillment of specific purposes<sup>212</sup>. Among them, for-profit legal entities have been created to obtain profitability based on their capacity to transform inputs into outputs to offer goods and services.

As can be seen in Figure 43, companies obtain their profitability based on meeting a demand from society. If they are not able to sell enough goods and services, they do not generate sufficient revenue flow and incur losses, which ultimately leads to the closure of the company. Companies, as an institution, have a social function (García Delgado 2023)<sup>213</sup>. Based on the success in carrying out this social function, resources are obtained for the profitability of its shareholders.



<sup>209</sup> Community of Madrid, 'Mortality and life expectancy of companies 2022': 'life expectancy of companies at birth [...] in 2022 reaches 8.81 years'.

<sup>210</sup> See INE, Press releases 10 November 2022: '45.1% of companies born in 2015 survived after five years of observation'.

<sup>211</sup> Business demography main variables

<sup>212</sup> CC, Ch. 2, Art.35

<sup>213</sup> Boletín RSG 2023, p.210, 'The causality, as almost always in economics, has been of a circular nature: without a market there is no entrepreneurship, and without entrepreneurship there is no market and no progress.'

**Figure 43:** Functional diagram of a company showing the flows of products and services to the right: *inputs* and *outputs*, as well as the economic flows in the left direction of revenues and costs, the company is at the center of a process of increasing value. Source: own elaboration

From a financial point of view, the normal operating performance of the company is reflected in the income statement. This is followed by variable costs, which represent the costs derived from the FP combination used to produce the supply, and thirdly, fixed costs, which represent the structure that supports the company's value generation. This reflects the general concepts of business management such as market orientation, the development of capabilities such as quality or innovation, or the search for competitive advantages (Slater and Narver 1994).

That said, the other forms of legal entity function in a similar way, whether in the form of government agencies, international organizations, associations, foundations or NGOs<sup>214</sup>. They use different types of inputs to offer products and services that affect specific parts of the market. For their work they receive income, whether this is linked to their sales or comes from other sources such as voluntary contributions, and this income enables them to cover the costs associated with the work they do. The remainder, if any, must be used for the purposes agreed in their bylaws. Under these considerations, companies are not very different from any other legal entity, except in the decision on the distribution of the profit obtained.

### 8.2.2. Creation of Value for the Legal Entity Market

Once the *inputs* have been acquired, companies create value from their internal transformation process, in which they make sequential combinations of the different *inputs in order* to generate a final *output* valued by society. Examples of this can be:

- The production of a good (*output*). It involves the dedication of time of all the operators involved in manufacturing within the company (labor), the use of precise, high-tech machines (capital), the use of raw materials, already

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<sup>214</sup> See 'Oxfam 21\_22 Annual Report', p.48: 'the confederation reported a surplus of €99.1M for FY 2021-22, a strong financial result [...] enabled us to strengthen our financial position in order to create greater impact in the future'. Also the 'International Financial Report 2022' of Médecins Sans Frontières, p.12, 'total surplus before changes in funds = 67,058,000 EUR'. Also Greenpeace 'Annual Financial Report 2022', p. 35, 'Surplus/(Deficit) after Share of Result in Participating interests and Financial Result (2022) = 1,676,000'.



These arrive at the company in their natural state or previously transformed by another company and thus as energy (Inert Matter).

- The service of transporting a good between two points (*output*). It implies the availability of different inputs, which include: one or more people (labor) to perform the tasks of collection, transport and delivery, the existence of the technical means (vehicle = capital) or of the necessary consumer goods (energy from fossil resources = Inert Matter).

In both cases, the dedication of inputs to the purpose defined by the company has made it possible to create the outputs offered to society in a process described as a Value Chain (Porter and Millar 1985). The company has been responsible for carrying out the transformation process for the creation of the output and for making the combination of productive factors nature, labor and capital that it has found to be the most efficient possible. These outputs can be destined for final consumption by individuals or to be used as new inputs by other companies that contribute to the development of a superior final output.

For both cases it is necessary to have the first PF, the space. A space that behaves differently: while in the first case a specific private space is required, which meets certain fixed conditions (work, safety at work, safety of the installation, storage...), in the second case the transitory use of the common space connecting the collection and destination points is required, or instead of a private space for which a circulation fee is paid in circumstances similar to a private highway.

### **Shareholder value without market value**

In contrast to this business model based on the contribution of value to society as the basis for profit, there is an alternative way of seeking to obtain profits in the economy. This is that of the business function as market arbiter based on the acquisition of undervalued assets for subsequent sale at a higher price, without involving any investment in FP. This use is related to the ability to own space and natural resources without limit either in time or quantity.

Currently, a company can buy the indefinite right of ownership over a given space, keep it for as long as it deems necessary and sell it later. During this process there has been no specific activity on the part of the company, the initial space may be exactly the same as the final one, but, due to the economic changes that have taken place during the time in which the property has been enjoyed, it is possible to sell it at a later date.

of space, it is possible, and even probable that this land has changed in value (George 1879)<sup>215</sup>.

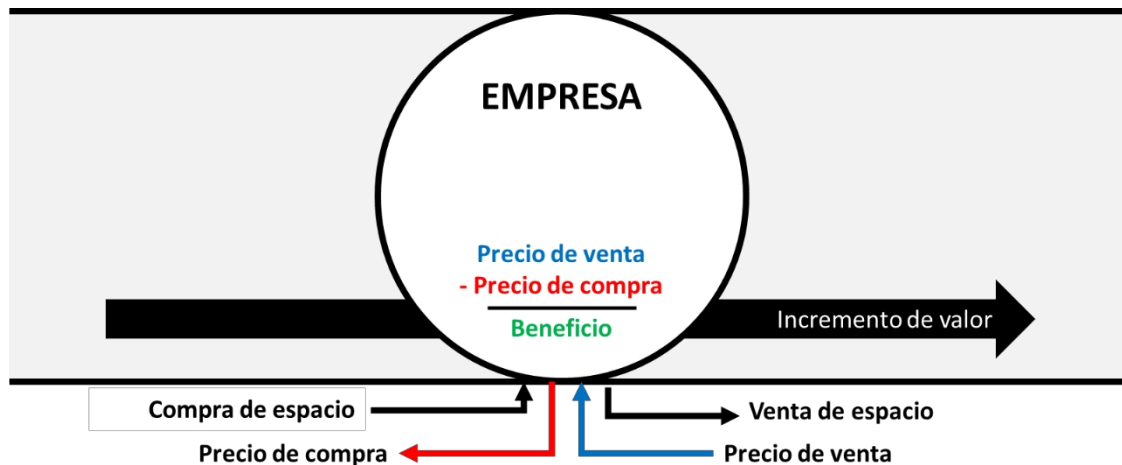
From a macroeconomic perspective, stability will hardly have existed; changes in the size of the population or in its income, already discussed in Chapter Four, will have an impact on the value of the asset. Similarly, under the existing monetary policy, the purchasing power of money will have changed, varying in turn its price, allowing at least its use as a store of value (Anari & Kolari 2002). From a microeconomic perspective it is possible that the environment in which the land is located may have changed between the time of purchase and sale of the land, again affecting the price. In such an environment, nearby landowners may have changed, the services available may have changed, or the number of people in the neighborhood may have changed (Mingche & Brown 1980).

As opposed to a static space, we find a world with great dynamism in economic terms. Changes in the world will inevitably generate a variation in price, which, as we have seen in previous chapters, tends to be increasing, both in absolute and relative terms. It is therefore foreseeable that the company will be able to sell the space at a price different from the purchase price, and on this basis seek to obtain a profit without having performed the basic function of companies of creating value for the market through the conversion of *inputs* into *outputs*. On the contrary, it will have created value for itself through the possession of an asset without generating any value for the market.

Figure 44 shows the case analyzed. Starting from the company as a central element for the creation of value for society through its transforming capacity, an activity associated with the company's income statement. This is a balance sheet operation, in which the purchase-sale process is carried out without any implication in the income statement other than as the accounting entry of the capital gain obtained in the process.

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<sup>215</sup> See also 'Everybody works but the vacant lot' in 'The New York Public Library' with the sentence published by Fay Lewis 'I paid \$3600. For this lot and will hold 'till I get \$6000. The profit is unearned increment made possible by the presence of this community and enterprise of its people. I take the profit without earning it. For the remedy read Henry George'



**Figure 44:** functional scheme of real estate capital income based on the purchase of space by the company. Own elaboration.

In other words, the profit in the income statement is not associated with a process of increasing value for the company (which would be shown in the form of revenues and costs in the gray band in the image), but with a process of managing property rights with no other impact on the company. It appears in the income statement only as capital gain income. This situation entails different implications on speculation, while from the point of view of capital goods it entails positive effects in terms of the constant valuation of the same that allows knowing at all times its market share (Malpezzi & Watcher 2005)<sup>216</sup>, from the view of space as a non-produced production factor in the hands of society, this activity implies the generation of private profit with no impact on society, a situation that supports the ownership of space in the hands of society.

In view of the analyzed situation, the problem arises regarding the definition of the model of property rights from an economic point of view that allows a better use of the space by society. It is the problem of moving from positive economics, in which facts are analyzed, to normative economics, in which variations in the existing economic conditions are considered, including the need or not for specific regulations.

To illustrate this, the natural evolution of a successful company in the primary sector can be considered as a source for three scenarios.

<sup>216</sup> The work of (Malpezzi & Watcher 2005) shows the positive relationship between the conditions of volatility associated with the possibilities of speculation and restrictions in the supply of housing. This problem is closely linked to FP space in terms of what can be considered total rigidity of its supply.

- First, a small start-up company engaged in agriculture could acquire space to perform its primary function.
- The same company years later, thanks to the success of its crops, would be able to purchase numerous lands (spaces) to continue performing its primary function on a larger scale.
- Ultimately, the same company could become so large that it has acquired enough land (space) to become the largest producer of a given agricultural product.

None of the three situations is alien to the functioning of the economy; they represent three phases of current business development in which the first shows the beginning of the entrepreneurial path and the third shows the successful outcome of a company's vocation for growth.

The company requires the use of space to perform its function. The use of space can have different motivations:

- **Punctual:** a worker may require a space to work in front of a computer. This space may be different at different times without necessarily having an impact on his or her performance.
- **Temporary:** changes of location are usually costly. In addition to the displacement of people and its impact on their work (habits, organization...), they imply the displacement of all the company's furniture. A critical example in this case can be capital-intensive factories where machinery is installed.
- **Spatial:** associated with location-dependent activities, such as premises and stores. They require a certain space for the success of the business. The same market obtains different results between a primary and a secondary location. Another spatial motivation could be based on the bonding of the company's workers, given the benefits of living in the vicinity of the company.
- **Linked to Nature:** associated with the production of natural resources that can be subsequently consumed, such as all food vegetables, timber production or mineral extraction. This is a use that can become very space-dependent, for example, in a fruit tree plantation, which requires investment time until the first harvest, and can then be productive for decades.

The different motivations make space a source of security and profitability for the companies, which is essential for them to be able to carry out their supply work. This condition requires that companies have security over the rights to the space available to them. These rights, as indicated at the beginning, specifically include conditions such as terms or associated rents. Under conditions of certainty, companies will be in a position to make their economic calculations and, therefore, to make decisions in line with the best use of their resources.

### 8.3. The Household of Individuals

After the consideration of the use of space for economic activity, the use of space as the home<sup>217</sup> of the human being; of the physical/natural person arises. A concept of home that transcends the economic aspect but which has traditionally been an element of economic concern (Marshall 1884). A home currently owned by 76% of Spaniards, as is the case with 70% of Europeans<sup>218</sup>.

(Dupuis & Thorns 1996) consider the complexity of the concept of home, discuss its linkage in terms of security that includes the concepts of constancy, time or routines, while using terms of personal identity, legacy or vital stimulation. (Hazel 2004) develops the importance of 'place' in relation to security in the study of housing<sup>219</sup>. (Blunt & Dowling 2006) pose the home in conjunction with material issues such as its market value or its physical protection and imaginative ones such as social meaning including identity or power relations. (Somerville 1997) in his work 'The Social Construction of the Home', develops the concepts of privacy, identity and familiarity as domestic constructs, to conclude by indicating that:

*"The construction of home as a familiar place is then, by extension, the construction of a place for one's family."*<sup>220</sup>

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<sup>217</sup> The concept of 'Home' raises subjective issues ranging from assessments of 'good or adequate' (Leckie 1989) to consideration of the basic elements that a space must include to be considered a dwelling (Segura & Linera 2022).

<sup>218</sup> See data Housing statistics, data referenced to the EU-28 in 2013.

<sup>219</sup> (Hazel 2004) has an impact on the terms used by (Dupuis & Thorns 1996), dealing with the concepts of security from the point of view of maintaining the environment, generating routines, controlling life or as a basis for the construction of identity, at the same time as a point from which the person's social relations are generated.

<sup>220</sup> p.237, Trad. Lib. Author: 'The construction of a home as a family place is by extension the construction of a place for the family'.

This concept of household is opposed to the consideration of land as a *commodity* (Polanyi 2001)<sup>221</sup>, or as capital (Harvey 1982)<sup>222</sup>, concepts in which the condition as FP in its function of exploitation for the market takes precedence.

(Turner 1976) indicates what he considers to be three principles that should develop housing provision, which include 'The principle of self-government in housing' associated with the role of inhabitants and local institutions, the 'principle of appropriate use of housing technologies' contrary to central housing planning, and the principle of 'limited housing planning' which advocates the role of centralized regulation in providing safeguards for private action.

Respect for the sense of belonging implies offering special treatment to human beings in their conception as physical persons. This situation is based on the definition of general property conditions that allow all human beings to have the space on which they build their home indefinitely. These conditions, if not limited, could provoke a displacement of the market from legal entities to natural persons.

This raises the inclusion of a differentiation between legal persons on the treatment of space as FP, which implies allowing the acquisition of space to individuals under the consideration of home. The treatment of home is limited to certain dimensions and general conditions, while at the same time offering access to the use of any superior space in conditions of leasing it to the company under the same conditions as those offered to legal persons. In its definition must be taken into account.

- **Dimension:** indicating the dimension maximum dimension that can indefinitely available to each individual<sup>223</sup>.
- **Number of properties:** on which a property can be obtained as a natural person.
- **Shared participation:** under the consideration that a person may participate in amounts less than 100% in the ownership of homes, which

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<sup>221</sup> See, p.72, 'Accordingly, there are markets for all elements of industry, not only for goods (always including services) but also for labor, land, and money, their prices being called respectively commodity prices, wages, rent, and int' or p.137, 'But, while production could theoretically be organized in this way, the commodity fiction disregarded the fact that leaving the fate of soil and people to the market would be tantamount to annihilating them.'

<sup>222</sup> See, p.343, 'The rise of capitalism entailed the "dissolution of the old economic relations of landed property" and their conversion to a form compatible with sustained accumulation', 'capital can be regarded as "the creator of modern landed property, or ground rent" '.

<sup>223</sup> The consideration of the property of natural persons does not enter into discussion with the family role or with the possibility that in a family of several members each individual can dispose of his or her rights.

implies the consideration of the possibility of participation in a higher number of properties.

By bringing these three elements together, citizens can be offered a combination of security and belonging in the availability of a family home while at the same time the considerations made on legal entities promote the development of the most valued land uses at any given time, allowing the generation of income for society as a whole in an efficient manner through the maximizing mechanism of the market.

At the same time, work is being done on elements of greater social concern in relation to housing, such as the concentration of properties<sup>224</sup>, the existence of empty housing<sup>225</sup> or speculation in the real estate sector, elements that translate into the obtaining of private benefits under the private availability of a production factor prior to human action.

### 8.3.1. Ownership of Space and its Rents

The relationship with space is based on the differentiation between the activity of human beings as natural persons and that of legal persons. While natural persons require a space in the form of a home that provides shelter for their human existence and is associated with conditions of stability, maintenance and care of their properties, legal entities are conceived as finalist entities whose existence is based on the achievement of market objectives, such as the obtaining of profitability by companies or the fulfillment of certain social purposes by institutions such as non-profit organizations, foundations, associations or the state itself, which means that space can be considered as a PF that contributes to the achievement of these objectives.

This difference in the conception of the activity of legal persons between offerers (legal persons) and final demanders (natural persons) presents limitations, in that the very activity of natural persons can entail contributions to the market in the form of offerers, the activity of artistic production being an example of an activity of human beings that brings value to the market. The problem here lies exclusively in the ownership of space as a PF of the economy.

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<sup>224</sup> Under the status in Spain of 'Large holder' to the natural or legal person owning more than 1,500m<sup>2</sup> or 10 urban properties intended for housing, in accordance with: 'Law 12/2023, of May 24, for the right to housing'.

<sup>225</sup> See 'Censos de Población y Viviendas 2021' which indicates 'According to electricity consumption in a full year, 3,837,328 dwellings are classified as vacant'.

From its role as a home, space is basic to the human existence of natural persons; once built, it exists outside the final objectives of the market, although it can participate in the development of specific economic activities by its citizens. This paper does not propose a temporal limitation of home ownership to human beings that would entail social and moral implications beyond the scope of this study.

On the other hand, from its role as a space used by legal entities, the conception of production factor does not require its association with unlimited property rights, but of an availability for its use during the time in which the economic activity is carried out. It may require from punctual rights (e.g. a sports competition), to a long association (e.g. investment in construction and/or renovation destined to hotel business).

This differentiation based on legal persons leads to a separation in property rights, allowing natural persons to acquire ownership rights to their homes of unlimited duration, while legal persons may acquire only rights to the exclusive use of spaces of the corporation. The separation between natural and legal persons in turn requires a humane decision as to the limitation of the ownership of natural persons in their conception of home, considering the use of any space outside the home as a right that can be accessed under market conditions. This implies that from the space available in property indefinitely as a home, any privative use of additional space will be associated with a deprivation of the right to use it by other human beings, which can be obtained under market conditions. A limitation that, as stated above, can be assumed by the company on the basis that it receives compensation for its assignment under the same conditions as those applicable to legal entities.

The definition of limits would act as a human decision imposed on society, and therefore as an arbitrary decision that can be labeled as opposed to freedom. At this point they confront each other:

- Equal access of all citizens to primary VET in its economic aspect.
- The availability of indefinite home ownership in its function of privacy, identity and familiarity (Somerville 1997).

The human decision in relation to space is reduced to determining the limits of property over which it can be disposed of indefinitely in the form of a physical person. In other words, to quantify from what dimension of space the



acquisition under market conditions, i.e., under the same treatment as that given to legal entities.

### 8.3.2. Decision Problem

From what has been indicated so far, the decision problem is developed, valuing the unique character of each property and the uses and customs derived from them. The complexity to solve this problem includes:

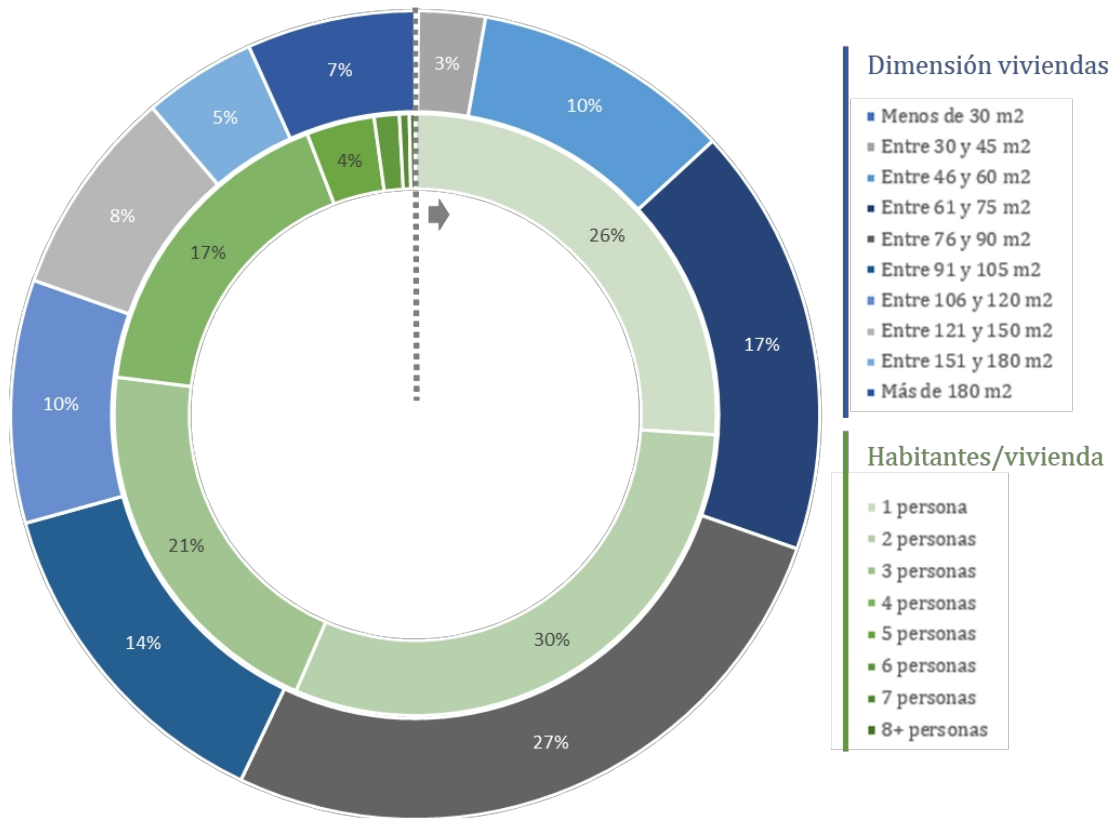
- Location: urban and rural, size of the municipality.
- Uses: housing, personal office, self-sufficient agricultural use, agricultural lease.
- Number of inhabitants per dwelling
- Partial interest in the property

This problem implies that a 500 square meter apartment in the center of a big city like Madrid can be considered an exceptional space, while a plot of land on which a single-family house is located and which occupies an equivalent space in a sparsely populated municipality can be seen as a common situation. This aspect increases the arbitrariness both in the single decision and in the possibility of defining alternative criteria.

Under the data shown in Figure 45, 80% of the dwellings in Spain have less than 120 square meters<sup>226</sup>, while 94% have four or less members in the household. However, the problem of deciding on the data provided implies making normative decisions from a positive point of view. This is the same as intervening human action based on its own observation, omitting facts such as the time limitation in the observation of certain conditions or the assumption that conditions will remain the same once the intervention is implemented.

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<sup>226</sup> See INE 'Continuous Household Survey (ECH). Data referring to January 1 of the year', 'Number of households by provinces according to type of household and usable floor area of the dwelling', 'Number of households by provinces according to type of household and usable floor area of the dwelling'.



**Figure 45:** Distribution of dwellings according to their size (external circumference) and the number of inhabitants per dwelling (internal circumference). Source: Prepared by the authors based on data from the INE continuous household survey.

Instead of socioeconomic conditions, other physical conditions can be used, such as the space necessary for the self-sufficiency of the owners.<sup>227</sup>

### 8.3.3. Transition Problem

As indicated above, we are dealing with a company that has operated under current market conditions. This situation means that commercial space transactions have been commonplace. At the present time there may be newly acquired space properties, whose amortization is beginning to be realized, at the same time as fully amortized space that has not been transacted.

Having determined the difference between natural and legal persons, it is necessary to define the measures under a minimum of arbitrariness that allow the implementation of the described market conditions. Starting from the consideration that all activity of individuals and legal entities is

<sup>227</sup> Since the definition of this amount is not the subject of this paper, it can be considered an estimated value of 100% ownership of a maximum of a property of 1,000 m<sup>2</sup>. This is the amount above which the acquisition of space would no longer be carried out under the conditions of a natural person's home, but under conditions similar to those of exploitation

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for any other legal entity.

THE HOUSEHOLD IN THE FACTORS OF  
PRODUCTION

The transition is limited to the following pro-market measures:

1. Space, as a non-produced factor of production, can no longer be acquired under conditions of indefinite ownership by juridical persons. It is considered that every natural person acts as a juridical person as regards the ownership of space for values higher than those expressed in the previous point.
2. Every legal entity has the right to use the limited space from the present moment until the period of amortization of the same fixed by the regulation. This right remains transferable at the discretion of its owner.

Under these conditions, the unproduced PFs are handed over to society, while at the same time offering the current owners the possibility of a return on their investments. At this point, it is important to highlight the need to find a solution that involves minimum market distortion. The problem lies in the fact that when society implements these mechanisms and promotes the liberalization of the market, a change in market conditions occurs, generating a milestone that separates different decision criteria. A previous one in which investment decisions on space (land) were made under conditions of indefinite ownership and a second one in which decisions are made under conditions of ownership limited in time. In this case, the main element linking both decision criteria is that of the accounting amortization of the property, according to which the cost of the property could be amortized over the useful life of the economic project carried out in that space, with sufficient time for the generation of profitability of the investment made. This condition would be aimed at avoiding legal claims on the one hand and interventionist actions on the other hand that would result in a worsening of the general market conditions.

Regarding interventionist actions, the proposed solution is aimed at avoiding political decisions that seek other solutions through non-market mechanisms. An example of this could be the decision to publish progressive taxes on the ownership of space until it becomes unviable, or another solution for many economies could be the acquisition of such spaces at market prices, charging society as a whole the cost through increased fiscal policies or an expansive monetary policy that impoverishes all citizens.

In opposition to the solution proposed, there is the problem of a concentration of the return of rights to the company at the end of the marked period. This aspect presents risks associated with the stability of the market in terms of a concentration of

This is an aspect that should be studied in depth in order to distribute maturities and generate stability.

#### **8.4. Examples of Public Action on Land Treatment**

In this sense, it is worth highlighting the public initiative of solutions that promote the liberalization of public land under market conditions, for which the "Programs for the transfer of land under surface rights for the development of affordable rental housing" promoted in the city of Madrid by the Department of Urban Planning in the first <sup>place</sup><sup>228</sup> in 2021 and as a second <sup>program</sup><sup>229</sup> in 2023, serve as an example.

These are programs that present numerous motivations of increased freedom and competition aligned with the issues addressed in this paper, which deal with the concept of space as the FP on which the intervention is carried out, as indicated by the mention of "land under surface rights". Programs that present a time limitation for the exploitation of the resource "45 years" and whose projects are executed by private capital. Issues aligned with the efficiency of the use of resources, as well as it can be indicated with equity from the point of view of income generation for society.

However, at the same time, we are faced with programs restricted by the prevailing economic model in which the ownership of the space is either private or public, which implies that in neither case is it a property of society. This leads to the consideration of a concession of finalist spaces in which the uses are also specified and restricted, no longer as housing, but specifically as

"affordable rental housing" rather than the market regulating itself.

It also highlights the role of the terms treated in this work, in which the amortization periods currently in force have been used as a starting point for the assignment of proprietary rights to the space. The 45 years shown in the program represent less than half of the maximum legal amortization periods, while at the same time marking a market value that is estimated to make the developed businesses profitable.

Another important point is maintenance, on which the regulator highlights the positive impact of allocating the housing built for rental purposes, which could be considered as a positive impact.

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<sup>228</sup> Program for the transfer of land under a surface right regime for the development of affordable rental housing (2021) of the Directorate General of Urban Development Management, Madrid City Council.

<sup>229</sup> Second program for the transfer of land under surface rights for the development of affordable rental housing (2023) of the Directorate General of Urban Development Management, Madrid City Council.

similar to a sublease, instead of being understood as property of the recipient of the land transfer. With respect to the final state, it is emphasized that the municipal administration will recover the land at the end of the assignment, adding to its assets the buildings constructed, thus obtaining "an important housing stock"<sup>230</sup>.

With respect to the tax system, the concession is framed within the Spanish tax structure, which implies that the price formation must include the corresponding taxes, among which the role of IBI appears as a form of tax on the land right in addition to the payment of the right itself for the bidding. Likewise, legal adequacy issues make it necessary to include in the price the building conditions, which according to the program are estimated at an additional 15% for compliance with energy efficiency requirements.

It is important to highlight here the use of market rents as an element of information of private origin for the definition of the conditions of the offer launched from a public institution, as it appears in the Annex on "initial yields for housing rental"<sup>231</sup> according to districts. These market rents are in line with the use of knowledge in Hayek's society (Hayek 1945).

The "Reviva Madrid" program<sup>232</sup>, which uses public funds for the acquisition of space from the private sector that is not available under market conditions, is in line with the opposite direction to that indicated by the offer to the market of resources considered as public. Also shown is the intervention of the market through the right of first refusal using public funds<sup>233</sup> in the Barcelona City Council<sup>234</sup>. Two different actions in terms of the transfer of property rights that share the intervention of the sale and purchase and/or rental markets through the use of public funds.

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<sup>230</sup> Second program of 2023, p.30, indicated among the program objectives.

<sup>231</sup> Registered in the First Program of 2021, which shows yields ranging from 3.9% for the Salamanca district to 8.43% for the Villaverde district, with an average of 5.06% for the districts as a whole, according to data from 'El Confidencial - Savills Aguirre Newman'.

<sup>232</sup> According to the 'Bases governing the acquisition of the right of temporary usufruct of housing in the city of Madrid and its leasing for the "reviva Madrid" program', which allocates 30 million euros for the acquisition of the right of temporary usufruct.

<sup>233</sup> See 'habitatge.barcelona' as of July 28, 2021 'Public housing stock grows with the purchase of four buildings in L'Eixample' where it states that 'Since 2016, the public housing stock has grown by nearly a thousand homes, with the acquisition of 958 homes with an investment of 91.2 million euros'

<sup>234</sup> According to the Urban Development Regulation of December 20, 2018. 'Modificació del Pla General Metropolità Per a la Declaració D'Àrea de Tanteig i Retracte a la Ciutat de Barcelona i Definició dels Terminis D'Edificació, del Municipi de Barcelona'.

### **8.5. Implications for the Real Estate Sector**

This model has major implications for the real estate sector, since the change in the treatment of space implies a transformation in its relationship with the economic system. The fact of converting a property right into a right of use leads to its removal from the assets of companies, and it becomes a cost in their profit and loss account. This situation entails a new relationship with the market with important effects on the price system, as well as on elements of great public concern such as speculation or informal settlements.

At the same time, the consideration of the need to have a space in safe conditions for human beings has led to assess the need to consider the only exception to a model based on the efficient functioning of the market, such as the availability of an indefinite property right over their home for human beings, a home linked to concepts of family, maintenance or inheritance. This situation does not prevent a person from enjoying superior spaces for the uses he may consider, but over which he has a temporary privative use in exchange for the generation of rents to society.

The implementation of the measures in a given area through the mechanisms discussed has direct implications on the economic equilibrium. Firstly, in the form of a reduction in competition for the acquisition of housing, by limiting speculative forms of speculative or multiple home ownership in the market. Secondly, it promotes business competitiveness in the municipality, allowing a reduction in rental costs for companies located in it and favoring the attraction of productive investment.

With respect to the problem of speculation, the problem arises from the fact that it is produced on goods whose existence is prior to human action. Speculation on capital goods such as a classic automobile or a watch is the market's response to the fruit of society's work and savings, which have transformed previous productive factors into that product. In contrast to the speculation that takes place on the artistic element that is scarce or unique for human beings, speculation on space is subject to historical appropriation rights that are the result of a process that starts from situations of appropriation or conquest (George 2012).

As soon as the ownership of the space passes into the hands of society, the traditional speculation on it disappears. When it is put up for public auction, it is the market that sets the price based on the maximum profitability for the company, with the winner of the bidding being responsible for the level of common income obtained. The assignment of the space acts as a contract between the parties under the agreed conditions, including the use and the

economic aspect, and preventing any change of use until the termination of the right over the space.

The contracts between the parties indicated imply a limitation of public action on land uses. By having contracts between the land lessor and the company, both parties acquire a commitment that limits any change of use. This again limits speculative activity and the possibility of corruption. Only at the end of the contracts between the parties is it possible to make changes that affect future contracts, resulting in a change in the market attractiveness of the space offered and in a variation of the profitability expectations that it may generate, a situation that will be transferred to the acquisition price of the space and thus to the social income.

In contrast to the advantages described above, there is the problem of the combination of two market conditions on FP Space, on the one hand that generated by the indefinite ownership of space for citizens' homes, and on the other hand the rights of use based on the leasing of space to society for commercial purposes. This condition causes that sales made on homes with indefinite ownership of the space pose different economic conditions depending on whether the buyer also acquires a home or if on the contrary acquires a right of use of limited duration. The situation described above poses a limited impact of private property on the emerged surface of the Earth<sup>235</sup>, leaving more than 93% of the planet in the hands of society and therefore being used under market conditions of the rights of use of space.

## 8.6. Conclusions

The definition of FP Space, its ownership, income generation and accounting discussed in the previous sections raises problems both in its relation to the constructions that are made about it and in the connotations of the concept of home for human beings.

The chapter raises the need to differentiate the relationship of natural and legal persons with respect to FP Space; the specific characteristics of the two types of legal persons and the differentiation between human existence and the social purposes proper to companies and other institutions lead to a specific treatment of the household as a

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<sup>235</sup> Considering the 510 million km<sup>2</sup> and a population of 10 billion people, for the assumption of a maximum indefinite ownership of 1,000m<sup>2</sup> per inhabitant, a maximum of 6.76% of the space considered as a home would be available. This amount would in turn be limited by the effect of high-rise construction, which is particularly prevalent in cities, as well as by the limitation of acquired space to significantly lower amounts; for a space of 200m<sup>2</sup> per inhabitant, this would be 1.35%.



space indefinitely owned by individuals. Under the above, any space other than the home is considered as a limitation of the possibilities of use of space by the rest of society to which any legal person can have access under market conditions.

This consideration favors the development of a model that facilitates access to housing for all human beings by limiting the relationship between the concepts of investment and home. A situation that does not prevent the proliferation of models aimed at renting housing in cases where citizens consider such a model preferable, such as student residences, residences for the elderly, *cohousing* or *coliving*, with the market itself facilitating the balance in such models under a consideration of the right to use space limited in time.

Under the decapitalization of space, the expected result implies an improvement in access to housing, a reduction in the cost of access to space by companies and institutions wishing to use it, and a generation of rents for society by depriving the use of space as a common good.

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## 9. SUSTAINABILITY OF PRODUCTION FACTORS

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The current treatment of the classic <sup>PF236</sup> limits the economy to a relation of labor and capital, converting the land in its totality into an economic good that can be used for any economic purpose desired. This treatment is independent of the public or private conception of the economy that is used, given that it considers all natural goods as assets of one of the economic agents, a situation that implies the ownership of land in the hands of different legal persons who have the capacity to use it under their designs.

In opposition to the conception of The Earth as an Asset, the proposed PFs and the Production Function developed from them propose a treatment of nature independent of the action of any current institution, being treated as a set of elements that at the moment they are incorporated into the economy do so in the form of the PFs: Space, Inert Matter and Living Beings. This separation facilitates the contribution of each PF to the economy and the individual valuation of its impact.

Just as any economic action generates an impact on the economy as a whole, actions on Earth generate an impact on the planet's ecosystem that will tend to a new situation of dynamic equilibrium. Thus, the actions of eight billion people add up to a total impact that modifies the ecosystems.

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<sup>236</sup> Current treatment under neoclassical thinking patterns.

At this point, the problem of sustainability<sup>237</sup> is posed from the point of view of the maintenance (static)<sup>238</sup> of the conditions in which human life and any other form of life on the planet is carried out. The objective of maintaining current conditions makes it possible to observe two elements working on the problem of sustainability: on the one hand, the evolution of natural phenomena independent of human action (dynamic)<sup>239</sup> and, on the other, the effects caused by the non-neutrality of human action, which modifies the environment intentionally or unintentionally. Among the unintentional modifications, of particular concern are the effects in the form of emissions harmful to ecosystems, derived from the consumption of different forms of the PF Inert Matter.

Under the capacity of human beings to anticipate the dynamism of ecosystems and to take measures that contribute to maintaining the statics of current living conditions, the study of the impact derived from the consumption of FP Inert Matter allows us to work on the definition of criteria aimed at the sustainability of its introduction as a market *input*. The objective of the economic analysis should not be to determine technical questions for experts in the field, such as the specific quantities of Inert Matter that allow the maintenance of current conditions, but to propose economic criteria associated with the best performance of human life on Earth. The present chapter raises this question by mainly linking the study of the PF Inert Matter to the level of supply that can be considered sustainable.

## 9.1. Introduction

The handbook (Samuelson and Nordhaus 2009), a fundamental document in the teaching of economics since its first publication by Samuelson in 1948, covers the organization of the PF land, labor and capital, dedicating an entire chapter, chapter XIV, to the analysis of land, natural resources and the environment. The chapter begins by mentioning:

*"But what is the threat to humanity if we do not respect the limits of our natural environment?"* <sup>240</sup>

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<sup>237</sup> Understood as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

<sup>238</sup> From a static view of sustainability: current ecosystems and living conditions are desirable. Sustainable implies 'That can be sustained', maintained in present forms, given permanence.

<sup>239</sup> They pose a problem of the dynamism of ecosystems that are in constant change due to the effect of forces beyond human control, in the same way that human action poses a constant change on these ecosystems, and these changes can be both complementary and opposing.

<sup>240</sup> p.267, Trad. Lib. Author: 'But what is the threat to mankind if the limits of the environment are not respected'?

This is an issue that in recent decades has acquired first level academic relevance with cross-cutting effect for different disciplines, having a special relevance in economic analysis with the direct relationship of economic growth with energy use (Ahmad & Zhang 2020) and therefore with the generation of emissions as one of the main causes of damage to the environment, emissions under which (Akerman & Höjer 2005) assess the impossibility of reducing only through technological development. The problem is described by (Wackernagel & Rees 2007) as follows:

*"The premise that human society is a subsystem of the ecosphere, that human beings are embedded in nature, is so simple that is generally overlooked or dismissed as too obvious to be relevant."* <sup>241</sup>

The problem of the limits of the so-called 'ecosphere' was calculated in terms of the capacity of the Earth's ecosystem to absorb the impacts derived from human consumption. The most widely used measure for assessing these impacts is the Ecological Footprint<sup>242</sup>, which in 1996 indicated a terrestrial capacity of 1.5 hectares per capita compared to a consumption that was then between three and four times higher for each North American citizen. The data on the measurement of the Ecological Footprint show a turning point in 1970, considered as the year in which human action on Earth ceased to be sustainable. The increase in population and per capita consumption has had a negative impact on the indicator, considering that today 1.7 Earths would be necessary to allow the sustainability of human life<sup>243</sup>.

Among all the issues associated with the concern for sustainability, it is the process of global warming that presents the greatest concern as a reference of its general impact on the entire planet. A warming measured by the Intergovernmental Panel on Climate Change (IPCC 2021)<sup>244</sup> based on the increase in temperature of the Earth's surface over the average estimated between 1850 and 1900. In the face of which they develop different levels of warming that

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<sup>241</sup> p. 4, Trad. Lib. Author: 'The premise that human society is a subsystem of the ecosphere, that human beings are integrated with nature, is so simple that it is usually overlooked or dismissed as too obvious to be relevant.'

<sup>242</sup> p. 9-13, includes the definition of Ecological Footprint as 'Ecological footprint analysis is an accounting tool that enables us to estimate the resource consumption and waste assimilation requirements of a defined human population or economy in terms of a corresponding productive land area.'

<sup>243</sup> Global Footprint Network data for 2019. See: [data.footprintnetwork.org](http://data.footprintnetwork.org). In the case of Spain 2.6 Earths would be needed, for the case of North America 5.02.

<sup>244</sup> See: Arias, P.A., et al. (2021) Technical Summary. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 33-144. doi:10.1017/9781009157896.002. p.56.

The scenarios and impacts on the planet based on historical indicators of CO<sub>2</sub>, temperature and sea level, among others, are studied for each level. The different warming scenarios entail effects on ecosystems in the form of changes in temperature, precipitation, or soil composition that modify the conditions of life on Earth. Under these conditions, CO<sub>2</sub><sup>245</sup> emissions appear as the main focus of academic study, a focus that, however, does not receive a total consensus, under which there also appear critical voices that consider that the warming process is mostly due to natural issues independent of human action (Kininmonth 2003). Under these conditions, even if the warming were the result of natural causes, one might ask whether human activity, especially in the economic sphere, can and/or should act in favor of maintaining and improving the current conditions in which life develops.

Concerning the present work, the concern resides in the fact that the distinction of PF in the form of Space, Inert Matter, Living Beings, Labor and Capital, shows a direct relationship between their consumption and the level of economic activity. On these grounds, and due to what has been mentioned about the emissions of different types of gases among which CO<sub>2</sub> stands out, the scope of study of this section is the relationship between consumption of Inert Matter and economic activity as a source of emissions. The consideration of economic activity as a source of emissions that modify ecosystems on Earth, transmits the concern to the definition of the level of emissions that is admissible for the maintenance of these ecosystems. This implies that for a higher value of emissions we would find ourselves on a path of unsustainability, while at a lower level of emissions we would find ourselves on the contrary in a sustainable situation<sup>246</sup>. This is an issue that can be addressed both in terms of unit consumption and consumption efficiency, with both leading to different results (Roberts 2004)<sup>247</sup>.

The contributions of William Nordhaus, who was co-author of the editions of the aforementioned manual of economics, can be highlighted; he has continued his economic research in areas such as economic growth, cycles or sustainability; a sustainability intimately linked to the land production factor in that land is a factor of production.

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<sup>245</sup> Accounted for by the 'International Energy Agency' as 36.8 Gt for the year 2022 in its report 'CO<sub>2</sub> Emissions in 2022', see [iea.org](http://iea.org). The value of less than 10 Gt in 1960 can be taken as a reference value for the cumulative increase.

<sup>246</sup> See 'carbon neutrality' or 'zero net emissions' in 'International Climate Negotiations Issues at stake in view of the COP 24 UN Climate Change Conference in Katowice and beyond'.

<sup>247</sup> Ch. 9, p.337, observes how increases in efficiency are associated with subsequent increases in the volume of consumption, which results in the opposite direction to the reduction of unit consumption.

polluting resources come from it (Nordhaus 1991). In the latter field he published (Nordhaus 2007) 'To tax or not to tax: alternative approaches to curb global warming' in which he advocated the use of market mechanisms to combat warming, as these are more efficient and involve less intervention by the economy, indicating that

*"We might fear that the international community could fiddle with tax rates and definitions and measurement issues and coverage while the planet burns."*<sup>248</sup>

A situation associated with the search for sustainability through public action by means of fiscal tools. Concern about public action takes on greater importance given the aforementioned situation that it is the states that have sovereignty over natural resources<sup>249</sup> thanks to the agreements reached between them. This condition limits the possibilities of collective action on the Inert Matter PF if it does not take place under a global coordination of the states themselves in which the positive impacts are widely distributed, while the costs remain concentrated in a few countries (Nordhaus 2015).

## 9.2. Demand Intervention and Sustainability

Concern for the sustainability of the Earth has led to individual and aggregate decision making with the objective of reducing emissions to levels that can be considered sustainable. From the individual point of view, a contribution is made to emissions control by incorporating sustainable criteria into consumption decisions, allowing companies to take actions in this direction on the basis that the consumer values them. This situation shows different behaviors among citizens, as shown by (Collins et al. 2007)<sup>250</sup> when indicating the existence of a ground effect in which there are consumers who are not willing to pay for social performance, an aspect that is motivated both by personal decisions and ignorance of the environmental impacts that are not reflected in prices.

With respect to coercive political action in the pursuit of sustainability, it is shown in the process of generating regulations that seek to act on specific points of human action, such as the cases of legislation published in Spain between 2021 and 2023 that includes aspects on incentives for renewable energies<sup>251</sup>, generation

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<sup>248</sup> p.43, Trad. Lib. Author: 'It can be feared that the international community may play with taxes, definitions, measurements or hedging while the planet burns'.

<sup>249</sup> General Assembly resolution 1803 (XVII) of 14 December 1962, entitled 'Permanent sovereignty over natural resources'.

<sup>250</sup> p. 570,

<sup>251</sup> See: 'Royal Decree-Law 29/2021, of December 21, adopting urgent measures in the energy field for the promotion of electric mobility, self-consumption and the deployment of renewable energies'.

waste management<sup>252</sup> , energy efficiency<sup>253</sup> or cooperation for sustainable development<sup>254</sup>. Elements that modify the behavior of markets, generating new price equilibriums under the conditions set by public authorities. The increase in costs derived from the implementation of regulations entails a restructuring of business resource allocations based on the elements that legally maximize profitability, points that are discussed in greater depth in the following section.

The problem of sustainability is transferred to companies under the combined pressures of consumption and regulation. As indicated above, they must first of all be profitable to guarantee the permanence of their market activity, which implies that they can only include sustainability actions under the criterion of profitability of such actions<sup>255</sup> ; in the absence of profitability, the investment, viability and social action of the company is lost insofar as it ceases to offer the market goods and services it values. Companies cannot be sustainable in a unilateral manner, inasmuch as the offer of products that reflect in their prices the limitations derived from their environmental impacts could imply amounts that cannot be assumed by current markets.

The set of actions on the part of consumers, institutions and companies can be understood as a new example of the absence of information in prices (Hayek 1945), in this case not derived from public action but from the configuration of the economic system under fundamentals that do not include sustainability in price formation, that is, under unsustainable human action.

### 9.3. Sustainability according to Inert Matter Supply

The above issues allow raising the need to transfer the problem of sustainability to the pricing system, which implies the sustainable supply of PFs that raise unsustainability issues. Considering the impact of the IPCC<sup>256</sup> studies, such a path of unsustainability of emissions is shown due to the current functioning of the economy, in which it can be mainly considered that the consumption of the PF Inert Matter that generates emissions is higher than admissible for the maintenance of the planet's ecosystem under current technological conditions.

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<sup>252</sup> See: 'Law 7/2022, of April 8, on waste and contaminated soils for a circular economy.'

<sup>253</sup> See: 'Royal Decree-Law 14/2022, of August 1, on economic sustainability measures in the field of transport, on scholarships and study aids, as well as on measures for energy saving, energy efficiency and reduction of energy dependence on natural gas'.

<sup>254</sup> See: 'Law 1/2023, of February 20, on Cooperation for Sustainable Development and Global Solidarity'.

<sup>255</sup> See, Kearney (2020), '*Green products often cost much more than many people are willing to pay. Wholesalers and retailers that adjust their accounting logic can gain a competitive edge by creating products with prices that consumers will tolerate.*'

<sup>256</sup> IPCC Technical Summary 2021.



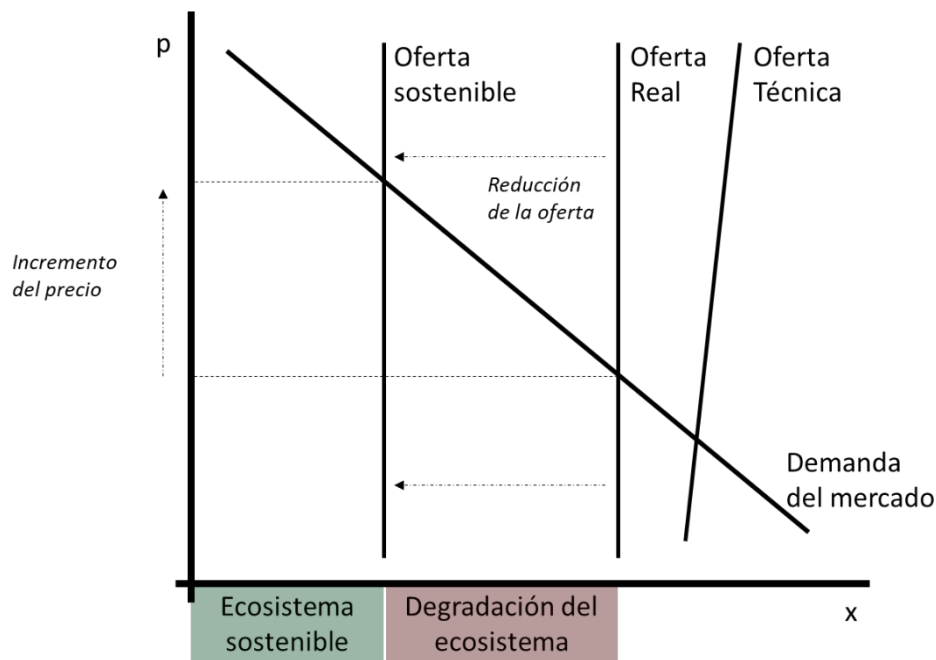
This would indicate that there is a higher supply of Inert Matter than is sustainable (Boccard 2021).

Under these conditions, the problem of sustainability in terms of supply is identified. According to this criterion, the problem lies in defining at a global level the amount of Inert Matter (supply) that can be consumed under the current conditions of economic exploitation. This is a complex definition in that there are different criteria to be agreed upon combined with the particular definition of the quantities of the different types of Inert Matter, exemplified by oil, coal or natural gas.

At this point, the problem of sustainability becomes a problem of supply; as long as nature can be individually owned and/or its goods can be extracted without sustainability criteria, there will be a problem of sustainability for the system as a whole. Therefore, the definition of sustainability criteria is the way for the supply of natural goods to reach sustainable levels. At this point the question to be asked is: What is the quantity of each natural good that can be introduced into the market without having a negative effect on the sustainability of nature? This definition of supply in its market-creating role requires considering different types of supply existing in the economy in relation to the subject of study:

- **Technical offer:** maximum capacity of commercialization of the corresponding Inert Material in the world (e.g. maximum number of barrels of hydrocarbons per day).
- **Actual supply:** implies the actual volume of such Inert Matter that is marketed (e.g. number of barrels of hydrocarbons sold daily). This economic offer could coincide with the technical offer in case of working at maximum capacity.
- **Sustainable supply:** that which combines an economic exploitation of the production factor with an academically supported market sustainability agreed upon by the agents.

Under these definitions, the problem of sustainability becomes a decision to limit the supply to a global maximum admissible, that is, the delimitation of market generation with a totally rigid supply as long as capacity and economic interests lead the supply to levels higher than the levels of sustainability. This situation generates the problem of defining and complying with a global supply level.



**Figure 46:** Relationship between supply and demand of Inert Matter as a function of its technical, real and sustainable offers. Source: Own elaboration

The above can be seen in Figure 46, in which, compared to the real supply determined in the market by the suppliers, a sustainable supply is determined that guarantees the maintenance of the ecosystem of the Earth; the difference between the two implies the realization of an economic activity that leads to the degradation of the ecosystem. It is also observed the existence of a technical offer superior to the real offer, whose slope appears due to the fact of making profitable the increase of the offer as the price grows. It can be seen how the transition from the real supply that currently exists to the supply that can occur under conditions of sustainability would entail an increase in the price of the goods on offer. As an example of sustainable supply, one could consider that which balances the ecological footprint of humanity with that of the Earth (Lin et al. 2018).

This fact has a particularly important impact on PFs as a source of energy, such as oil, coal or natural gas, since an increase in their prices derived from a reduction in supply has a direct effect on the entire production system, changing the viability of projects and the general price system of the economy.

### 9.3.1. Sustainable Supply Versus Intervention Solutions

When considering the issue of sustainability as a case highly linked to the incorporation of Inert Matter into the market given the state of technology at each

At the moment, we are dealing with a question of market creation, i.e. defining how much material should be offered to the market during a given period of time. This situation allows the market price system to distribute in the most efficient way possible the limited amount of Inert Matter, generating in turn an income for society equivalent to the price paid for its acquisition.

This situation is the opposite of what we currently find on the planet, in which supply depends on the action of the invisible hand of all the agents involved in the process of extraction, transformation and commercialization of the productive factors, seeking the personal benefit of each of the intervening parties, whether they are private or public entities. Under current conditions, the search for sustainability becomes a combination of two main forces, demand on the one hand and public intervention on the other.

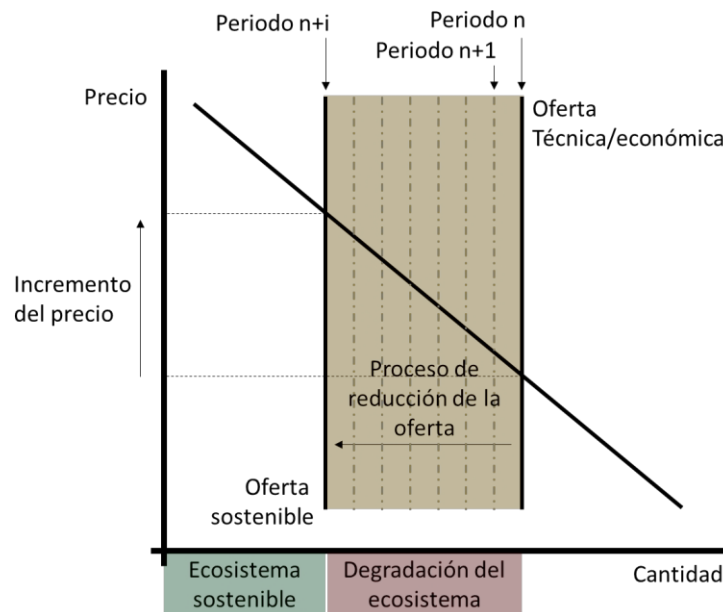
Demand acts here under the modification of consumer preferences, including in its utility the perception of the supply's compliance with sustainability criteria. Under this aspect, a sustainable supply is obtained insofar as there is a demand that values and is willing to pay for it (Collins 2007), a situation that contributes to the adoption of corporate sustainability models (Ranganathan 1998). At the same time, public intervention responses appear through regulations and fiscal policy decisions that limit supply conditions.

### **9.3.2. Sustainability Pathway**

In the case of the current use of Inert Matter, there are two problems, on the one hand that of its ownership, with different conceptions at the international level in which public and private ownership of oil or natural gas are combined (Wolf 2009). On the other hand, its sustainability. The work carried out focuses on the conception of non-produced PFs as goods belonging to society, i.e., neither private nor public, but social. Under this consideration, the ownership of society allows both the human decision of the quantity to be introduced into the market in a sustainable way, and the possibility of offering an equitable distribution of the income generated.

With respect to the problem of sustainability described in the fourth section, the question falls on the decision of the quantity of Inert Matter that is introduced into the market in its market creation function. Under such a criterion, a transition period could be defined from an initial quantity ' $x_0$ ' in a period ' $n$ ' to a final ' $x_i$ ' for a time ' $n+i$ ', in a process of progressive reduction of supply, as illustrated in Figure 47. A process that must be progressive to avoid that the laws of supply and demand cause a price increase that the agents of the economy do not

can anticipate and absorb. A one-off reduction in supply to a level considered sustainable could lead to a severe market adjustment with risk to the overall economic system.



**Figure 47:** Inert Matter supply reduction process over time from current supply (technical/economic) to sustainable supply. Source: own elaboration.

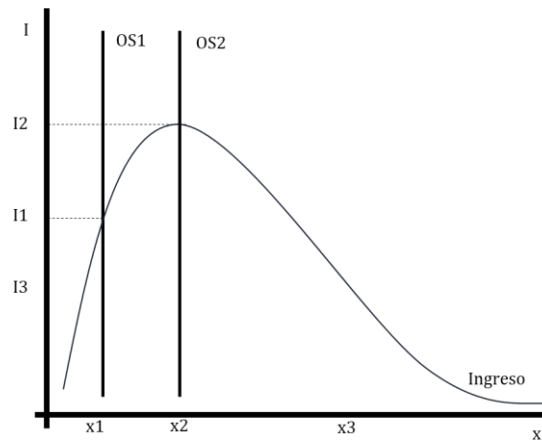
Two limiting issues arise at this point:

- The need for a human decision to define the quantities of Inert Matter to be introduced in the market.
- The current ownership conditions of Inert Matter reserves on the planet.

#### 9.4. Market Creation Criteria

With respect to the first limitation, the decision is based on the search for the sustainability of the system, but at the same time has the condition that the income generated implies the generation of income for society. The objective of sustainability implies the definition of the quantity of each type of Inert Matter that enters the market given the analysis of its impact on ecosystems under current conditions. This objective, which allows sustainability in the long term, runs the risk of being subject to the inclusion of economic income maximization criteria for the definition of the quantity of Inert Matter. This situation is reflected in Figure 48, which shows three levels of sustainable supply  $os_1$  and  $os_2$ , at the same time that the associated income ( $I$ ) is located in function of the relationship between quantities ( $x$ ) and prices ( $p$ ). The taking of

sustainable supply decisions including income generation criteria would lead to social benefits in the short term while damaging the environment.



**Figure 48:** Rents derived from market generation of each type of Inert Matter, relationship of society's income with different values of sustainable supply. Source: own elaboration.

Secondly, there is the question of the current property rights over the Inert Matter reserves on the planet. Reserves that are currently exploited independently by each owner at private or public level. The consideration of these reserves as PF of the society, implies a separation between the current market condition and the market fundamentals developed in this work. This causes different implications that hinder the evolution towards sustainability through supply:

1. **Distribution:** at present, the reserves of the different types of Inert Matter are unevenly distributed throughout the planet. Their social consideration is in conflict with current property rights. Under these conditions, the definition of a sustainable supply on the global market will present an opposition based on the particular interests of the current holders.
2. **Competitiveness:** the possibility of advancing locally towards sustainable models is not possible under conditions of freedom in that the limitation of local supply will seek business opportunities in international markets. Additionally, the reduction of supply would imply a worsening of the competitive position based on the increase in production costs with respect to places where there is no such restriction.
3. **Intervention:** the impossibility of resorting to a sustainable supply implies moving towards a model that combines demand-side actions with market intervention, which has implications on the level of scope of sustainability criteria as well as on the limitation of individual freedoms existing in the market.

Under all these conditions, the search for supply sustainability depends on progressing towards a global consensus sufficient to allow the implementation of the model in a large area of the planet.

### 9.5. Sustainable Growth

Faced with the problem of the planet's sustainability, the literature has developed the concept of *degrowth*, a concept according to which André Gorz<sup>257</sup> asked whether the Earth's equilibrium was compatible with the survival of the capitalist system. The same year (1972) that the Club of Rome report 'The Limits to Growth' (Meadows et al. 1990) was published, in which growth expectations were debated and different scenarios of economic and population growth and resource exploitation were modeled. The concept has evolved since then with debates ranging from the consideration of limited resources, to sustainable growth and sustainable degrowth, together with criteria such as environmental justice or ecological policy. In the words of (Kallis et al. 2015) degrowth pivots on two centers of gravity in the form of a critique of growth and a critique of capitalism as a social system that requires indefinite growth<sup>258</sup>. It can also be understood as the 'radical political and economic reorganization aimed at reducing resource and energy efficiency'. All of the above has translated into an academic concern in which research related to adjustments in infrastructures, work organization, monetary systems or public finances (Bengi 2021) have been carried out that propose degrowth guidelines commonly associated with utopian aspects (Kallis et al. 2018), an issue that does not question the need for the honest academic contribution of its authors.

Part of the foundations of the concept of degrowth does not arise with the aforementioned definition, but can be understood as the result of a historical process in which PF work has been the protagonist, thus, compared to the intense working hours in the nineteenth century<sup>259</sup>, in 1938 the working day of 40 hours was reached<sup>260</sup>. A matter that (Galbraith 2012) highlights in 1958 by indicating that "we are in a position to work less because more is produced in less time." to later consider also the possibility of fewer people working. The main issue is that the

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<sup>257</sup> Collected by (Demaria et al. 2013), p.195. See also 'degrowth.info': 'Is the earth's balance, for which no-growth-or even degrowth-of material production is a necessary condition, compatible with the survival of the capitalist system?'  
<sup>258</sup> p. 4, to which he adds the criticism of GDP as an indicator for measuring growth and the *commodification* of social goods to which economic value is contributed.

<sup>259</sup> (Galbraith 2012) p. 280: 'During the nineteenth century a drastic reduction in the working week took place. It was estimated that in 1850 it reached an average of just under seventy hours.'

<sup>260</sup> 'The Fair Labor Standards Act', p. 13, § 207, 'Maximum hours'.

The decrease in consumption is no longer a question of leisure-consumption, it loses part of its link to questions of need or opulence, and becomes a mainly ecological problem that continues to be linked to labor issues.

Ecological constraint is shown as a limitation of resources or of their capacity of use. However, the concept is associated in the literature with the need for modification of the economic system (Gorz 2012) either in favor of a general self-limitation that can be considered utopian because it is alien to the foundations of human action, or in the search for a cession of the freedom of human beings towards public <sup>intervention</sup><sup>261</sup>, indicating the objective of:

*"To guarantee institutionally to individuals that a general reduction of the working day will offer them all the advantages that could be enjoyed in the past: a freer, more relaxed and richer life. "*

A phrase that, despite being closely linked to work, refers to the reduction of consumption derived from the reduction of the working day, with sustainability being the ultimate objective sought. Degrowth is shown as an objective because it is considered the necessary means for sustainability, also taking into account the fundamentals of the leisure-consumption relationship.

The concept of growth, understood as the "action and effect of growing", or economic development as the "evolution of an economy towards better standards of living "<sup>262</sup> is presented in contrast to this criterion. Under these concepts, this document does not work on a problem in which growth or degrowth appear as ends, but one in which growth is associated with sustainability.

Two elements coincide at this point, on the one hand the limitation of the PF Inert Matter according to the conditions of sustainability and on the other the distribution of rents from the capitalization of this Inert Matter among the entire <sup>population</sup><sup>263</sup>. From the first element, it can be expected that sustainability criteria will lead, among other results, to a limitation of the capitalization of basic raw materials for energy supply, such as fossil fuels.

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<sup>261</sup> p. 55, by proposing a Society with less work and less consumption, indicating also that 'Self-limitation is thus shifted from individual choice to the terrain of the social project'.

<sup>262</sup> Definitions of the Real Academia Española (n. d.).

<sup>263</sup> Situation aligned with the consideration of (Hickel 2020), see S. IX 'Everything is Connected'. in that: '*Capitalist growth has always been organised around an expansionary territorial logic. As capital pulls ever-increasing swathes of nature into circuits of accumulation, it colonises lands, forests, seas, even the atmosphere itself.* The above is aligned on the one hand with the decapitalization of Nature's PF that have not been capitalized in the sense given in the present work, while at the same time aligned with the concept of capitalism associated with the vocation of human development, for which PF Capital, as produced PF, acts as a necessary element.

This would be seen as a process of partial decrease, as long as a growth in the productivity of labor and capital PFs can be expected. With respect to the distribution of rents, the decrease would imply a reduction in the rents to be distributed, which would have an impact on the valuation of nature's PF and therefore on society's income from the transfer of rights over these factors, an aspect that has effects contrary to equity.

Growth thus becomes an objective limited by the availability of the PF of nature, which can consider the existence of a transitory situation of degrowth by the reduction of the process of capitalization of the PF Inert Matter. This conception of degrowth acts on the ecological problem raised in 1972, but does not give an answer to the historical leisure-consumption problem on which the approaches directed on the working day.

The problem of degrowth remains from the socioeconomic point of view, with special relevance in the capital-profit ratio (Piketty 2014)(Gorz 2023)<sup>264</sup>, a problem that could be seriously aggravated under the decapitalization of space in its redefinition as independent non-capitalized and non-capitalizable PF, as well as the decapitalization of Inert Matter PF in its natural state, issues that limit the destinations of investment to productive activities. Under the limitation of investment to the capital goods themselves, a rise in such capitalization can be expected and therefore the consequent reduction in the capital-profit ratio<sup>265</sup>.

## 9.6. Conclusions

The non-neutrality of the consumption of PF Inert Matter in the economy causes a degradation of ecosystems. The activity of human beings in the most developed countries requires the availability of several planet Earths to be sustainable, so it is necessary to provide solutions that limit the current degradation of ecosystems.

The search for solutions from the perspective of regulation raises problems of arbitrariness and inefficiency that work coercively against market equilibrium. At the same time, approaches to the desire for sustainability of demand are limited by the distributive action of the invisible hand that achieves maximum efficiency under the given conditions, but limits the incorporation of sustainability criteria into the already limited perceptions of the impacts of human actions on the ecosystem.

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<sup>264</sup> p. 126

<sup>265</sup> (Piketty 2014) p. 67.



The concept of Inert Matter as an FP of the economy reflects the ability of all human beings to decide how their actions affect the planet. By regulating at a global level the entry of FP Inert Matter under the consideration of market creation, a limitation arises under the concept of sustainable supply that includes criteria outside the market activity. Based on the capitalization of PF, it is the invisible hand itself that allows the best distribution of resources in conditions of efficiency and sustainability. All of the above is aligned with the concept of social growth as a human objective that includes economic growth, with the issues of degrowth being included under the concept of sustainability of market creation.

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## **10. POLICIES AND FACTORS OF PRODUCTION**

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What has been examined up to this point raises a restructuring of the formulation of the economy's PFs that presents the implications at the financial, housing and sustainability levels studied in the previous chapters, aspects that are currently highly associated with the activity of the public sector in developed economies. Financial issues allow the state to oversee companies as the main producing agent of the economy, in the case of housing, being a basic good for society, the public sector considers the need to participate from different approaches, as can be exemplified in price fixations or subsidies, regarding the case of sustainability the intervention is largely done through regulation and alteration of market conditions.

This chapter studies the effect of the income obtained by society from the perspective of the PFs proposed with respect to the effect derived from public policies. Since the need for public action has traditionally been considered in the search for an improvement in the distribution of income, we start from a study of the criteria of efficiency and equity to move towards a comparative analysis of different tax figures representative of the tax system, as well as Henry George's land rent and the rents generated by the PFs Space, Inert Matter and Living Beings.

## 10.1. Introduction

Political decisions are a fundamental actor in today's economies; during the last century, the public sector's share in the Gross Domestic Product has grown from values below 10% to over 50%<sup>266</sup>. These decisions pose an important effect on the development of the economy, modifying balances and seeking to offer a positive impact whose objectives are aligned with employment, price stability, economic growth, income redistribution and quality of life and environmental conservation (Cuadrado et al. 2010)<sup>267</sup>, the motivation for this intervention is based on the existence of market failures on which it is intended to act (Martín Quemada & García-Verdugo 2014).

Among all the elements on which policy acts, the problem of the unsatisfactory distribution of income has remained a major concern in economic thought, as (Samuelson & Nordhaus 2009) indicates:

*"The most perfectly competitive markets may not produce a fair distribution of income and consumption. Societies may therefore decide to modify the laissez-faire market outcomes. Economics has the important role of analyzing the relative costs and benefits of alternative kinds of intervention."*<sup>268</sup>

Implying the existence of a natural market conflict between efficiency and equity that must be resolved by society's decision. This means that in opposition to the adoption of a pro-market attitude that encourages economic efficiency, the solutions proposed by different actors in the economy have tended to be models of state intervention ranging from centralized planning to tax models with a strong interference in the economic equilibrium.

Faced with the advantages of freedom arise the problems of inequality, in which are located the work 'The Price of Inequality' by (Stiglitz 2014) which deals with the problem of the concentration of wealth from the analysis of the current society, and provides its proposals for solutions that, with the expectation of developing a better society, as he indicates in:

"each and every one of the seven reforms we have described produces a double dividend: they increase economic efficiency and increase equality."

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<sup>266</sup> Data collected by the International Monetary Fund (IMF) based on the December 2022 'Public Finances in Modern History Database' show 'Government Expenditure as % of GDP' of 58.34% for France, 56.74% Italy, 47.11% Spain, 44.30% United Kingdom, 44, 09% Japan or 36.26% United States. [imf.org/external/datamapper/exp@FPP](http://imf.org/external/datamapper/exp@FPP)

<sup>267</sup> Part 2, p.142

<sup>268</sup> p. Author: 'Perfectly competitive markets may not produce a fair distribution of income and consumption. Societies may therefore decide to modify the *laissez faire* outcomes of the market. Economics has the important role of analyzing the relative costs and benefits of alternative types of intervention.'

These solutions combine aspects of direct intervention in the markets, as can be seen in the repetition of actions in which it proposes to "stop", "close" or "close" the markets.

<sup>269</sup> with others to modify existing regulations.

Also in the study of inequality, the contributions of (Piketty 2014) in 'Capital in the 21st Century' stand out in what becomes a detailed study of the income-capital relationship linked to the problem of inequality. Several points stand out from this work published in 2013, the first and perhaps most important for the subject in question is the study of the distribution of capital that he deals with in Chapter II on 'The dynamics of the income-capital relationship', in it he shows how housing accounts for between 40 and 60 percent of the existing capital in developed countries, with real estate as a whole being the main source of accumulated wealth during the entire period since 1700, with the United States presenting the highest share of wealth not in the form of agricultural land or housing. In his analysis of the distribution of capital he also devotes a section to the role of slavery in the wealth of society, indicating that for the United States at the end of the eighteenth century:

"the total value of the slaves was [...] almost as much as the value of the land agricultural" <sup>270</sup>

Secondly, it highlights the contribution of solutions in its fourth part, entitled 'Regulating Capital in the 21st Century'. He begins by showing the growing evolution of "government revenues" in a group of rich countries from rates of less than 10% at the beginning of the 20th century to a wide range that has reached 40% in most cases and has exceeded 50% in some cases since 1980. After describing the current state of the economy and its inequality, he points out that

"nothing prevents us from imagining a society in which taxes representing two-thirds or three-quarters of national income [...] would be used to finance needs and investments considered a priority [...] health, culture, clean energy and sustainable development." <sup>271</sup>

Considering the case of the most developed countries in the world, the state has assumed the responsibility of intervening in the market in order to modify the equilibrium generated towards those that better respond to its objectives through policies that must combine the generation of income and public <sup>spending</sup><sup>272</sup>. Thus, we can see how the Bank of Spain

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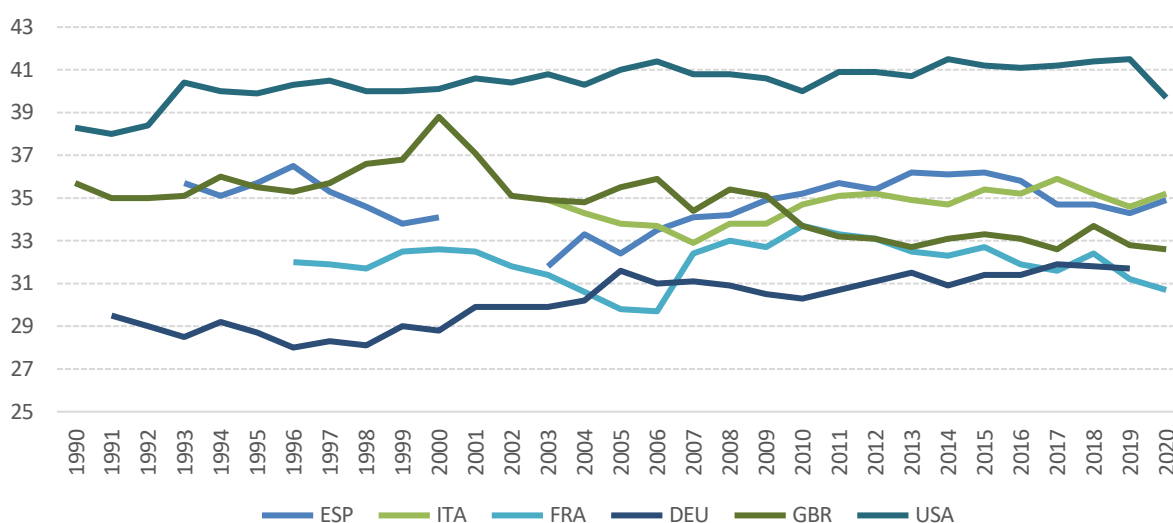
<sup>269</sup> Ch. X, p.335-336

<sup>270</sup> Chap. IV, p.178. Concept of slavery as an asset, which implies a consideration of the human being as the capital of society.

<sup>271</sup> Chap. XIII, p.531

<sup>272</sup> See manuals on public revenues (Paniagua & Navarro 2011) and on public spending (Paniagua & Navarro 2010).

published the report 'Public Spending in Spain from a European perspective'<sup>273</sup>, which indicated that by 2019 the level of public spending in Spain would be 42% of GDP, while in the European Union this figure would be 46% (EU-15), the United States 38% and Japan 39%. These values do not prevent the existence of large differences, with countries such as France<sup>274</sup> or Belgium exceeding 50% of GDP, while Ireland is below 30%. These figures show economies that are highly intervened by political decisions from which important results could be expected in the direction of a better quality of life for society.



**Figure 49:** Annual evolution of the Gini coefficient for selected countries: Spain, Italy, France, Germany, Great Britain and the United States. Source: World Bank

However, not only is the improvement in the results not achieved, but the data show the opposite direction: while in 2003 Spain had a Gini index of 31.8, by 2020 it had increased its value to 34.9, which implies greater inequality in the distribution of income, while at the same time, the number of people living below the poverty line at the national level increased from 20.1% to 21.7%, data that show a relatively stable behavior and trend over time. These results are not different from those obtained for other developed economies, as shown in Figure 49, in which, for the period 1990-2020, all countries show such stability in the Gini coefficient, with the United Kingdom being the country that achieves a decreasing trend with a value of -3.1, together with a value of -1.4 for France, which is very stable.

<sup>273</sup> Occasional Papers No. 2217, p. 15

<sup>274</sup> See (Piketty 2019), p.668, showing the impact of taxation on different income percentiles in society.

marked by the reduction of the last two years of the series. All other countries worsen their situation, with Italy +3.7 and Spain +2.9 performing worse.

Results shown again by (Piketty & Sáez 2014) under the trend of inequality in the distribution of income and wealth since the 1970s, according to which there has been an increase in the concentration of both especially marked in the United States.

In addition to these results of inequality within countries, there are even greater results of inequality between countries, in a world in which 10% of the population continues to live in conditions of extreme poverty (>\$1.9/day 2011PPP)<sup>275</sup> , which translates into a fundamental problem for human beings and which is therefore associated with conditions of continued social instability.

Among the taxation models of particular concern here is the role of land taxation in its conception of the PF Space and Inert Matter, whether in the form of taxation of productive land highly linked to the market, of those destined for housing or of the raw materials necessary for economic activity. Among these proposals, the Land Tax of (George 2012)<sup>276</sup> proposed in the second half of the 19th century stands out, as well as more current models including those of the 'Ecological Tax Reform'<sup>277</sup> (EEA 2011), proposals that bring greater weight to the fiscal policy of countries and therefore to the decisions of economic intervention dictated by politics.

Economic thought in its search for solutions to existing problems tends to expand under the traditionally accepted economic fundamentals and under the limitation of a PF model that tends to the exclusive division between labor and capital, forcing any proposed solution to be in the form of inefficient market intervention rather than pro-market proposals. Solutions that imply the disincentive of economic activity and the arbitrary redistribution of resources by the corresponding government. Being the land tax considered as a solution that collected (Smith 2007) as:

*"Ground-rents and the ordinary rent of land are, therefore, perhaps, the species of revenue which can best bear to have a peculiar tax imposed upon them. "*

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<sup>275</sup> The World Bank (accessed 26/10/2023) <https://datos.bancomundial.org/>

<sup>276</sup> p. 207-208, Henry George puts forward the solution based on the concept: 'It is not necessary to confiscate the land - only confiscate the

rent', which leads him to 'Abolish all taxes - except on the value of land'.

<sup>277</sup> 'Environmental tax reform in Europe: implications for income distribution'.

<sup>278</sup> p.655, Trad. Lib. Author: 'Soil rents and ordinary land rents are therefore, perhaps, the species of income that can best support an excise tax'.

A statement made in a pre-eminently agricultural economic context that is nevertheless similar to the one made by Milton Friedman more than 200 years later in a society in which agriculture had been relegated, saying:

*"In my opinion [...] the least bad tax is the property tax on the unimproved value of land, the Henry George argument"* <sup>279</sup>

However, such 'less bad' solutions are based on market intervention and supported by criteria that will easily develop a high arbitrary component on quantities, reference rates or exceptions. The problem arises that any solution that does not arise from the market definition will become an interventionist solution whose decision will fall into the hands of a few.

In this sense, and given the UN's population expectations, which estimate that population growth will decelerate to reach a level of 9.7 billion people in 2050 and 10.4 billion by <sup>2100</sup><sup>280</sup>, real land prices could be expected to grow as a result of population dynamics throughout the century.

The combination of a problem of property and income distribution, together with the problem of the planet's sustainability discussed in the previous section and the inability of the public sector to obtain results in accordance with the large amount of resources obtained from the private sector, give rise to concern about the possibility of finding a real response. This situation raises the following questions:

1. Are current land ownership conditions related to the consideration of the need for public intervention?
2. Could a redefinition of VET lead to an improvement in the general conditions of the economy in a sustainable way?

## 10.2. Efficiency and Equity

Concern for equity is a major issue in economic thought (Okun 1975)<sup>281</sup>, the basis of the welfare society, the defense of public intervention, work in favor of the application of fiscal and monetary policies as well as regulation. The quest for income and wealth sharing appears as an objective that can be considered in very different ways, mainly because the concept

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<sup>279</sup> Milton Friedman's speech at the 'Americanism Educational League 51st Anniversary Dinner', Pasadena, CA, February 6, 1978. See: Hoover Institution: Friedman, Milton. 'Is Tax Reform Possible?'. Author: 'In my opinion [...] the least bad tax falls on unimproved landed property, Henry George's argument'.

<sup>280</sup> See: data from '2022 Revision of World Population Prospects', results discussed in its 'Summary of results'. Where it is stated: 'The latest projections by the United Nations suggest that the global population could grow to around 8.5 billion in 2030, 9.7 billion in 2050 and 10.4 billion in 2100'.

<sup>281</sup> p. 88, 'Increasing Equality in an Efficient Economy'.



of equity presents great differences depending on the criterion of measurement. In this sense, a search for equality of opportunities leads to disparity of results, while a search for equality of results would not be supported by other forms of equality. This is understandable in that, in order to obtain an equality criterion, very different distributions of the factors leading to different results can be used, even more so when these factors are neither physical nor clearly measurable elements.

Economic history shows a constant concern for inequality in society, (Smith 2007) observed the differences between rich and poor<sup>282</sup>, (Ricardo 2010) observed misery in different parts of the world in the indolent habits or in the vice of governments<sup>283</sup>, (Marx and Engels 2023) saw the misery of the proletariat in the dependence of his master<sup>284</sup>, or (Marshall 1920) who expressed that "the study of poverty is the study of the causes of the degradation of a large part of mankind "<sup>285</sup>. This is a concern associated with all economic thinkers, regardless of their attachment to certain lines of thought, (Mises 2021) in indicating that "inequality of income and wealth is a typical feature of the market economy "<sup>286</sup> or (Sen 2000) in the analysis of poverty conceived as deprivation of basic capabilities<sup>287</sup> .

From a closer view, in this search for equity, the role of different economists has contributed to clarify not only that today's society is not equitable, but that it has never been equitable. The result of studies by (Stiglitz 2014)<sup>288</sup> on the distribution of wealth, show levels of concentration in which 1% of society owns more than 30% of the wealth of the United States, a situation that occurs in a context no longer of markets in initial growth, but of mature capitalist economies that should have a higher level of distribution. These results are aligned with the later conclusions of (Piketty 2014), who, starting from the fact that the concentration of capital is higher than that of income, develops the relationship between the two over the years, obtaining a range in which the country's capital with respect to income moves between a minimum that has occasionally fallen below 300% in the middle of the 20th century and a maximum in the vicinity of 700% that occurred at the beginning of the 20th century and to which it is tending at the beginning of the 21st century<sup>289</sup>. Concern

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<sup>282</sup> Ch. V, p.64

<sup>283</sup> Ch. V, p. 92

<sup>284</sup> In 'Principles of Communism', IV 'How the Proletariat Originated', p. 96.

<sup>285</sup> Ch. I, § 1, p. 7.

<sup>286</sup> p. 349

<sup>287</sup> p. 114

<sup>288</sup> Ch. I, 'The U.S. Problem with the 1 Percent', p. 48.

<sup>289</sup> Ch. III, p. 132-133. IV, p. 168, 175.

shared by (Milanovic 2020) in 'Capitalism and Nothing Else' where he exposes the same situation to which he adds the tendency to increase inequality in income and wealth and to hinder mobility in terms of improving socioeconomic <sup>position</sup><sup>290</sup>.

How is it possible that, with a tax system that works with a wide range of taxes around 40% of the annual income of the economy (Spain, Italy, Germany, France, Great Britain, USA, Japan), the inequalities shown in the works cited above are maintained? Shouldn't the problem of inequality have been addressed with the intervention itself?

Outside the search for economic policy proposals, it is worth asking whether the positive effects of policy measures (Browning & Johnson 1984) (Woo 2020) outweigh the negative effects (Lindbeck 1984) caused by them in the form of public sector failures (Cuadrado et al 2010). As opposed to other actions in search of equity, usually related to fiscal policy what is exposed in the present paper in the form of the definition of PFs and their property rights is developed from a neutral model for human entrepreneurial action, in that investment, production or consumption decisions are not modified by an alteration of market equilibria thus working under conditions of maximum efficiency. The fundamentals presented above show that it is an equitable model in origin because all citizens have the same rights over the planet, and at the same time efficient, in its absence of intervention of the natural equilibrium of the market.

In relation to equity, the results presented are related to the measures published by (Van Parijs 1997) in relation to <sup>freedom</sup><sup>291</sup>, as well as to basic income (Van Parijs and Vanderborcht 2006) in that nature's PF allow the generation of income for <sup>society</sup><sup>292</sup>. Equity of access to primary PF is equivalent to equity in the relationship with the environment in which we live, allowing every citizen to have the possibility of enjoying such PF. Given that, usually for economic activity it is necessary to have private rights over primary PF, every citizen obtains his or her share of the maximum price that the market has assigned to PF. It should be noted that the citizen himself can raise the price of the factor of production by acquiring it more expensively from society, so that the whole population becomes at the same time the generator of factor rents and the recipient of what they generate. The exposed condition unites the criteria of efficiency and equity in the use of the PF of nature from a vision of distributive justice prior to the economic action, not so

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<sup>290</sup> p. 39

<sup>291</sup> Ch. 1.8, 'Real Libertarianism', p.25

<sup>292</sup> Ch. III, p. 115, 'The common ownership of land'.

of distributive justice in economic action as argued (Rallo 2019) on Hayek's relationship with universal basic income.

### 10.3. Income Generation, Intervention and Production Factors

At present, countries resort to fiscal policy to generate revenues to cover their expenditures in order to maintain the so-called 'Welfare State' model. Their fiscal policy is structured on the basis of a wide network of taxes levied on different economic activities, including production, the use of productive factors, property and consumption. As discussed in the previous sections, a modification of property rights based on the so-called natural criteria of ownership of PFs would lead to a move towards the availability of rents for the whole society. These rents could in turn be separated between those obtained from the uses of space and those coming from the sales of Inert Matter in its market-creating role.

When considering the generation of rents as a result of the use and acquisition of society's resources, these represent an aliquot part of all the people who make up that society, allowing a redistributive effect of wealth in a natural way as opposed to the role of fiscal policy. At this point it is necessary to compare the effect on the economy of the generation of society's rents by means of political intervention or by PF rents prior to human action.

For the comparison between the elements, the format of (George 2012)<sup>293</sup> its effect on five attributes associated with the general principles of taxation (Paniagua and Navarro 2011)<sup>294</sup> has been used, including<sup>295</sup>:

- The existence or absence of **arbitrariness** as a basis for the existence of the tax, which can be considered associated with the principles of sufficiency and flexibility in the objective of the budgetary balance of public administrations. It opposes the use of principles based on reason in the definition of the tax or income, before the voluntary decision of the application of the tax and its amount. The absence of arbitrariness may be considered a positive attribute.

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<sup>293</sup> p. 209-217, studies in his classification on the 'Canons of taxation' the impact of taxation on four elements, namely: production, ease and low cost of collection, certainty of collection, and finally, equality

<sup>294</sup> p. 17-21, in which the 'General requirements or principles of taxation' are analyzed including: the sufficiency principle and flexibility, the principle of administrative simplicity, the principle of efficiency and the principle of equity.

<sup>295</sup> The points discussed analyze the attributes of arbitrariness, simplicity, certainty, redistribution and efficiency, which differ slightly from those presented by the authors as they are considered to better reflect the objectives of this work.

- **Simplicity** in its collection under the principle of administrative simplicity, associated with elements such as the ease in calculating the amount, the absence of exceptions or the economics of collection. Simplicity is considered a positive attribute.
- **Certainty** of collection, also linked to the principle of administrative simplicity. Certainty that allows administrations and the market to make decisions based on criteria of knowledge and to take measures with foresight. This attribute can be observed from the point of view of tax collection, due to the total amount generated, as well as from the taxpayer's point of view, due to the forecast of the amount of his participation. The existence of certainty valued as a positive attribute.
- **Redistribution** as a social function linked to the principle of equity in the distribution of society's income. Interpreted under the principle of capacity to pay, which implies that agents with greater economic activity contribute greater income to society's resources. A greater redistributive effect is seen as positive.
- The principle of **efficiency** in its effect on the relative prices of both PF and its translation to final consumer goods and services. The most efficient is considered to be that which does not modify the behavior of the market in the free action of all individuals. Greater efficiency is considered positive for the economy.

The difference in the behavior of the different most widespread taxes and the income of the productive factors of society can be observed, for this purpose, the relationship of the attributes mentioned with the following tax figures is studied below:

- Progressive taxation of earned income
- Flat tax on earned income
- Tax on capital income
- Value added tax on sales
- Tax on international trade
- Wealth tax

**Progressive taxation on labor income** appears in the form of an arbitrary tax in which the tax authority determines both the existence of the tax and

its brackets and amounts, being able to modify the elements at its discretion. In terms of simplicity, the determination of the amount of the tax requires the quantification of the tax base, existing deductions and allowances and the application of different tax rates to the different income brackets, with great variation in the average rates and marginal rates as the income grows. Although the amount of the tax can be estimated, it is highly influenced by changes in the economy due to its own progressivity, variations in the functioning of the market will impact on the higher marginal rates.

From the redistributive point of view of the tax, progressivity effectively achieves this, in that higher incomes associated with a greater capacity to pay generate higher contributions. Finally, at the efficiency level, the tax acts as a disincentive to work, implying that as labor activity increases, the proportion of income obtained by the worker decreases.

The **fixed taxation of earned income** is also arbitrary under the same criteria defined for progressive taxation. However, the existence of a single tax rate and the absence of brackets contributes to its simplicity, while at the same time being more certain in its amount. Its redistributive effect is diminished since it gives the same tax treatment to all individuals regardless of their ability to pay, both horizontally and vertically. And at the level of efficiency, although it reduces incentives to work by reducing the net amount to be obtained from it, its impact is less than in the case of the progressive tax, since it does not increase the disincentive effect as labor income increases.

**Capital income**, in its definition as a tax, is subject to the same effects of arbitrariness as the previous ones; however, it can be considered that due to the ease of movement of capital, it is currently conditioned by the arbitrariness of the national markets as a whole. It is a tax with little or no progressivity, which also has the advantage of falling partially on the company as the main taxed agent. Given that capital is more concentrated than labor, it is associated with high levels of redistribution, while at the same time, in terms of efficiency, the tax is highly inefficient in that it discourages investment, and therefore generates effects on the economy in the medium and long term. The aforementioned mobility of capital causes its tax rates to be subject to international criteria, which increases competition and limits the growth of its rates, which would be more inefficient.

As for the **value added tax on sales**, which is a consumption tax, the arbitrariness is reflected in its taxation nature, its lack of simplicity in the existence of

different tax rates for different items, their certainty linked to market habits, varying according to variations in consumption both at the total level and segmented by tax rate. As an example, the change in consumption from general to essential products due to the effect of the economic cycle.

From the redistributive point of view, the value added tax on sales is associated with consumption, so it does not depend on the taxpayer's income or wealth, but on his or her consumption decisions. And finally, in terms of its efficiency, it has an effect both on the consumption decision by increasing the prices of goods, and on the production decision by reducing the net income from sales, decoupling the cost for consumers from the income for companies.

In fifth place come **international trade taxes**, mainly in the form of import tariffs. They are also subject to arbitrariness in their taxing role. In terms of simplicity, the application of particular tariffs according to criteria such as the type of merchandise or its origin makes it a complex tax. It presents relatively low levels of certainty in terms of its dependence on global markets and national business activity. From a redistributive point of view, it is dependent on the purpose of imports and the rates set for each good, so it does not necessarily have to be associated with very high levels of redistribution with respect to other taxes. Finally, at the efficiency level, it alters the market equilibrium and the conditions under which business activity within the country is profitable.

The last of the taxes considered significant for this paper is the **wealth tax**, which is present in Spain, although not in most other developed countries in Europe and the rest of the world. This tax maintains the arbitrary conditions of other taxes, to which it adds the complexity of calculating the wealth of each individual. Given that in Spain it affects a relatively small number of people in the form of the largest estates, it can be considered of greater certainty with respect to other taxes. It has a high redistributive capacity in its impact on the groups with greater resources at the same time as the capacity to tax all their wealth regardless of whether it is being used (which would entail capital income) or not. In terms of efficiency, it generates an effect of expulsion of individuals with high wealth while at the same time discouraging the generation of wealth.

In addition to these taxes, there is the role of the **land tax** initially formulated by (George 2012)<sup>296</sup>. This is a tax that seeks first of all to eliminate the arbitrariness inherent to all tax figures, however, as it is a tax applicable to elements to which the market assigns changing values, its determination becomes subject to existing valuation rules or criteria, an aspect that does not eliminate the possibility of discrepancy and the need to arbitrate the solution. With respect to its simplicity, it requires determining the value of all real estate assets at the individual level, while separating the value associated with the land from that dependent on the investments made. Its amount is dependent on the valuation of the assets, which tends to be stable over time, but must be determined continuously under market criteria. As for the combination of its redistributive effects and its efficiency, it opposes the marked inefficient character of all tax figures by favoring the development of the most efficient land uses at the same time as it generates income for it.

Having analyzed the main tax figures, it remains to compare the rents of space and Inert Matter as income from the private uses of the PFs of society.

**Space rents** are generated as a result of market action, with the use that assigns a higher value to the space obtaining its rights. Its value is determined exclusively by market criteria, which eliminates the need to determine it by means of particular elements in the form of rates or external valuations. Since these are contracts between the company as provider of the space and the lessee, its use is guaranteed within the agreed terms and the amount to be paid can be considered certain and stable. In terms of redistribution, as indicated above, the amount is defined by the best uses of the space, implying a higher income as an activity can take better advantage of it. This last aspect, in turn, is associated with efficiency in a competitive market in which the market maximizes the use of the production factor.

Inert Matter rents are also generated by the action of the market, eliminating the arbitrariness of the generation of society's income. Their determination is equally simple through the natural formation of prices. The certainty can be considered inferior to that of space rents, in that it can be dependent on the consumption decisions of markets, on agreed prices, as well as on the limitation of market creation. At the level of redistribution and efficiency already discussed, it combines maximum rent generation with maximum market efficiency.

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<sup>296</sup> For more information on land taxation, see (Gunnison Brown 1924).

It would remain to value the rents generated in the creation of a market by living beings, for example in the form of catching fish in the wild. Element subject to conditions similar to those indicated for Inert Matter in terms of its relationship with the different attributes.

The assessment of the relationship of the attributes indicated with each of the taxes and rents studied is shown visually in Figure 50. At the level of arbitrariness, the concept of tax is associated with a need to arbitrate market failures, which always implies a high level. Against this, the elimination of the market failure of wealth distribution in the common use of natural wealth is considered. With respect to the redistribution column, as one would expect all taxes and rents present positive effects here. Finally, at the level of efficiency, all uses that are pro-market are associated with the concept of efficiency, while all general market disturbances are obstacles to the efficiency-maximizing behavior of the free economy; taxes cannot be neutral to the economic activity of human beings.

	Arbitrariedad	Sencillez	Certidumbre	Redistribución	Eficiencia
Renta del trabajo - Progresivo	○	○	○	●	○
Renta del trabajo - Fijo	○	●	●	●	○
Renta del capital	○	●	○	●	○
Valor añadido sobre ventas	○	○	○	●	○
Comercio internacional - Importaciones	○	○	○	●	○
Impuesto sobre el patrimonio	○	○	●	●	○
Impuesto sobre la tierra	●	○	●	●	●
Renta del espacio	●	●	●	●	●
Renta de la materia inerte	●	●	●	●	●

**Figure 50:** Attributes of the different taxes and revenues studied with respect to the criteria analyzed in the study, with the following being considered positive: the absence of arbitrariness, simplicity in their collection, certainty in their amount, the redistribution effect as an indicator of equity, and efficiency in their impact on the economy. ● Very positive - Positive ○ Very negative. Source: own elaboration based on the format of Lindy <sup>Davies297</sup>.

Lastly, it is worth mentioning the condition of a world structured on the basis of states that promote different tax solutions, making it so that in all areas of the world

<sup>297</sup> See: 'Understanding Economics' published by Lindy davies on henrygeorge.org.



The decisions on the application/modification of taxes as well as the evolution towards the income model will have an effect of altering the equilibrium of the markets at national and international level, as well as in an inter-temporal manner. The criterion of efficiency being critical in the maximization of present economic activity as well as in the increase of future activity.

#### **10.4. Conclusions**

Public action plays an important role in today's developed societies, where the market economy is intervened by a set of tools in the form of public revenues, public spending and regulations that seek to correct the so-called market failures. Under these conditions, one of the main focuses is the concentration of income and wealth that tends to occur in today's free markets.

The formulation of nature's PFs presents a new way of generating income for society that leads to a redistributive effect of income that affects all citizens equally. This situation is developed in the chapter by confronting the basic concepts of efficiency and equity of economic analysis, at the same time as developing the impact of the proposed solutions in comparison with the main taxes existing in the market, which allows us to see a significantly better behavior of the income model based on market operation.

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## 11. SUSTAINABLE HUMAN ACTION

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Praxeology<sup>298</sup> is the starting point of all the work carried out, elements proper to the Austrian school of economics such as subjectivism, methodological individualism, spontaneous order or the conception of the creative entrepreneur form the set of bases on the understanding of the forces in which the study of the human being in economic science is framed. Every human action entails an alteration of the equilibrium of an economic market that is under constant change, in which the different agents seek to profit from their activity. In the same way that human actions entail an alteration of the ecosystem in which they occur, modifying the previous equilibrium in another dynamic evolution, in this case of living conditions.

When observing the market together with the ecosystem, a conflict arises in which the continuous growth of the market is sought in a dynamic condition of human activity at the same time as the maintenance of the living conditions of human beings as a static concept of sustainability. Human action is framed within a limited field of action such as Planet Earth, where there is not only a limitation of available resources in the form of scarcity, but at the same time a dynamism that alters the conditions of future life.

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<sup>298</sup> See (Mises 2021), defined as 'general theory of human action', p. 4.

This dynamic situation of ecosystems on Earth does not necessarily imply a negative condition, however, it generates uncertainty about the capacity of human beings to adapt to life in conditions different from those currently existing, a situation that leads to study the role of sustainable human action as a concept that includes the preference for the stability of the living conditions in which we find ourselves; sustainable human action takes into consideration the understanding of the dynamism of markets under human action and incorporates the expectation of stability of ecosystem conditions. It can now also be understood as a concept of human action on Earth that not only presents the economic constraints of PF allocation as static limited resources, but adds the modification of ecosystems as a dynamic element that alters future human <sup>action</sup><sup>299</sup>.

The main problem with the consideration of sustainable human action is associated with the fact that sustainability is not produced as an objective datum, but is shown as a subjective and interpretable concept on which a decision must be made, which implies the introduction of an arbitrary component in an economic model associated with market freedom.

This condition of sustainable human action, together with the treatment of PF in the previous chapters, implies the consideration of praxeology from Austrian economic theory together with the Georgist foundations on the common property of the Earth, to which the dynamic consideration of the ecosystem is added. All these elements together lead me to study the relationship of economic thought with what is stated in the work, including elements such as the neoclassical formulation of the production function that favors institutional analysis, the accounting structure or the identification of the PF in business activity, as well as the creation of a dual market on space with the aim of uniting the criteria associated with security-family of the home of human beings with those associated with profitability-risk of the markets.

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<sup>299</sup> The concept of sustainable human action implies knowledge of ecosystems and decision making for the adaptation of ecosystems to human preferences, which causes the concept of sustainability to be associated with the best conditions for the performance of human life in the given environment, which implies the activity to modify the environment in the search for such conditions. This can be exemplified in the case of life on Mars or other conditions of life outside Earth.

### 11.1. Introduction

Faced with the path of servitude along which developed economies are advancing, as well as with "You will have nothing and you will be happy"<sup>300</sup> as an expectation of self-imposed social order, there is a need to seek an alternative that takes into account the unique properties of human beings and our way of relating to the environment in which we live. To this end, it is possible to start from subjectivism as a methodological starting point (Huerta de soto 2002)<sup>301</sup> in the conception of the individual as a creative actor, and combine it with a defense of respect for the common goods in the creation of the market and the distribution of its rents. In order to formulate the alternative, the following concepts analyzed in this work have been proposed:

1. Definition of PF, Space, Inert Matter, Living Things, Labor and Capital, as well as their rents and the Production Function.
2. Differentiation in terms of rights of natural and legal persons on the PF Space for the availability of a home.
3. Relocation of PF in the financial statements of legal entities, as a result of changes in the production function.
4. Delimitation of the amount of sustainable supply of FP Inert Matter in its different forms as an element of market creation.

To which must be added an additional concept in the form of a path of freedom, such as the distribution of the income generated by the primary PF among all individuals in society. In this way every individual receives a compensation from society derived from the cession of the right to use a space or other good of nature in favor of third parties.

Everything formulated up to this point leads to a confrontation between the current conception on which the economic order is based and that worked out in the document on the property rights of PF. The current socioeconomic configuration<sup>302</sup>, inherited from previous generations, shapes the environment on which all citizens have made decisions to date, under a generally imperceptible invisible hand that accepts unequal treatment of access to the PF that allow the development of each individual's life project. This unequal access can be observed at the private level in the

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<sup>300</sup> (Auken 2016) Auken publishes in the same vein on October 31, 2019: 'This is what 2030 could look like if we win the war on climate change'. The concept is included in the introduction of the video: '8 predictions for the world in 2030' published on the YouTube channel of the 'World Economic Forum' on March 6, 2017.

<sup>301</sup> Ch. I, 'The Methodenstrit', p. 27.

<sup>302</sup> See (Niño Becerra 2020) p. 22, as a fundamental element of the capitalist philosophy: 'man has before him all of nature and can extract from it all that he is capable of transforming with his labor' (Niño Becerra 2020).

different distribution of ownership of non-produced PF, as well as in the arbitrary capacity of the state to intervene in the private decisions of each individual, an intervention that currently covers both non-produced PF and those that are the result of human action.

Faced with this situation, the model proposed in this study is linked to the definition of liberalism of (Benegas Lynch 2015) as the:

"Unrestricted respect for the life projects of others."<sup>303</sup>

Model based on the natural functioning of markets, based on the principles of: individual freedom, reciprocity, equal access to non-produced PF and private ownership of the goods produced. These principles, however, are not currently fulfilled, since, on the one hand, the delimitation of private property covers natural goods considered as belonging to the whole society and, on the other hand, state intervention in the economy takes place under conditions of non-reciprocity<sup>304</sup>, even limiting the conditions of private ownership of the goods produced.

Under the consideration that what is shown in this document is a preferable condition for society, the problem would lie in the capacity to advance from the current conditions to the proposed ones, starting from the maximum level of respect for the contracts acquired under the market conditions existing at any given time. Defining transitional conditions that allow the progressive reduction of arbitrariness in the market and therefore the increase of efficiency with its advantageous effects for society as a whole. Faced with the criterion that land may have been expropriated from society by the prevailing system (Proudhon 1983)<sup>305</sup>, arbitral action that seeks to mitigate the damage produced with the production of another damage in the opposite direction should be avoided, eliminating from the possibilities of action the concept of coercive expropriation by society of goods prior to human action that are currently in private hands.

#### 11.1.1. La Llanura Limited

The soil of the unlimited plain<sup>306</sup> exemplified by Henry George in 1879 is now home to a population five times greater<sup>307</sup> that precludes considering the advent of a

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<sup>303</sup> Collected in Alberto Benegas Lynch's 2015 publication in reference to the same author's publication 'Liberalism for Liberals' by Emecé Editores in 1986.

<sup>304</sup> See here the contribution of (Rothbard 2021) and his quotation of De Jouvenel, p.42, : 'Whether it is socialist or not, power must always be at war with the capitalist authorities and always seeks to strip the capitalists of the wealth they have accumulated. In doing so, it obeys the law of its nature. '

<sup>305</sup> Ch. 2.3, p. 77

<sup>306</sup> (George 2012) Ch. XIX, p.122, 'The Unlimited Plain'.

<sup>307</sup> From around 1.5 billion people in the world to more than 8 billion.

The first colonist, at the same time, all the goods of nature that are in it already have an owner, which implies that they have been capitalized by people, companies or institutions. The limited space on Earth does not allow groups of people to colonize new lands in which to develop their lives, a condition that turns them into people who only have their time to work on a planet that does not belong to them. While the land remains similar to what existed then, the plots are more valuable to society in that they are part of a more populated and complex market, an increase in value that is expected to continue as the world's population and the specialization of human activities continue to increase.

Under this social order live millions of human beings<sup>308</sup> who have only their unskilled labor to survive, not only machinery and technology is the property of other people in the world, but also all natural PF, which implies that they must exchange their labor to gain access to natural goods that no one has produced. This situation leads them to live relatively outside international markets, in an informal economy that limits their access to the advantages of the complexity of globalization (Soto 2000) in a vicious circle under institutions contrary to market freedom (Acemoglu and Robinson 2023).

It is observed how the social conflict does not occur in the relation between the Classic PFs capital and labor (Marx 2014), but in the relation between PFs nature and capital. The consideration of nature as a capital good Marx describes in 'The process of accumulation of capital' indicating:

"...] the usurpatory conversion of feudal and clan property into modern private property, consummated with shameless terrorism, were as many idyllic methods of original accumulation."<sup>309</sup>

About what I had previously included:

"The progress of the eighteenth century is revealed in the fact that now the law itself is becomes a vehicle for the theft of the people's land [...]"<sup>310</sup>

In contrast to other aspects of his work, such as the theory of value and the capital-labor conflict, which are later refuted by economic thought, the study he carries out on the consideration of PF of Nature as PF Capital from a historical perspective partially maintains its validity under the considerations presented here.

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<sup>308</sup> See 'Piecing Together The Poverty Puzzle, Poverty and Shared Prosperity 2018' by 'World Bank Group' which indicates that 10% of the world's population lived on an income of less than \$1.90 per day in 2011.

<sup>309</sup> Section VII, Ch. XXIV, p.333

<sup>310</sup> Section VII, Ch. XXIV, p.325

These elements are in line with what was explained in chapter five, and we can go back to the figure of Grotius in the first half of the seventeenth century, who took up the conception of land as common property (Grotius 1925):

"Air and land are the common property of men, in which one can enlarge his house in such a way as to abstain from the things of others and from force.

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The debate on land ownership has gained currency in recent decades with contributions such as those of (Steiner 2005) in his 'Territorial Justice' that maintain the treatment of land as a capital good, as shown by the perception of its possession as a liability contracted with society. Those of (Risse 2009) in his conception of 'Common Property of the Earth' propose a model that starts from the existing global order (Pogge 2009) with a conception of property that starts from a concept that can be considered philosophical of human relations with the land, but with the difficulty of being materialized.

From what has been worked on here, it is not a question of equal, joint or individual possession (Álvarez 2010) but rather of a concept of Nature's PF as an existing good prior to economic action, which, once it begins to participate as PF in the economy, receives its rents, which, in this case, are the property of human beings as a whole. A conception that allows maximizing the efficient use of Nature's PF under market conditions, achieving not only minimum rents for society, but also their maximization.

## 11.2. Road to freedom

Hayek published his work 'Road to Serfdom' in <sup>1944</sup><sup>312</sup> during the final stages of the Second World War, under the thesis of the incompatibility of freedom with totalitarian models. As stated in its title, it reflects the tendency towards a restriction of freedoms based on the reduction of the market and thus towards a model of servitude to the orders of rulers who supposedly seek the common good. Eighty years after the publication of the work, the opposite effect can be seen in the thinking of society; the concept of individual freedom has been relegated to the background in many nations in favor of the pursuit of the common good, a goal towards which society has been moving by granting increasing levels of freedom to individuals.

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<sup>311</sup> Ch. 1, p. 53

<sup>312</sup> (Hayek 2020)



of political power to the representatives of society to the detriment of incentives on individual activity.

The market represents the search of all individuals to improve their living conditions; it is the place where exchanges that are preferable for both parties take place. (Smith 2001) considers that these exchanges based on the search for the preferable move an invisible hand that guides society towards a general improvement of the conditions in which human life <sup>develops</sup><sup>313</sup>. The limitation of the market implies the ceding of individual decision-making capacity to institutions that decide in favor of all citizens, an action that not only entails a ceding of decision-making, but also a ceding of individual incentives to participate in the market. The issue here lies in the fact that in the absence of incentives we can expect a reduction in the contribution of each individual to the market and therefore the distribution of a smaller set of goods and services. This situation only distances society from the common good that each individual is expected to desire for society as a whole.

In this sense Adam Smith's invisible hand remains valid, since it is nothing but the representation of human action in the environment in which it can act. It will lead to the maximum level of exchange in an environment without any intervention, but it will also lead to the best possible level of exchange in any constrained environment. The invisible hand shows itself even in situations where the market is highly intervened. Traditional examples are a prison, where tobacco has traditionally been the medium of exchange, or a schoolyard where the instrument of exchange becomes trading cards, badges or other fashion items. Two highly restricted examples in which the initial allocation of factors is rearranged towards the optimum agreed by the agents, but in which the objects and means of exchange arrive through an external market that facilitates them and enriches a restricted internal market that is not self-sufficient. The invisible hand acts only as the natural response to the ordering of resources among people, not from the function of encouraging the growth of the market.

However, this defense of the human virtues of the invisible hand can only be made from the recognition of the possibility of each individual to have the same natural capacity to satisfy his needs, that is, to have the same access to all those PF that have not been obtained as a result of the work of others and that therefore cannot belong to anyone in particular. If they do not have the same natural capacity to satisfy their needs due to the lack of access to the means to achieve it, we find ourselves with an unbalanced market that is not in equilibrium.

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<sup>313</sup> Lib. IV, p. 554

is difficult to progress. It is therefore a market in which a human being is not even free to cultivate the means to make a living.

Considering what was exposed in the previous chapter, in which the access to the means of production begins with the acceptance of market conditions in which there is no right over the natural products of the land, obtaining the right requires agreeing on the price with the previous holder of the right. However, these rights have not been the result of natural behavior, but come to us from a process of historical buying and selling that goes back to some situation of conquest or cession of the land as collected (George 2012) in his book VII '*Justice of the remedy*'<sup>314</sup>.

The problem that arises from this is due to the fact that the evolution of the economic system has generated the acceptance of fundamentals that do not respect criteria of equity prior to human action and that have therefore led to the search for solutions that limit the freedom of human action in favor of a subjective common good whose purpose is to fix the initial error. Phrase that includes the following elements:

1. The foundations of the economic system have no natural basis in the relationship between society and the ecosystem.
2. Because of this, problems of inequality arise prior to the intervention of any human being, causing differences prior to the participation of elements such as work, skill or luck.
3. To remedy these differences, the public sector coercively imposes market operating conditions on the population.
4. Market intervention tends to discourage individual activity, causing a contraction of the market and therefore the distribution of a lower volume of goods and services.
5. The contraction of the market not only has immediate effects, but, given the absence of incentives, causes a reduction in the medium and long term of potential expectations of advancing the common good.

Society finds in coercion the method to seek a unilateral solution to the initial error of creating the market, developing for this purpose a system of compulsory taxation. Generating a model that, although it can achieve a certain degree of redistribution, diminishes individual incentives and therefore the total production of goods and services for society. A system that has found support in the

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<sup>314</sup> Chap. 26, p.169-177

scientific thought, with a prominent role of Keynes' contributions in 1926 and 1936.<sup>315</sup>

Faced with this situation, there is a wide range of positions from both academia and society in a world that presents a conflict between numerous situations considered critical for our society, such as: housing, poverty, employment, health, education, welfare, population growth, pollution, sustainability and inflation, among others. Thus, faced with the consideration that the *Laissez Faire* of the market will allow the generation of optimal solutions, intervention solutions are proposed in areas such as sustainability, which entails a reduction of available resources that translates into a rise in the prices of other factors, or the example of the allocation<sup>316</sup> of resources to mitigate housing problems, which implies a modification of the market balance at the same time as a reduction of resources in other areas, worsening their relative situation.

People observe a society with great inequalities and seek to offer static solutions for a dynamic system. Considering a system that does not present real conditions of freedom, thus (Van Parijs 1997) argues that real freedom must have the conditions of security, self-ownership and *leximin opportunity*<sup>317</sup>.

The implications for freedom of the above are in turn related to those discussed by (Sen 2000) in terms of the need for adequate material conditions. In this sense, poverty as deprivation of basic capabilities is shown in the form of limited access to the PF of nature as common goods, causing citizens to face a market in which their freedom is constrained by the sole capacity to use the production factor labor. The fact that capital is unequally distributed due to the effect of the market is a different issue from the condition that PF derived from nature are considered as capital. The ethical problem of economics has a direct relationship with the ability of all human beings to satisfy their basic needs. The tools of predictive economics considered by (Sen 2020) and their contribution to policy decisions is often associated with a reduction of the field of human action that

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<sup>315</sup> See 'The end of *Laissez Faire*' in (Keynes 1985) and the 'General Theory of Occupation, Interest and Money' in (Keynes 1965).

<sup>316</sup> The concept of 'chosen assignment' of (Pigou 1968), p. 109, can be considered here, in the usual consideration that This is a problem of technique, but not of purpose.

<sup>317</sup> Ch. I, p.25, *leximin opportunity* is understood as the greatest opportunity to do what is desired.

(Sen 2000) raises in the 'Constitutive and Instrumental Role of Freedom' the consideration that:

"Fundamental freedoms include some elementary capabilities such as, for example, being able to avoid deprivations such as starvation, malnutrition, avoidable morbidity and premature mortality, or enjoying freedoms related to the ability to read, write and calculate, political participation and freedom of expression. " <sup>318</sup>

Conditions associated with the concept of development as freedom (Pedrajas 2007) who indicates about Sen that:

"It evolves toward more defined approaches in the order of freedom as the global point of view that must guide any theory of justice that philosophically founds a human development. " <sup>319</sup>

As well as that:

"For Sen, both equality and freedom are two sides of the same coin, where the coin is development and justice."

On the other hand, freedom is also the ultimate goal of the literature in favor of market intervention, thus (Marx & Engels 2023) indicate in the Communist Manifesto that as class distinctions have been eliminated:

"the free development of each is the condition for the free development of all.

Understanding that the socialization of capital is the previous step to the possibility of living in freedom.

Also (Laski 1961) in studying European liberalism indicates that:

"Contractual freedom is never genuinely free until the contracting parties possess equal bargaining strength. And that equality, of necessity, is a function of equal material conditions. " <sup>321</sup>

All of the above implies that the concept of freedom itself can be observed from different points of view, a concept that includes the aforementioned conditions:

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<sup>318</sup> Chap. II, p. 55

<sup>319</sup> Chap. IV, p. 273

<sup>320</sup> Chap. III, p.70

<sup>321</sup> Ch. I, p. 16

- Individual safety
- Capacity building
- Availability of means of subsistence
- Relationship between individual freedom and social freedom
- Equal material conditions

Under the proposed five PF model these five criteria are fulfilled, firstly, having a home facilitates individual security, secondly, by generating rents from Nature's PFs, equal material starting conditions are given to the entire population, facilitating subsistence and the development of capabilities, lastly, every citizen is free to bid individually for Nature's goods, which favors higher rents for society.

### **11.3. Market Growth and Prosperity**

In writing 'Human Action' in (Mises 2021), in his chapter XXX 'Price Intervention' he included a section entitled 'Considerations on the causes of the decline of classical civilization'<sup>322</sup> in which he treats the decline and fall of the Roman empire as a process of decrease of exchanges, fall of specialization and in general of market breakdown derived from the decrease of incentives as a result of intervention. Considerations to which Temin 2009 adds depth (Temin 2009) showing the complexity of markets in ancient Rome based on aspects such as wages, credits or inflation. A level of complexity that had been lost in the twilight of the Roman Empire and that was not attainable again until the dawn of the industrial revolution.

This complexity of markets as a result of specialization, an increase in per capita income in real terms and the prosperity of society in general is considered here as an economic objective in line with the research of the Economic Complexity Observatory<sup>323</sup>. It is a desirable complexity in that it promotes efficiency in markets, which means that the goods and services exchanged are valued as highly as possible according to the multiple uses to which they can be put. As an example, and given the section dedicated in this paper, a space intended for commercial use has a lower value in a small municipality than in the center of a densely populated city, just as it is estimated to have a lower value in regions with lower income.

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<sup>322</sup> p. 905-908

<sup>323</sup> See: (Hausmann, Hidalgo et al. 2011) 'The Atlas of Economic Complexity, Mapping Paths to Prosperity'.

Under these considerations, the increase in the complexity of society will be associated with an increase in the market value of the goods exchanged in it, which in turn will lead to an increase in the rents generated by the use of FP Space or the capitalization of Inert Matter and Living Beings. Since these rents are the property of society as a whole, any event that leads to a reduction in the efficiency of the markets will translate into a reduction of the overall rent. Thus, a decrease in competition for productive factors or general decisions of public intervention on markets will lead to a direct reduction in income, an aspect that impacts the citizen in two directions, through the aforementioned income and through market prices.

Similarly, in the event that the citizen considers the income obtained by the existence of a society that obtains the maximum level of exploitation of the productive factors to be sufficient, he would reduce the labor factor of production. In the case of an aggregate society, the expected result is a reduction in the complexity of the economy and therefore a tendency to reduce the market value of the primary PF, with a direct effect on the aggregate and individual incomes of the population.

The fact that PF prior to human action generates rents for society as a whole implies a general interest in their maximization. At the same time, the availability of these rents can act in the opposite direction as a disincentive to work, which would imply a reduction in future rents.

#### **11.4. Public Action on the Factors of Production**

In the words of (Andelson 2000) the moral foundations of Georgist theory are attacked by Hayek's arguments because of the existence of three different sources of land value: the intrinsic natural value, the value attributable to public services and the value attributable to private activities<sup>324</sup>.

The problem lies in the concept of property, once an indefinite property right over a common space is granted, there is a mismatch with the rights of other people and the search for tax solutions that do not reflect the true market value of such space and that do not respond to the individual interests of the people directly involved in the operation, nor of society in the form of the individuals who lose rights over such space. It is at the moment in which said property right is granted that the right is withdrawn from society and the search for artificial tools to compensate society for it begins. This is how different tax proposals and realities are born, such as the land tax.

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<sup>324</sup> p. 110, 'The Issue of Separability'.

by Henry George, or others such as the Real Estate Tax that reflect subjective valuations of properties and arbitrary criteria based on coercion for setting the amount of the tax. The first solution of the single land tax is commented by (Hayek 2019) in 'The Foundations of Liberty' in that it requires once again a state monopoly of information:

"If the factual assumptions on which it is based were correct, that is to say, if it were possible to distinguish unequivocally the proper value of the 'permanent and indestructible forces of the soil' and that which derives from two kinds of improvements (those coming from collective action and those due to the efforts of the individual owner), the reasons in favor of its establishment would be very strong. "<sup>325</sup>

When property rights over the PF preceding the human being are eliminated, these factors are placed at the disposal of all citizens and a social income maximized by market conditions is generated. This is a solution that he defines as "the most seductive and plausible plan of all socialist schemes "<sup>326</sup>, a solution that he nevertheless rejects because of the difficulty of separating the value generated by society from the value generated by the private owner.

Against this consideration of Hayek, the justification of private ownership of a previous production factor can be discussed, since, if we leave the economic paradigm in which we find ourselves, the investment criteria can be observed from a different point of view. In this sense, investments are made with the general objective of obtaining a return, the fact that the return is currently distributed between the exploitation activity derived from the investment and the revaluation of the asset is the result of the current economic fundamentals in which the PF are reduced to practically two, labor and capital, and land is understood as one more asset in the capital of its owners.

He goes on to comment on the assertions regarding the possibility of land being a social good insofar as he indicates that in order to sustain the objective of private land development it is necessary to guarantee fixed rents for long periods of time and it must be possible to transfer them freely, two elements that seem feasible but whose viability is eliminated by considering the state as the owner and manager of said concessions. Once again, there is a difference in criteria with respect to what is dealt with in this document, since the issue raised is the existence of a land market with concessions based on auction models. Making the investor

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<sup>325</sup> P. 783

<sup>326</sup> Quoted in Andelson 2000, p. 111.

The Company is aware of the general and temporary conditions of acquisition of the rights and therefore includes them in its expectations of return on investment.

In 'Road to Serfdom' (Hayek 2020) he understands that land ownership cannot be considered a privilege:

"It would indeed be privilege if, for example, as was sometimes the case in the past, the ownership of land were reserved for members of the nobility. [...] But to call private property as such, which everyone can acquire under the same laws, a privilege..."<sup>327</sup>

This property once again shows a treatment of land as a capital good, associating it with the concepts of private property, without taking into account the criteria of a productive good, a resource necessary for life or the scarcity of PF due to issues unrelated to human action, elements that may make sense from a static vision in which exchange takes place, but that present critical implications in a dynamic vision in which the market for classic PF land is subject to constant revaluation as the population and complexity of the economy increase.

Considering viable the acquisition of temporary ownership of the land surface, this model is in turn supported by the ability to obtain the totality of an objective market rent, and therefore not being subject to valuation criteria that may be higher or lower than the market price and that in turn do not show the real value that society gives to the commons, an aspect that is recognized (George 1889) in '*The Standard*' as a criterion that would make this solution superior to a single land tax<sup>type328</sup>.

In contrast to the criteria outlined by Hayek on the single land tax, we can consider the opinions already commented by (Galbraith 2012), who after highlighting George's optimistic vision by titling his chapter 'The remedy', considers that Henry George's ideas showed a too drastic remedy, a reasoning that does not question the ends, but only the viability of the means, before which leads him to defend alternative tools of revenue generation for society in the form of interventionist fiscal policies subject to arbitrary decisions. As he indicates in chapter XXI, by assigning to the tax system the duty to serve public ends, in an alternative to the *Georgist* remedy that eliminates market mechanisms and omits

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<sup>327</sup> Ch. VI, p. 143

<sup>328</sup> Vol. VI, No, 7, p. 1, 8-9



from the analytical process any consideration of methodological individualism (Mises 2021) as the starting point of <sup>economics329</sup>.

From what was announced in the previous paragraph, we can consider the current situation of the economic system during the last decades and with special emphasis on the beginning of the third decade of the XXI century, which could be summarized as:

Given institutions that defend individual property rights over goods that predate human action, we are working on an economic model in which every factor of production that is not labor is likened to a capital good. The increasing capitalization of the economy distances labor from the purchasing power of capital and therefore contributes to the continuous increase of inequality. Faced with this situation and given the consideration of the impossibility of a natural treatment of goods prior to human action, the solution assimilated by society has been coercive public intervention as a mechanism for redistributing income and guaranteeing minimum conditions in the form of citizenship rights extended in countries with a higher level of development. However, this redistributive intervention discourages human action and therefore generates inefficiencies that reduce economic activity as the level of intervention increases.

Faced with the situation described above, the current work proposes exclusively the recognition of all PF prior to human action as a social good, the proportional recognition for all citizens of the income generated by the private use of such goods, the consideration of legal entities as entities that combine PF with the aim of generating added value for society and making a profit in the process, and the consideration that the income from work and savings should correspond to those who have generated it under conditions of reciprocity, freedom and maximization of incentives to contribute to the development of human society.

#### **11.4.1. Maintenance of Nature's Production Factors**

The problem is transferred here to all those elements that have a useful life longer than the concession of exclusive rights that the company offers on the space, such as buildings or fruit trees. In the case of buildings, the investment processes are subject to the time over which the rights exist, deciding to make investments under the condition of their profitability and under conditions of accounting amortization of the built asset in the corresponding term. The term may also condition the maintenance of the assets, a fact that could lead to a decrease in maintenance as we approach the end of the term.



concession. However, there would be a minimum level of maintenance dependent on obtaining profitability during the useful life, and at the same time, in the event that the private possession of the space ceases to be profitable, it could be made available again to the company under the conditions agreed at the beginning of the concession. With respect to fruit trees, given that large plantations require costly investments and that they have initial growth periods in which they do not provide a harvest, the profitability will increase at the beginning of the investment, and then the investment interest will decrease as the concession rights are reduced. In both cases, the possibility of a right of first refusal for the existing owners on the new concession would make it possible to maintain the space under a new valuation of its possible uses at market price.

These limitations can be considered as partially existing at present, when the economy includes owners of the different spaces as well as tenants who develop their businesses in large buildings, strategically located commercial premises or farmland. Finally, in the interest of ensuring the maintenance of the assets, there would remain the consideration of the return of the space in the same conditions in which it was obtained, only modified by the conditions and uses agreed at the beginning of the concession, which raises the need for a public regulatory role prior to the auction on the uses of the leased spaces.

It is possible to understand the urban and commercial development of space from an objective of exploitation for private purposes that usually has associated benefits for the community and that contributes to increase the value of the land on which it is carried out. Considering that any development shows externalities for the society, and that those beneficial ones do not generate profitability to the responsible of the exploitation beyond the increase that it can have on this exploitation.

With respect to the maintenance of soil quality, (Rothbard 2021) studies the improvement in the conservation of resources under conditions of private ownership, as exemplified in the Libertarian Manifesto. He first uses the case of a Copper Mine<sup>330</sup> subject to depletion under public demands, but progressively exploited in private hands under respect for both current and future value. On this point, the proposed model grants ownership of all land assets to society (not to the state), and therefore extraction decisions are not made from an individualized point of view by each owner-entrepreneur but from a single global criterion in which elements that combine the generation of resources for the economy and the sustainability of the planet together take precedence. In this way, it can be foreseen that initially the mines associated with the following will be put into service

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<sup>330</sup> Chap. XIII, p. 289-291

lower ore extraction costs. There is therefore a precondition for the pricing system which is the limitation of the quantity, on which prices will be formed.

Along the same lines, the criterion of land maintenance is presented, and to illustrate it (Rothbard 2021) uses the example of grazing on state-owned land<sup>331</sup>, indicating that the absence of private property leads to the depletion of natural resources, to the need to use them before other citizens can take advantage of them. In this case, the solution is initially based on absolute respect for private property rights, which means that any person who has rights over a piece of land for a long period of time can keep it as his own in order to obtain resources over time. On the other hand, there is the problem of the termination of the rights over the space, which could lead to a maximum exploitation of the available space, or, on the contrary, to its abandonment. In any case, and under the experience of the rental market, the owner will have to return the land to the company in the same conditions in which he obtained it, so it will not be possible to cause damage to the land without this entailing an associated economic cost.

### **11.5. Opportunities and Risks**

The fundamentals raised in chapter five of this paper, which include the reformulation of PF, the definition of property rights based on the human contribution to the production of goods, and the path towards sustainability on the supply side, show their alignment with the economic criteria of efficiency, equity and sustainability, generating socioeconomic implications that contribute to the development of a free society.<sup>332</sup> This situation is compared in turn with the role of different forms of tax policy developed by public authorities, discussing the implications in terms of arbitrariness, simplicity, certainty, redistribution and efficiency. This situation is compared in turn with the role of the different forms of fiscal policy developed by public authorities, discussing the implications in terms of arbitrariness, simplicity, certainty, redistribution and efficiency, noting the expected better behavior of market mechanisms with respect to interventionist measures, highlighting the alignment of efficiency and equity in the search for the generation of incentives for citizens.

To achieve the goals, the relationship of PF with the foundations of human action collected in the Austrian thought of the economic literature is discussed, at the same time that the role of the relationship of human beings with the ecosystem as an element in which human action intervenes modifying the environment is discussed.

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<sup>331</sup> Chap. XIII, p. 294

<sup>332</sup> Development that is aligned in its fundamentals with that developed by (Max-Neef et al. 2010), but that nevertheless returns to the market the capacity to satisfy human needs, avoiding considering that the solutions to market problems become 'Challenges for the political task'.

Under this study, progress is made in a consideration of sustainable growth in which the market acts in defense of maximum efficiency for the sustainable distribution of resources, encouraging citizens in the search for a common good understood as the maximum development of human society, which in turn allows the maximization of the income generated by the common PF.

The results of the analysis carried out seek to contribute to the maximum performance of human action in the environment in which we live, aligning the results of studies of economic theory with the sustainability of the conditions of our current ecosystem, as well as in future ecosystems in which human beings may live. To achieve this, we promote the maximum level of human freedom that allows markets to function efficiently, with respect for the primary PF pre-existing to the human being, factors that become a source of income for society and that contribute to provide a foundation on which to raise living conditions.

The work starts from aspects of the economic literature from classical and Austrian roots, such as the invisible hand of the market of (Smith 2001)<sup>333</sup> as the best distribution of the scarce resources of society based on individual preferences, the entrepreneurial function in the form of creative destruction of (Schumpeter 2018)<sup>334</sup> as the foundation for the continuous improvement of society at the same time as the basis for the artistic development of people in conditions of freedom, the dispersion of information treated by (Hayek 1945) in the sense of the impossibility of knowing the preferences of all citizens at all times and the subjectivism of (Mises 2021)<sup>335</sup> from the conception of human action as the starting element of economic science. These economic aspects are joined by the concern of (George 2012) in his denunciation of the appropriation of land, as well as of (Proudhon 1983)<sup>336</sup> in his study of property, the analysis of its value (Bates 1908)<sup>337</sup> and ultimately the conception of (Marshall 1920)<sup>338</sup> on the importance of the problem of land ownership in the economy. Under the search for a consensus among all the above mentioned elements, the proposed solution combines aspects of efficiency and freedom typical of the Austrian school literature with aspects of equity and sustainability based on the privative use of primary goods, antecedents of sustainable human action. In this sense, a context of opportunity is created for all citizens, being from there the value contributed by each one to society what allows him/her to

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<sup>333</sup> Lib. IV, Ch. II, p. 554.

<sup>334</sup> Ch. VII, p.169

<sup>335</sup> Ch. I, p. 27

<sup>336</sup> Chap. II & III, p. 77

<sup>337</sup> Ch. XXII, 'The value of land is the capitalization of the earnings'.

<sup>338</sup> Lib. IV, Ch. II, p.88

to receive the corresponding revenues. All this in the absence of state intervention or subject to a minimum intervention for the purposes of education, security and health, limiting the use of coercive tools, both in taxation and in the supply of services. These proposals are, however, complex to implement due to the significant change they entail from the current situation.

In view of the conditions described above and given the accumulated social experience, it is likely that, if the present work is well received, an attempt will be made to partially implement the proposed actions with the aim of increasing the central power of the states. A situation that could translate into an increase in the interventionist role of the state that would add to fiscal policy the possibility of appropriating at the state level, rather than the proposed social level, all the rents generated by the use of the primary PF under which it has competencies. In this sense, although the elimination of taxes in favor of the adoption of rents that increase the efficiency of the economic system would be preferable to the current fiscal model, it would still be an interventionist model that discourages the use of the unique qualities of each human being to contribute to the construction of society as a whole.

The conditions show the difficulty of overcoming the deep imprint of decades of state intervention on society to be replaced by goals that combine equity and growth. These goals may seek a partial justification in the current conditions of the economic system, given the appropriation of primary PF. Thus, the existing fiscal policy finds a partial justification in the need to respond to the shortcomings of the economic system due to a rationale that does not take into consideration the unique characteristics of each productive factor.

#### **11.5.1. The Human Decision**

A solution is proposed here that contributes to equilibrium, in that all space and all Inert Matter over which a property right is acquired generates rents in favor of the community and therefore in favor of those who no longer have this space or matter at their disposal. This implies eliminating the justification of state coercion to intervene in an economy that treats each factor of production on the basis of its particularities.

The model developed in the paper requires a minimal decision on the part of human beings in favor of the role of the market, seeking to eliminate from the criteria the positive analysis (Friedman 1953) of previous economic experiences or the definition

of normative solutions. This reduces the decisions to be made to the minimum number of elements:

- The punctual definition of the space conditions that allow natural persons to have a home, acting as legal persons for any higher dimension.
- The periodic definition of the quantities of elements that make up the PF Inert Matter and the PF Living Beings involved in market creation.

In the case of space, the decision becomes mainly a technical question of the dimensions required to have a home, a decision that can lead to a change in the behavior of citizens depending on the measures set.

The implementation of the above ideas puts the market back at the center of all economic activity as a resource allocation mechanism, seeking to limit any intervention while generating rents for society. To achieve this, it is necessary to align several elements, among which two stand out: the transition towards social ownership of land use and the making available to the global society of Inert Matter reserves. These elements are currently subject to property rights in the hands of individuals or legal entities, whose situation has been reached through transfers by market mechanisms under the prevailing economic system.

The fact that the remedy is drastic (Galbraith 2012) is not an obstacle to direct the work towards the best functioning of the economic system that can be found at any given time.

#### **11.5.2. Implementation in developing countries**

In view of the difficulties that the above may pose for its implementation in the more developed countries due to the stability of their institutions and the complexity of making modifications that affect the current conception of property rights, the work raises broad possibilities for implementation in countries that are developing their own institutions, including those that have emerged from armed conflicts.

In these cases, the development of the model can be approached from the initial stages with a lower impact derived from the existence of previous institutions, facilitating the independence of Nature's PFs from the concepts of ownership of the economy and the development of rents aligned with Amartya Sen's concept of development as freedom (Pedrajas 2007). At the same time, the local implementation of the model of

development based on the proposed five PFs would contribute to the improvement of local efficiency gains and equity, and would therefore pose pressures for their implementation elsewhere in the world.

In the same way, the above is applicable outside of Earth, in that any colonization entails the development or establishment of new institutions for the place in question, which facilitates collaboration between all Human Beings. Thus the conditions of discovery allow to enjoy the temporary availability of surfaces of the PF Space without opposition, which implies a marginal cost equal to zero, at the same time that facilitates the capitalization of resources as PF Inert Matter under the same conditions. A different matter would be the incorporation of PF Inert Matter for use in a market subject to static sustainability constraints.

### **11.6. Development Goals**

Society's concern for major social imbalances and for the sustainability of our relationship with the ecosystem has led us to seek different lines of action that lead to an expectation of improvement in both elements. This concern has resulted in the development of successive global action programs from which great advances are expected in the social spheres and in caring for the planet. Thus, in the year 2000, the 'Millennium Development Goals'<sup>339</sup> emerged with eight lines of action, to be replaced in 2015 by the 'Sustainable Development Goals'<sup>340</sup> (SDGs) composed of seventeen new lines of action. They are a set of desirable objectives all in that they contribute to an improvement in society and the relationship with the planet.

The question that arises from here in relation to the issues raised in this document is whether there is a real capacity to advance in the direction set by the current foundations of the system or whether, on the contrary, there are limitations to the possibility of achieving the goals in that progress towards achieving some may entail setbacks to the achievement of others. At the same time, the question arises as to whether the way to achieve these objectives should be set by authorities mainly at the national and supranational levels, or whether, on the contrary, it should be the market that achieves them. The latter question is the one that has received answers throughout the different sections of this paper, giving the market the ability to move towards their achievement by reviewing its foundations and making market creation decisions, without intervening in their subsequent distribution.

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<sup>339</sup> See: 'The Millennium Development Goals Report 2015' of the United Nations.

<sup>340</sup> See: United Nations 'Sustainable Development Goals Report 2023'.



It should be noted that the provision of all goods and services to society, whether in the form of food, housing construction or education, among others, involves the application of PF that are used in exchange for an income. It is therefore the entrepreneurial action of citizens that allows progress towards these objectives in an efficient manner and the freedom of action that creates the necessary incentives to do so. Below is a table with the considerations related to the 17 sustainable development goals analyzed from the vision described in this paper, which has as its foundation:

- The identification of the five PF: Space, Inert Matter, Living Beings, Labor and Capital.
- Allocation of social ownership of Nature's PFs
- The distribution of primary PF income.

OBJECTIVE	IMPLICATION
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### END OF POVERTY

The work raises the possibility of advancing towards the eradication of poverty from the consideration of all primary PF as social, which implies the generation of income for society through the leasing or acquisition of these factors. In this sense, it is worth differentiating the PF space from that of Inert Matter, and from that of Living Beings, since the discussion on the beneficiaries of these factors may have different connotations.

On the impact of Inert Matter, as the planet earth is unique for all citizens, it can be considered as beneficiary of the exploitation (capitalization) of such resources to the whole society as a whole and therefore the derived rents allocated proportionally; since the fact of withdrawing a limited productive factor from any place of the planet prevents uninvolved citizens from benefiting from it.

With respect to space, it is worth asking whether it should be the inhabitants around the space who should benefit from the creation of a community on the site, which would imply the distribution of rents.

in different communities around the world, or if they are all the

the world's inhabitants on an aggregate basis the recipients of its share of the

proportional share of these rents. In the goal of ending poverty, the fact that market generation contributes to obtaining resources for all the inhabitants of the planet becomes a starting point aligned with equity in the natural ownership of primary PFs and with efficiency in their use once they are introduced into the market.

At an illustrative level for a daily income of 3\$/person/day and given a consideration of 8 billion people, 365 days a year and a world GDP of 100,000,000 billion \$: this would imply that the rents of the PF Space and Inert Matter equally distributed should represent at least 8.76% of the GDP, leaving an estimate of 91.24% for the rents of the other PF (labor and capital). Estimate that can be considered conservative since the high share of fossil energy sources or since the implication of land leasing by legal entities.

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## 2

### Hambre cero

## ZERO HUNGER

The change in the conception of the factor of production makes it possible to move towards a model in which human beings can decide what to do with their resources. By conceiving space as a social good that is leased to people who wish to carry out a commercial activity on it, the separation of human beings from the ownership of land is eliminated and therefore allows them to have rents not only from their factor of production, labor, but also from their participation in the primary PF, and in the case of having savings, from the capital invested.

This change allows every citizen to have access to minimum resources to cover his or her needs. Considering food as a first level need, the results of this work are focused on the maximum possible reduction of hunger as a social problem.

It should be noted that, given the above, it is the market in its free operation that is capable of reaching reduction targets.

the good intentions of the institutions with which they work. The market is the one that achieves this goal. As in the case of poverty reduction, with which hunger reduction is correlated, it is the market conditions that allow the distribution of society's income without any additional institutional intervention.

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3

Salud y  
bienestar

### HEALTH AND WELLNESS

The objective of health and well-being is aligned with the objective of zero hunger, in terms of the generation of income for society. According to the present work, this is a human decision in which the citizen can distribute the resources obtained by his participation in the primary productive factors, together with his use of the PF labor and, if necessary, savings (capital), which will allow him to advance towards an improvement of his welfare conditions under his own preferences.

As an example of the impact on the goals of reducing both maternal and infant mortality, these are aspects in which the distribution of society's income should have a positive behavior under the action of the market.

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4

Educación de  
calidad

### QUALITY EDUCATION

Despite the consideration of quality as a fundamental objective of society in its contribution to the achievement of any other objective, this paper does not make specific assessments of the quality of education.

Only the fact that the generation of earned income and its social distribution contributes to an improvement in the individual's capacity to distribute his or her resources and his or her preference for education can be considered.

It is worth mentioning that, from the point of view of the economic theory analyzed, education, together with security and health, is one of the most important economic sectors in the world.

fundamental elements for which the contribution of the community is necessary, making it possible to limit political action in this regard.

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**5**

Igualdad de género

**GENDER EQUALITY**

The present work treats all human beings under the same conditions, without differentiation of any kind, and considers the whole of society as a single whole that is responsible for market creation decisions while at the same time obtaining an equitable distribution of income.

The availability of income for all citizens on equal terms facilitates free decision-making by reducing economic dependence among individuals.

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**6**

Agua limpia y saneamiento

**CLEAN WATER AND SANITATION**

The treatment made during the work on all primary PFs is aggregated and therefore does not affect the particularity of water, which is part of the PF Inert Matter and therefore appears as a natural good under the ownership of the whole society.

With respect to sanitation, it is worth highlighting the points analyzed in defense of the home of individuals, as well as the study carried out (Segura & Linera 2022) on the minimum conditions of habitability and the implications of the production factor space in favor of the configuration of legal settlements. In this sense, the conditions of consideration of *slums*, informal settlements and inadequate housing according to **UN Habitat**, which include access to running water, sanitation, security of tenure, structural quality and living space, have been worked out enough.

7

Energía  
asequible y no  
contaminante

### AFFORDABLE AND NON-POLLUTING ENERGY

This objective includes one of the main elements in which this research has derived when considering the generation of energy and its effects on the ecosystem. Its treatment starts from the consideration of the need to operate under a single market in which, in case of not generating limits to the use of productive factors, we may incur in damage to the ecosystem in which we live.

At this point, it is the generation of a market in terms of the limitation of energy PFs that contributes to limiting the polluting effect to that which is agreed upon and meets the Earth's sustainability criteria. This promotes the preference for renewable energies (7.2) and the increase of energy efficiency (7.3).

On the other hand, the concept of affordable energy is based firstly on the difficulty of agreeing on the definition of the concept of energy affordability, and secondly on the fact that a limitation in the generation market for those elements that are harmful to the ecosystem leads to an increase in the price of everything that is dependent on energy and therefore on practically the entire market.

However, this is a point that is worked as a process towards sustainability and from the progressive adaptation of the market and not so much as a radical change, according to what is expressed in the chapter on 'Sustainability of the Factors of Production'.

**8**

Trabajo decente  
y crecimiento  
económico

**DECENT WORK AND ECONOMIC GROWTH**

From the point of view of economic growth, the efficient allocation of PF is a necessary condition for increasing the potential growth of the economy. The limitation of public intervention is associated with such economic growth on the part of society. Goals (8.1), (8.2) are directly related to economic efficiency. Goal (8.4) with the creation of the market for Inert Matter.

With respect to decent work, the analysis shows how working conditions improve as the complexity of society increases. In this sense, economic growth is necessary to generate work and improve its conditions, as well as to contribute to the distribution of income among society as a whole, which increases the decision-making power of citizens in decisions about their working conditions.

**9**

Industria,  
innovación e  
infraestructura

**INDUSTRY, INNOVATION AND INFRASTRUCTURE**

The above mentioned in this paper entails the decapitalization of nature's PFs, a circumstance that leads to a transfer of savings towards productive investments in line with the SDGs, in line with objectives (9.4) and (9.5).

In addition, the availability of space at market conditions allows for a reduction in PF costs, which facilitates the profitability of companies in the search for a new market equilibrium.

## 10

### Resolución de las desigualdades

#### RESOLUTION OF INEQUALITIES

Primary PF income, in its concept of aliquot distribution among the population, has a direct impact on the objective (10.1) of income growth of the poorest 40%, as well as (10.2) of economic inclusion of all people regardless of their conditions and preferences. The same criteria are applied here as those used for gender equality.

This reduction of inequalities occurs mainly in relation to the information collected in the Production Function, when moving from the neoclassical model  $x=f(L, K)$ , to the proposed model  $x=f(S, M, B, L, K)$ , according to which all the PF of nature belong to all human beings, a situation that allows the availability of such PF or their rents to all people regardless of aspects such as their socioeconomic conditions or their nationality.

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## 11

### Ciudades y comunidades sostenibles

#### SUSTAINABLE CITIES AND COMMUNITIES

As indicated in the implications for the real estate sector, the conception of non-produced PF as social goods has a direct impact on speculation, since, from the point of view of legal status, there is a shift from indefinite availability of space to a temporary right to use it. This is associated with a reduction in the relative cost of acquiring housing (11.1), as well as a more intensive use of urban spaces.

The sustainability aspects (11.6) are linked to prices from the supply side, so that consumption decisions become sustainable as soon as they are operated under a capitalization of Inert Matter, which is already sustainable.

**12**

Producción y  
consumo  
responsables

**RESPONSIBLE PRODUCTION AND CONSUMPTION**

The discussion on the sustainability of PF enables progress towards responsible production based on the common ownership of natural resources (12.2) and their capitalization under market conditions.

Issues related to food loss (12.3), waste (12.5), information (12.6) remain dependent on consumer assessment and public action where appropriate.

**13**

Acción por el  
clima

**CLIMATE ACTION**

Emission reductions resulting from those outlined in the chapter on 'Sustainability of PFs' become a market-based promotion of climate action. Contributing to less dependence on political decisions and national plans (13.2) in the fight to maintain the current climate.

The above is oriented with the objectives of the Paris Agreement of 2015 to limit the increase in global temperature based on decision-making by society in relation to the capitalization of the different forms of Inert Matter, being able to limit emissions to the targets set by science. Situation that allows to contribute to reduce the increase of the global temperature. temperature below the marked limits.



## 14

Vida submarina

### UNDERWATER LIFE

The main element in relation to underwater life is the consideration of the FP Living Beings, which responds to point (14.4) by considering as a common good all Living Beings that are not currently under human action, it does so by giving a general economic treatment that avoids the particular regulation of fishing exploitation activities.

This modification in the economic conception transfers to all human beings both the decision on the fishing activity and the income derived from the rights of the activity. In addition, the aforementioned works against subsidies (14.6) as a criterion for intervention in the natural equilibrium of the market.

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## 15

Vida de  
ecosistemas  
terrestres

### LIFE OF TERRESTRIAL ECOSYSTEMS

The treatment of FP Space as the common property of all human beings limits the ability to act in ways that cause damage to ecosystems. Upon obtaining a right to use the space, its lessees have the obligation under contractual conditions to return the space to society in the same conditions in which it was initially received. This situation acts against deforestation (15.2) or the deterioration of terrestrial ecosystems.

Similarly, the consideration of the Living Beings PF acts on the relationship with all non-human life forms, a situation aligned with action (15.7) on poaching or trafficking of species protected.

## 16

Paz, justicia e  
instituciones  
sólidas

### PEACE, JUSTICE AND STRONG INSTITUTIONS

The main relationship with the objective is the generation of equal income for the whole society derived from the treatment of nature's PF, this action is aligned with the reduction of violence (16.1) in terms of the distribution of income from nature's PF, which allows both an increase in the distribution of per capita income and an increase in the minimum disposable income.

The treatment of FP Space works in favor of target (16.5) by limiting the ability of public agents to generate windfall profits based on land rezoning.

## 17

Alianzas para  
lograr objetivos

### ALLIANCES TO ACHIEVE OBJECTIVES

The proposed production function emphasizes the common ownership of Space, Inert Matter and Living Beings by all human beings. This situation is opposed to the consideration of a permanent sovereignty over natural resources at the level of the nation. A question that affects point 17.1 due to the fact that the consideration of internal resources that falls on the FP forms of nature, mainly as Inert Matter converts a right into a "Provision of support". A question that is expressly shown in point 17.2 by indicating "the commitment of many developed countries to reach the objective of allocating 0.7% of gross national income to official development assistance", which appears as a magnitude not subject to questions.  
market.<sup>341</sup>

<sup>341</sup> See for the case of Spain: Law 1/2023, of February 20, on Cooperation for Sustainable Development and Global Solidarity.

### **11.7. Conclusions**

Imagination, as the human capacity to define a future, makes it possible to outline the conditions in which human beings can live in freedom, enjoying the available resources and the achievements attained as a society. The imagined situation is attainable under a social demand that drives an orderly change in the established direction. A change against which opposition can be expected from the particular and collective interests of those who hold the rights over goods acquired under agreements considered lawful under the conditions of the current economic system.

From the point of view of respect for the market as the mechanism of maximum distribution, coercive methods for the adoption of the established criteria are opposed to the ends sought. This issue causes any transition to depend on an adaptation of the current market to the imagined market. What is expressed in this chapter is nothing but the process understood as more respectful of the current market situation, but at the same time allowing progress towards a market in which the distribution of PF in the economy is respectful of the particular properties of each one.

The process of change described is simpler from the spatial viewpoint than from the material viewpoint, in that in the first case a partial implementation is possible, resulting in an improvement in local efficiency and an attraction of investment that is subsequently replicated in other places. In the case of Inert Matter, change requires a global consensus, or the adoption of economic measures that, if partially implemented, would lead to a worsening of the competitive position. The difference in the implementation of both issues can lead to a more efficient and equitable world with respect to the use of space, without moving towards the balance of the planet's ecosystems through progressive price adaptation based on the sustainability of market supply.

## 12. CONCLUSIONS

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### 12.1. Conclusions

The consideration of the Earth's surface as a capital good defines an economic structure in which human beings are limited in their relationship with the world. The fact that non-produced goods such as land are treated similarly to produced goods results in the permanence of inequalities and the limitation of the possibilities of economic progress for a large part of society.

Among all existing properties, the home represents the main investment in most people's lives, implying the destination of savings and income, generating a link to the territory and coming to serve as a legacy for future generations. This fundamental role of housing is subject to the pressure of the increase in society's capital, which translates into a commensurate increase in the capitalization of the real estate sector and distances the relationship between citizens' income and their ability to access housing.

The dynamics observed in the case of Spain include the increased role of legal entities in the acquisition of real estate for leasing, an aspect that is achieved from the profitability of the operation as well as from the profitability due to the increase in the value of the assets. Changes derived from the aging of the population are also observed, with the role of financial solutions such as the nuda

ownership or reverse mortgages. Results that show a trend towards a reduction in homeownership among younger people in favor of renting.

Given the unequal access to land as PF of the economy, this paper rethinks the PF in the form of Space, Inert Matter, Living Beings, Labor and Capital, under the consideration of being the maximum possible level of aggregation based on their different characteristics and their generation of rents. In this way, the non-produced PF Space, Inert Matter and Living Beings cease to be susceptible of appropriation in their natural conditions and start generating rents for the whole society under market conditions.

Given that the change in the treatment of PF affects the basis of the economic system, this implies changes at different levels. In the first place, the aggregate Production Function in its Neoclassical form used at the macroeconomic level goes from two to five independent variables; this fact poses changes in the study of economics and in the current teaching of economics. Secondly, the consideration of PF as unique elements demands their treatment as such in the real economy, which modifies their location in the accounting of all institutions, the main impact is shown by removing property from the balance sheet space and placing its general use in the income statement in the form of a lease to society under contractual conditions. As a third point appears the particular treatment of the home of Human Beings, according to which the only differentiation in the market treatment of FP Space is raised by facilitating the creation of a limited market in conditions of ownership of natural persons in their search for security at the same time of the general market in conditions of lease to society in defense of profitability and efficiency. Fourthly, we consider the effect on sustainability resulting from the consideration of Inert Matter as PF of society, for which we start from the consideration of the global sovereignty of natural resources that must be capitalized for their participation in the economy, this condition allows at the same time to generate rents for society, to anticipate the effects that the consumption of certain forms of Inert Matter PF may have on ecosystems and to work on the role of markets as optimizers in the distribution of resources. Finally, all the rents of nature's PFs are compared with the taxes that make up the revenues of public action; the comparison allows us to observe a better relationship with arbitrariness, certainty, simplicity, redistribution and efficiency thanks to the action of the market; the ends sought by public authorities are largely attainable by the free action of the market under conditions of equal access to nature's PFs.

From the Austrian subjectivist vision of human action, the work raises the need to redefine the relationship of human beings with the environment under the foundations of Georgist thought. The proposed changes contradict the existence of a labor-capital opposition under a five PF model in which increases in productivity allow increases in the value of nature's resources, leading to an increase in income for society as a whole. Finally, the paper also raises the consideration that the neoclassical formulation provides value in the formation of knowledge and in the standardization of global activities such as accounting, which impacts on the entrepreneurial actions of citizens.

#### **12.1.1. Limitations**

The present document is the result of a work that has been expanding the research horizon as partial conclusions have been obtained that have generated new research questions, the main limitation being the need to limit the research to the formulation of PF from an economic point of view and the study of their main effects on the economy, with special emphasis on the role of the home of Human Beings. Despite the need to incorporate elements of a legal nature, any relationship with them is made from an economic point of view, without considering other legal implications outside the scope.

In the study of the financialization process and the analysis of land value, we have worked exclusively with public data, given the wide availability of such data, such as annual reports of the companies studied, documents published by securities agencies and industry associations. Much of the information had to be worked on a case-by-case basis because it is available in written documents that include financial or property information in different formats. It would have been possible to go into more depth in the case of having specific information on each of the assets and their valuation over time.

With respect to the analysis of the PFs and the effects of the proposed modifications on their formulation, the main limiting element has been the unavailability of data on the results of the proposed actions, which has implied the transfer of the empirical analysis of the first part between sections two and four to a study of the thinking and its implications in the second part.

### 12.1.2. Future Lines of Research

The proposal on the modification of PFs has great implications for the economy that exceed the scope of this paper, opening up interesting lines of further research.

- The results of the study on land prices and the complexity of the economy can be substantially expanded both from a horizontal viewpoint with the incorporation of other countries and regions and from a vertical viewpoint with the analysis at the municipal level, mainly allowing the study of the relationships and differences between the different economies.
- Of particular interest is the impact of the dual market of PF Space by indicating its use based on two tenure regimes, which has important effects on the distribution of space as well as issues of regulation - deregulation of the same for market or household purposes. Along the same lines, the analysis of the effects that the PF auction process may have on the possibility of concentration is particularly interesting.
- The question of the sustainability of the PF Inert Matter represents a broad field of research in which the definition of global institutions dedicated to the creation of the PF market for its capitalization stands out. In this field, the study of the impact of fossil energy supply constraints on the price system and the process of supply reduction from the economic to the sustainable one is particularly relevant.
- With respect to the rents generated by nature's PFs, the main analysis that has already been discussed in the work is the study of the criteria that allow their uses and distributions, raising differences in the treatment of space and Inert Matter derived from the impact they have on society; while space poses a temporality and a dependence on the local community, Inert Matter generally implies a punctual and independent use of the same.
- The development of the process of moving from a two PF economy to a five PF economy implies an analysis that substantially deepens the results obtained here. The main element results from the process of converting property rights over the PF Space into new rights of use based on contractual conditions.
- Of particular interest is the impact of the proposed issues on the concept of speculation, which is considerably limited within the scope of

The property is converted into a right of use, and at the same time there remains the possibility of speculation on the home.

- The aforementioned changes have a substantial impact on the financial sector, with the result of changes in the real estate sector having the greatest effect by modifying expectations regarding new mortgage loans for individuals. At the same time, there is a modification of the risks derived from the leasing of space for its exploitation, since the options for the land to act as collateral for the loan are limited while part of the same is transferred to the company due to the possibility of the space being returned under conditions of insolvency of the business of its holder, a situation subject to the terms and penalties agreed upon.
- Finally, the changes induced on credit have effects on the study of economic cycles by withdrawing commercial real estate investment and keeping property rights sacralized only under the household concept, giving the market the rights to use natural assets under contractual conditions.



## **12.2. Conclusions (English)**

*The consideration of the Earth's surface as a capital good defines an economic structure in which human beings are limited in their relationship with the world. The fact that non-produced goods such as land are treated in a similar way to produced goods results in the permanence of inequalities and the limitation of the possibilities of economic progress for a large part of society.*

*Among all existing properties, the home represents the main investment in most people's lives, involving the destination of savings and income, generating a link to the territory, and coming to serve as a legacy for future generations. This fundamental role of housing is subject to the pressure of the increase in society's capital, which translates into a commensurate increase in the capitalization of the real estate sector and distances the relationship between citizens' income and their ability to access housing.*

*The dynamics observed in the case of Spain include the increase in the role of legal entities in the acquisition of property for renting, an aspect that is achieved from the profitability of the operation as well as from the profitability due to the increase in the value of the assets, changes derived from the ageing of the population are also observed with the role of financial solutions such as bare ownership or reverse mortgages. These results show a trend towards a reduction in home ownership among younger people in favor of renting.*

*In view of the unequal access to land as FP of the economy, this paper reconsiders the Factors of Production in the form of space, inert matter, living beings, labor, and capital, under the consideration of being the maximum possible level of aggregation on the basis of their different characteristics and their generation of rents. In this way, the non-produced FPs space, inert matter and living beings cease to be susceptible of appropriation in their natural conditions and start to generate rents for the whole society under market conditions.*

*Given that the change in the treatment of FP affects the basis of the economic system, this implies changes at different levels. Firstly, the aggregate Production Function in its Neoclassical form, which is used at the macroeconomic level, goes from two to five independent variables; this fact brings about changes in the study of economics and in the current teaching of economics. Secondly, the consideration of FP as unique elements requires their treatment as such in the real economy, which modifies their location in the accounting of all institutions, the main impact being shown by removing property from the balance sheet space and placing its general use in the income statement in the form of a lease to society under contractual conditions. The third point is the particular treatment of the home of Human Beings, according to which the only differentiation in the market treatment of FP space is proposed, facilitating the creation of a limited market in*



*natural persons in their search for security at the same time as the general market in conditions of leasing to society in defense of profitability and efficiency.*

*Fourthly, we consider the effect on sustainability resulting from considering inert matter as society's FP, which is based on the consideration of the global sovereignty of natural resources that must be capitalized for their participation in the economy; this condition also makes it possible to generate income for society, anticipate the effects that the consumption of certain forms of inert matter FP may have on ecosystems and work on the role of markets as optimizers in the distribution of resources. Finally, all the rents of nature's FP are set against the taxes that make up the revenues of public action; the comparison allows observing a better relationship with arbitrariness, certainty, simplicity, redistribution, and efficiency thanks to the action of the market; the ends sought by public authorities are largely achievable by the free action of the market under conditions of equal access to nature's FP.*

*From the Austrian subjectivist view of human action, the need to redefine the relationship of human beings with the environment under the foundations of Georgist thought is raised, the proposed changes contradict the existence of a labor-capital opposition under a five FP model in which increases in productivity allow increases in the value of nature's resources, Finally, he considers that the neoclassical formulation brings value in the formation of knowledge and in the standardization of global activities such as accounting, impacting on the entrepreneurial actions of citizens.*

### **12.2.1. Limitations**

*This document is the result of a work that has been expanding the research horizon as partial conclusions have been obtained that have generated new research questions, the main limitation being the need to limit the research to the formulation of FPs and the study of their main effects on the economy, with special emphasis on the role of the home of Human Beings. Despite the need to incorporate legal elements, any relationship with them is carried out from an economic point of view, without considering other legal implications beyond the scope.*

*In the study of the financialization process and the analysis of the value of land, we have worked exclusively with public data, given the wide availability of such data, such as annual reports of the companies studied, documents published by securities agencies and by associations in the sector. Much of the information has had to be worked on a case-by-case basis as it is available in written documents that include financial or property information in different formats. It would be possible to go into more detail if specific information on each of the assets and their valuation over time were available.*

*With regard to the analysis of the FPs and the effects of the proposed modifications on their formulation, the main limiting element has been the unavailability of data on the results of the proposed actions, which has implied the transfer of the empirical analysis of the first part between sections two and four to a study of the thinking and its implications in the second part.*

#### **12.2.2. Future research lines**

*The proposal on the modification of FPs has great implications for the economy that go beyond the scope of this paper, opening up interesting lines of further research.*

- *The results of the study on the price of land and the complexity of the economy can be substantially extended both from a horizontal viewpoint with the incorporation of other countries and regions and from a vertical viewpoint with the analysis at the municipal level, mainly allowing the study of the relationships and differences between the different economies.*
- *Of particular interest is the impact of the dual market of FPs space by indicating its use on the basis of two tenure regimes, which has important effects on the distribution of space as well as questions of regulation - deregulation of space for market or household purposes. In the same vein, the analysis of the effects that the PF auction process may have on the possibility of concentration is particularly interesting.*
- *The question of the sustainability of FP inert matter represents a broad field of research in which the definition of global institutions dedicated to the creation of the FP market for its capitalization stands out. In this field, the study of the impact of fossil energy supply constraints on the price system and the process of reducing supply from economic to sustainable is particularly relevant.*
- *With regard to the rents generated by natural FP, the main analysis, which has already been commented on in the work, is the study of the criteria that allow their use and distribution, with differences in the treatment of space and inert matter derived from the impact they have on society; while space is temporary and dependent on the local community, inert matter generally implies a one-off use that is independent of it.*
- *The development of the process of moving from a two FP economy to a five FP economy implies an analysis that substantially deepens the results obtained here. The main element results from the process of converting property rights over the FP space into new rights of use based on contractual conditions.*

- *Of particular interest is the impact of the proposed issues on the concept of speculation, which is considerably limited in the commercial sphere by the conversion of ownership into a right of use, while at the same time the possibility of speculation on the home remains.*
- *Finally, the changes introduced introduce substantial effects on the financial sector, with the result of the changes in the real estate sector having the greatest effect by changing the expectations of new mortgage loans for individuals. At the same time, there is a change in the risks arising from the leasing of space for exploitation, as part of the risks are assumed by the company in the event that the space is returned under the insolvency of the business of its holder, a situation subject to the agreed terms and penalties.*



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## BIBLIOGRAPHY .

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- Aalbers, M.B. (2008) The Financialization of Home and the Mortgage Market Crisis. *Competition & Change*, Vol. 12, No. 2, June 2008 148-166
- Aalbers, M.B., Christophers, B. (2014) Centring Housing in Political Economy. *Housing, Theory and Society*, 31:4, 373-394, doi: 10.1080/14036096.2014.947082
- Aalbers, M.B. (2016) *The Financialization of Housing. A political economy approach*. Routledge
- Abel, A.B., Bernanke, B.S. (2001) *Macroeconomics*. Pearson
- Acemoglu, D., Robinson, J. (2023) *Why countries fail*. Booket, Grupo Planeta
- Ahmad, T., Zhang, D (2020). A critical review of comparative global historical energy consumption and future demand: The story told so far. *Energy Reports*, 6, 1973-1991. doi: 10.1016/j.egyr.2020.07.020.
- Akerman, J., Höjer, M. (2006). How much transport can the climate stand? -Sweden on a sustainable path in 2050. *Energy policy*, 34(14), 1944-1957. doi: 10.1016/j.enpol.2005.02.009.
- Alai, D.H., Chen, H., Cho, D., Hanewald, K., Sherris, M. (2014) Developing Equity Release Markets: Risk Analysis for Reverse Mortgages and Home Reversions. *North American Actuarial Journal*, 18(1), 217-241, 2014.
- Alam et al. (1991) M.S. Alam; B.K. Bala; A.M.Z. Huq; M.A. Matin (1991). A model for the quality of life as a function of electrical energy consumption. *Energy*, 16(4), 739- 745. doi: 10.1016/0360-5442(91)90023-f.

- Alvarez, D. (2010) Common Property of the Earth, Human Rights and Global Justice. ISEGORY. *Journal of Moral and Political Philosophy*, No. 43, July-December, 2010, 387-405. ISSN: 1130-2097
- Anari, A., Kolari, J. (2002) House Prices and Inflation. *Real Estate Economics*, 30(1), 67-84. doi: 10.1111/1540-6229.00030.
- Andelson, R.V. (2000) On separating the landowner's earned and unearned increment: a georgist rejoinder to F.A. Hayek. *American Journal of Economics and Sociology*, Vol 59, No.1
- Aristotle (1988) *Politica*. Editorial Gredos
- Atance, D., Debón, A., de la Fuente, I. (2021) Reverse mortgage: impact of longevity risk in the Spanish case. *Annals of the Institute of Spanish Actuaries*, 4th epoch, 27, 2021/135-159.
- Auken, I. (2016) *Welcome to 2030. I own nothing, have no privacy, and life has never been better*. Medium - World Economic Forum
- Azpitarte, J. (2018) *Urbanism and freedom*. Unión Editorial
- Bajo and Monés (2000) *Curso de Macroeconomía*. Antoni Bosch Editor, S.A.
- Barbier, E.B. (2008). *Ecosystems as Natural Assets*. Foundations and Trends in Microeconomics, 4(8), 611-681. doi: 10.1561/07000000031
- Barro, R.J. (2001) Human capital: growth, history, and policy- a session to honor stanley engerman. *AEA papers and proceedings*, vol. 91 NO. 2.
- Batt, R., Appelbaum, E. (2013) The Impact of Financialization on Management and Employment Outcomes. *Upjohn Institute Working Paper*, No. 13-191. [ssrn.com/abstract=2235748](https://ssrn.com/abstract=2235748).
- Benegas Lynch, A. (2015) *Freedom is reciprocal respect*. The Cato Institute
- Benegas Lynch, A. (2021) *The Austrian school in business*. Unión Editorial
- Bengi, A. (2021) Degrowth, Rethinking Marxism. *Journal of Economics, Culture & Society*. 33:1, 98-110, doi: 10.1080/08935696.2020.1847014
- Beracha, E., Zifeng, F., Hardin W.G. (2019) REIT Operational Efficiency and Shareholder Value. *Journal of Real Estate Research*, 41:4, 513-554. doi: 10.22300/0896- 5803.41.4.513.
- Bible (The) (1972) *The House of the Bible*. ISBN: 84-288-1061-3
- Bigo, P. (1968) *La propiedad*. ZYX



- Birz, G., Devos, E., Dutta, S. et al. (2022) Ex-ante performance of REIT portfolios. *Rev Quant Finan Acc*, 59, 995-1018. doi: 10.1007/s11156-022-01068-6.
- Blunt, A. & Dowling, R. (2006) *Home*. Routledge
- Boccard, N. (2021) Commodities & Sustainability. SSRN. doi: 10.2139/ssrn.3854548.
- Borgoni, R., Michelangeli, A., Pontarollo, N. (2018) The value of culture to urban housing markets. *Regional Studies*, 1-12. doi: 10.1080/00343404.2018.1444271
- Bort, A. (2010) *Principios de microeconomía*. Editorial Universitaria Ramón Areces
- Boyce, J.K. (2001) From Natural Resources to Natural Assets. NEW SOLUTIONS. *A Journal of Environmental and Occupational Health Policy*, 11(3), 267-288. doi: 10.2190/5QPY-TPE0-JP5W-5FJE.
- Browning, E.K., Johnson, W.R. (1984) The trade-off between Equality and Efficiency. *Journal of Political Economy*, Vol. 92, no. 2.
- Brundtland, G.H. (1987) *Our Common Future: Report of the World Commission on Environment and Development*. Geneva, UN-Dokument A/42/427. [un-documents.net/ocf-ov.htm](http://documents.net/ocf-ov.htm)
- Brynjolfsson, E., Hitt, L. (1995) Information Technology as a Factor of Production: The Role Of Differences Among Firms. *Economics of Innovation and New Technology*, 3:3-4, 183-200. doi: 10.1080/10438599500000002
- Burn, K., Szoeki, C. (2016) Boomerang families and failure-to-launch: Commentary on adult children living at home. *Maturitas*, 83 (2016) 9-12.
- Byrne, M. (2019) *The financialization of housing and the growth of the private rental sector in Ireland, the UK and Spain*. UCD Geary institute for public policy, discussion paper series.
- Cantillón, R (2021). *Essay on the nature of trade in general*. Union Editorial Capozza, D.R.,
- Helsley, R.W. (1989) The fundamentals of land prices and urban growth. *Journal of urban economics*, 26, 295-306.
- Cetrulo, A., Guarascio, D., Virgillito, M.E. (2020) The Privilege of Working From Home at the Time of Social Distancing. *Intereconomics*. doi: 10.1007/s10272-020-0891-3.
- Chacon, R.G. (2023) Tenant Concentration in REITs. *The Journal of Real Estate Finance and Economics*. 66:636-679. doi: 10.1007/s11146-021-09829-1.
- Charles, S.L. (2019) The financialization of single-family rental housing: An examination of real estate investment trusts' ownership of single-family houses in the Atlanta

- metropolitan area. *Journal of Urban Affairs*, 1-21. doi: 10.1080/07352166.2019.1662728.
- Cheng, J., Zhao, J., Zhu, D., Zhang, H. (2021) Limits of Land Capitalization and Its Economic Effects: Evidence from China. *Land*. 10, 1346. doi: 10.3390/land10121346.
- Chiapello, E., Walter, C. (2016) The Three Ages of Financial Quantification: A Conventionalist Approach to the Financiers' Metrology. *Historical Social Research* 41, 2, 155-177. doi: 10.12759/hsr.41.2016.2.155-177.
- Christophers, B. (2016) For real: land as capital and commodity. *Royal Geographical Society (with IBG)*, 41 134-148. doi: 10.1111/tran.12111.
- Chung, R., Fung, S., Shilling, J.D., Simmons-Mosley, T.X. (2016) REIT Stock Market Volatility and Expected Returns. *Real Estate Economics*, pp. 1-28. doi: 10.1111/1540-6229.12128.
- Clark, J.B. (1908) *The distribution of wealth*. The Macmillan Company.
- Collins, C.M., Steg, L., Koning, M.A.S. (2007) Customers' Values, Beliefs on Sustainable Corporate Performance, and Buying Behavior. *Psychology & Marketing*, Vol. 24(6): 555-577. doi: 10.1002/mar.
- Colwell, P.F., Munneke, H.J. (1997). The Structure of Urban Land Prices. *Journal of Urban Economics*, 41(3), 0-336. doi: 10.1006/juec.1996.2000.
- Conley, D., Gifford, B. (2006) Home Ownership, Social Insurance, and the Welfare State. *Sociological Forum*, Vol. 21, No. 1, March 2006. doi: 10.1007/s11206-006-9003-9
- Coscolluela Martínez, C. (2010) *Effects of the capital stock on output and employment in the Spanish economy*. Fundación de las cajas de ahorros.
- Crosby, N., Lorenz, D., Lützkendorf, T. (2011) Sustainability and property valuation. *Journal of Property Investment & Finance*, 29(6), 644-676. doi: 10.1108/14635781111171797
- Crotty, J. (2006) The Neoliberal Paradox: The Impact of Destructive Product Market Competition and 'Modern' Financial Markets on Nonfinancial Corporation Performance in the Neoliberal Era. *Financialization and the World Economy*. Edward Elgar
- Cuadrado, J.R. (Coord.), Mancha, T., Villena, J.E., Casares, J., González, M., Marín, J.M., Peinado, M.L. (2010) *Política económica, elaboración, objetivos e instrumentos*. Mc Graw Hill

- Cuffaro, N., Hallam, D. (2011) Land Grabbing in Developing Countries: Foreign Investors, Regulation and Codes of Conduct. *SSRN Electronic Journal*, doi: 10.2139/ssrn.1744204.
- Czyżewski, B., Matuszczak, A (2016). A new land rent theory for sustainable agriculture. *Land Use Policy*, 55, 222-229. doi: 10.1016/j.landusepol.2016.04.002.
- Dales, J.H. (1968) Land, Water, and Ownership. *The Canadian Journal of Economics*, Vol. 1, No. 4, pp. 791-804. [jstor.org/stable/133706](http://jstor.org/stable/133706)
- Delisle, R.J., McKay Price, S., Sirmans, C.F. (2013) Pricing of Volatility Risk in REITs. *Journal of Real Estate Research*, 35:2, 223-248. doi: 10.1080/10835547.2013.12091359
- Demaria, F., Schneider, F., Sekulova, F., Martinez-Alier, J. (2013) What is Degrowth? From an Activist Slogan to a Social Movement. *Environmental Values*, April 2013, Vol. 22, No. 2, special issue: *Degrowth*, pp. 191-215. [jstor.org/stable/23460978](http://jstor.org/stable/23460978)
- Dirección General de Gestión Urbanística, Ayuntamiento de Madrid (2021) *Program for the transfer of land under a surface right regime for the development of affordable rental housing*.
- Dirección General de Gestión Urbanística, Ayuntamiento de Madrid (2023) *Second program for the transfer of land under a surface right regime for the construction of a new building. affordable rental housing development*.
- Du, H., Ma, Y., An, Y. (2011). The impact of land policy on the relation between housing and land prices: Evidence from China. *The Quarterly Review of Economics and Finance*, 51(1), 19-27. doi: 10.1016/j.qref.2010.09.004.
- Duménil, G., Lévy, D. (2006) Costs and Benefits of Neoliberalism: A Class Analysis. *Financialization and the World Economy*. Edward Elgar
- Dupuis, A., Thorns, D.C. (1996) Meanings of home for older homeowners. *Housing Studies*, 11:4, 485-501. doi: 10.1080/02673039608720871
- Echaves García, A. (2016) The difficult access of young people to the housing market in Spain: prices, tenure regimes and efforts. *Cuadernos de Relaciones Laborales*. ISSN: 1131-8635
- Echaves García, A., Navarro Yañez, C.J. (2018) Housing provision regimes and residential emancipation: analysis of the public effort in housing in Spain and effect on emancipation opportunities from a comparative autonomic perspective. *Politics and Society*. ISSN: 1130-8001

- EEA (2011) *Environmental tax reform in Europe: implications for income distribution 2011*. European Environment Agency - 66 pp. - 21 x 29.7 cm ISBN 978-92-9213-237-8. doi: 10.2800/84858
- EPRA (2023) *Global REIT Survey 2023. A comparison of the major REIT regimes around the world*.
- Epstein, G.A. (2005) *Financialization and the World Economy*. Edward Elgar
- Epstein, G.A. (2019) *What's Wrong with Modern Money Theory? A Policy Critique*. Palgrave MacMillan
- Erturk, I. (2020) Shareholder Primacy and Corporate Financialization. *The Routledge International Handbook of Financialization*. Routledge
- Evers, S., Seagle, C., Krijtenburg, F. (2013) *Africa for sale? Positioning the State, Land and Society in Foreign Large-Scale Land Acquisitions in Africa*. Brill
- Feng, Z., Wu, Z. (2021) Local Economy, Asset Location and REIT Firm Growth. *The Journal of Real Estate Finance and Economy*. doi: 10.1007/s11146-021-09822-8.
- Fields, D. (2018) Constructing a New Asset Class: Property-led Financial Accumulation after the Crisis. *Economic Geography*, 1-23. doi: 10.1080/00130095.2017.1397492
- Fisher, I. (1907) *The rate of interest, its nature, determination, and relation to economic phenomena*. The Macmillan Company
- Friedman, G. (2001) The sanctity of Property Rights in American History. *Political Economy Research Institute*. Working Paper N14
- Friedman, M. (1953) *Essays in Positive Economics*. The University of Chicago Press
- Friedman, M. (1957) *A Theory of the Consumption Function*. Princeton University Press. ISBN: 0-691-04182-2
- Friedman, M. (1970) *A Friedman Doctrine: The Social Responsibility of Business Is to Increase Its Profits*. The New York Times. September 13, 1970, Section SM, Page 17.
- Friedman, M. (1972) *Theory of prices*. Alianza editorial
- Friedman, M. (2022) *Freedom of choice, a personal statement*. Deusto
- Funari, N. (2022) *Nareit Study Shows the Growth and Benefits of Global REIT Adoption*. Nareit
- Gaffney, M. (2004) *Land as a distinctive factor of production*. Wealth and want
- Gaffney, M. (2008) Keeping Land in Capital Theory: Ricardo, Faustmann, Wicksell, and George. *The American Journal of Economics and Sociology*, Vol. 67, No. 1, Henry George:

- Political Ideologue, Social Philosopher and Economic Theorist*, pp. 119-142. [jstor.org/stable/27739694](https://www.jstor.org/stable/27739694).
- Galbraith, J.K. (2012) *The affluent society*. Austral
- García - Lamarca, M. (2020) Real estate crisis resolution regimes and residential REITs: emerging socio-spatial impacts in Barcelona. *Housing Studies*, doi: 10.1080/02673037.2020.1769034
- García Almirall, M.P. (2007) *Introduction to real estate valuation*. ISBN: 978-84-8157-471-5
- García Delgado, J.L. (2023) Sobre la Valoración Social del Empresario. *Boletín de la Real Sociedad Geográfica*, [S.l.], n. CLXI, p. 209-216, dec. 2023. ISSN 2603-6010.
- George, H. (1889) *The Standard* No. 137, Aug 17.
- George, H. (1935) *Progress and poverty, an inquiry into the cause of industrial depressions and of increase of want with increase of wealth, the remedy*. Robert Schalkenbach foundation
- George, H. (2012) *Progress and poverty*. Robert Schalkenbach foundation
- Georgescu-Roegen (1970) The Economics of Production. *The American Economic Review*, May 1970, Vol. 60, No. 2. [jstor.org/stable/1815777](https://www.jstor.org/stable/1815777)
- Ghosh, C., Giambona, E., Harding, J.P., Sirmans, C.F. (2008) How Entrenchment, Incentives and Governance Influence REIT Capital Structure. *J Real Estate Finan Econ*. 43:39-72 doi: 10.1007/s11146-010-9243-6
- Gilstrap, C., Petkevich, A., Sezer, O., Teterin, P. (2021). REIT Debt Pricing and Ownership Structure. *The Journal of Real Estate Finance and Economics*. doi: 10.1007/s1114146-020-09806-0.
- Gómez Montoro, A.J. (2002) La titularidad de derechos fundamentales por personas jurídicas: un intento de fundamentación. *Spanish Journal of Constitutional Law*. No. 65. pp. 49-105. [jstor.org/stable/24884698](https://www.jstor.org/stable/24884698)
- Gonzalez, R.E., Espina, J., Segura, A. (2023) *Problemas resueltos de gestión de empresas y proyectos*. Garceta. ISBN: 978-84-1903-433-5
- González, R.E., Morales, G., Segura, A. (2023) MOOC 'Problems of Microeconomics and Macroeconomics'. MiriadaX
- González, R.E., Segura, A., Espina, J. (2024) *Problemas de Economía de la empresa*. Garceta. ISBN 978-84-1903-434-2.

- Gonzalo y González, L. (2005) *Sistema impositivo español, estatal, autonómico y local*. Dykinson
- Gorz, A. (2012) *Ecological*. Intellectual capital
- Gorz, A. (2023) *Critique of Productivist Reason*. Catarata
- Grijalvo, M., Segura, A., & Núñez, Y. (2022). Computer-based business games in higher education: A proposal of a gamified learning framework. *Technological Forecasting and Social Change*, 178(121597), 121597. doi: 10.1016/j.techfore.2022.121597.
- Grotius, H. (1925) *Del Derecho de la Guerra y de la Paz*. Editorial Reus S.A.
- Gunnison Brown, H. (1924) The Single-Tax Complex of Some Contemporary Economists. *Journal of Political Economy*, Vol. 32, No. 2 (Apr. 1924), pp. 164-190. [jstor.org/stable/1826183](https://www.jstor.org/stable/1826183)
- Gylfason, T. (2001) Natural resources, education, and economic development. *European Economic Review* 45 (2001) 847-859
- Harvey, D. (1982) *The limits to capital*. Basil Blackwell Publisher Limited
- Harvey, D. (2012) *Rebel Cities: from the right to the city to the urban revolution*. Verso
- Hausmann, R., Hidalgo, C.A. et al (2011) *The atlas of economic complexity, mapping paths to prosperity*. Puritan Press
- Hausmann, R., Rodric, D., Velasco, A. (2005) Growth Diagnostics.
- Hayek, F. (1945) The use of knowledge in society. *The American Economic Review*, Vol. 35, No. 4. (Sep., 1945), pp. 519-530.
- Hayek, F. (2019) *The foundations of freedom*. Unión Editorial Hayek,
- F. (2020) *The road to serfdom*. Alianza editorial
- Hayek, F. (2022) The Problem of Housing and Urban Planning. *Market Processes: European Journal of Political Economy*, Vol. XIX, no. 2, Autumn 2022, pp. 395 to 418.
- Hazlitt (1946) *Economics in one lesson*. Students for liberty
- Heng, A., Qun, W., Zhonghua, W. (2015) REIT Crash Risk and Institutional Investors. *Journal of Real Estate Finance and Economics*. doi: 10.1007/s11146-015-9527-y
- Hickel, J. (2020) *Less is more, how degrowth will save the world*. William Heinemann London
- Howard, G. (2017) *The Migration Accelerator: Labor Mobility, Housing, and Aggregate Demand*. [economics.mit.edu/files/12175](https://economics.mit.edu/files/12175).

- Huerta de Soto, J (2002) *Nuevos estudios de economía política*. Unión Editorial
- Ihlanfeldt, K.R. (2007). The effect of land use regulation on housing and land prices. *Journal of Urban Economics*, 61(3), 0-435. doi: 10.1016/j.jue.2006.09.003.
- Intergovernmental Panel on Climate Change (IPCC). *Technical Summary. In: Climate Change 2021 - The Physical Science Basis: Working Group I Contribution to the Sixth Assessment Report. Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press; 2023:35-144. doi: 10.1017/9781009157896.002
- Jensen, M.C. (1986) Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review*, May 1986, Vol. 76, No. 2. pp. 323-329. [jstor.org/stable/1818789](https://www.jstor.org/stable/1818789)
- Jevons, H.S. (1911) *The theory of political economy*.
- JLL (2022) *SOCIMIs, Ten years since their creation*.
- Kallis, G., Demaria, F., DÁlisa, G. (2015) *Degrowth: A vocabulary for a new era*. Routledge
- Kallis, G., Kostakis, V., Lange, S., Muraca, B., Paulson, S., Schmelzer, M. (2018). Research on Degrowth. *Annual Review of Environment and Resources*. 43(1). doi:10.1146/annurev-environ-102017-025941.
- Keaney, M. (2014) Financialization and Social Structure of Accumulation Theory. *World Review of Political Economy*, Vol. 5, No. 1, pp. 45-77. [jstor.org/stable/10.13169/worlrevipoliecon.5.1.0045](https://www.jstor.org/stable/10.13169/worlrevipoliecon.5.1.0045).
- Keynes, J.M. (1965) *Teoría general de la ocupación, el interés y el dinero*. Fondo de cultura económica
- Keynes, J.M. (1985) *Essays on intervention and liberalism*. Orbis
- Kininmonth, W. (2003) *Climate change - a natural hazard*. *Energy & Environment*, Vol. 14, No. 2/3, pp. 215-232. [jstor.org/stable/43734558](https://www.jstor.org/stable/43734558)
- Kirzner, I.M. (2011) *Market Theory and the Price System*. Liberty Fund
- Knight Frank Research (2023) *The wealth report*.
- Knoll, K., Schularick, M., Steger, T. (2017) No Price Like Home: Global House Prices, 1870-2012. *American Economic Review*, 2017, 107(2): 331-353. doi: 10.1257/aer.20150501
- Krippner, G.R. (2005) The financialization of the American economy. *Socio Economic Review*. 3, 173-208
- Henry George Institute (2021) *Labor, land & liberty: A Lindy Davies Reader (Vols. 134-136)*.

- Laffaire, M., Tucac, P. (2021) *Supply-side policies to improve access to rental housing in Spain*. Esade Ec. Pol - Center for Economic Policy.
- Laski, H.J. (1961) *El liberalismo europeo*. Fondo de cultura económica.
- Leckie, S. (1989). Housing as a human right. *Environment and Urbanization*, 1(2), 90-108. doi: 10.1177/095624788900100210
- Levy, D.S., Kwai-Choi Lee, C. (2004) The influence of family members on housing purchase decisions. *Journal of Property Investment & Finance*, 22(4), 320-338. doi: 10.1108/14635780410550885
- Li, L. (2012) *The Determinants of REIT Volatility*.
- Lin, D., Hanscom, L., Murthy, A., Galli, A., Evans, M., Neill, E., Mancini, M.S., Martindill, J., Medouar, F.-Z., Huang, S. et al. (2018) Ecological Footprint Accounting for Countries: Updates and Results of the National Footprint Accounts, 2012-2018. *Resources* 2018, 7, 58. doi: 10.3390/resources7030058.
- Lindbeck, A. (1984) *Inequality and redistributive policy, political behavior and economic policy*. Orbis
- Liu, Z., Wang, P., Zha, T. (2013). Land-Price Dynamics and Macroeconomic Fluctuations. *Econometrica*, 81(3), 1147-1184. doi: 10.3982/ECTA8994. doi: 10.3982/ECTA8994
- Locke (1981) *Essay on Civil Government*. Aguilar
- Lucas, R.E. (1978) On the Size Distribution of Business Firms. *The Bell Journal of Economics*, Vol. 9, No. 2 (Autumn, 1978), pp. 508-523. [jstor.org/stable/3003596](https://www.jstor.org/stable/3003596)
- Mader, P., Mertens, D., Van der Zwan, N. (2020) Financialization: an introduction. *The Routledge International Handbook of Financialization*. Routledge
- Malthus, R. (1970). *First essay on population*. Marshall Alliance, A.
- (1884) *Where to house the London poor*. Metcalfe and son Marshall,
- A. (1920) *Principles of economics*. Macmillan and Co.
- Martín Quemada, J.M., García-Verdugo, J. (2014) *Global public goods, economic policy and globalization*. Ariel
- Martínez Raya, A., Segura de la Cal, A., González Díaz, R. E. (2023). An empirical analysis of the aircraft emissions by operating from scheduled flights within the domestic market in Spain. *Processes*, 11(3), 741. doi: 10.3390/pr11030741.



- Martínez Raya, A., Segura de la Cal, A., & Rodríguez Oromendía, A. (2023). Financialization of real estate assets: A comprehensive approach to investment portfolios through a gender-based study. *Buildings*, 13(10), 2487. doi: 10.3390/buildings13102487.
- Marx, K. (2014) *El capital, antología*. Alianza Editorial
- Marx, K., Engels, F. (2023) *Communist Manifesto*. Small print
- Max-Neef, M., Elizalde, A., Hopenhayn, M. (2010) Development on a human scale. *CF+S Library*. <http://habitat.aq.upm.es>
- McKinsey Global Institute (2021). *The rise and rise of the global balance sheet*.
- Meadows, D. H. (1990) *Los Limites del Crecimiento*. Fondo de Cultura Economica.
- Méndez Gutiérrez del Valle, R. (2021) Urban financialization and rental bubble in Spain: trends and contrasts in a multi-scale perspective. *Documents d'Anàlisi Geogràfica* 2021, vol. 67/3 441-463.
- Menger, C. (2007) *Principles of economics*. Ludwig Von Mises Institute
- Milanovic, B. (2020) *Capitalism, nothing more, the future of the system that dominates the world*. Penguin Random House
- Mill, J.S. (1971) *Sobre la libertad*. Aguilar
- Mill, J.S. (2009) Principles of political economy. The Project Gutenberg EBook
- Mingche, M., Brown, H.J. (1980) Micro-Neighborhood Externalities and Hedonic Housing Prices. *Land Economics*, Vol. 56, No. 2, pp. 125-141. [jstor.org/stable/3145857](https://www.jstor.org/stable/3145857).
- Mises, L.V. (2021) *La acción humana*. Union Editorial
- Mishra, S.K. (2007) *A brief history of production functions*. MPRA Paper No. 5254, posted 10 Oct 2007 UTC. [mpra.ub.uni-muenchen.de/5254/](https://mpra.ub.uni-muenchen.de/5254/)
- Mochón, F. (2009) *Introduction to Macroeconomics*. McGrawHill
- Modigliani, F., Brumberg, R. (1954) *Utility Analysis and the Consumption Function: an Interpretation Of Cross-Section Data*. Post Keynesian Economics, ed. Kenneth K. Kurihara.
- Modigliani, F. (1986) Life Cycle, Individual Thrift, and the Wealth of Nations. *Science*, Vol. 234, 704-712
- Morales Alonso, G., Nuñez Guerrero, Y. (2022) *Economic and organizational environment for engineers*. Sanz and Torres
- Morri, G., Benedetto, P. (2019) *Commercial property valuation, methods and case studies*.



- Muñoz Machado, A. (2013) *La política industrial, un reto de nuestro tiempo*. Diaz de Santos.
- Nasarre Aznar, S. (2016) Questioning some myths of access to housing in Spain, in European perspective. *Labor Relations Notebooks*. ISSN: 1131-8635
- Nethercote, M. (2019) Build-to-Rent and the financialization of rental housing: future research directions. *Housing Studies*, doi: 10.1080/02673037.2019.1636938
- Niño-Becerra, S. (2020) *Capitalism 1679 - 2065, an approach to the economic system that has produced more prosperity and inequality in the world*. Ariel
- Nordhaus, W.D. (1991) To Slow or Not to Slow: The Economics of The Greenhouse Effect. *The Economic Journal*, Vol. 101, No. 407, pp. 920-937. [jstor.org/stable/2233864](https://www.jstor.org/stable/2233864)
- Nordhaus, W.D. (2007) To Tax or Not to Tax: Alternative Approaches to Slowing Global Warming. *Review of Environmental Economics and Policy*, V.1, I.1, pp. 26-44. doi: 10.1093/reep/rem008.
- Nordhaus, W.D. (2015) Climate Clubs: Overcoming Free-riding in International Climate Policy. *American Economic Review* 2015, 105(4): 1339-1370. doi: 10.1257/aer.15000001
- OECD (2021) *Building for a better tomorrow: Policies to make housing more affordable, Employment, Labour and Social Affairs Policy Briefs*. OECD, Paris, [oe.cd/affordable-housing-2021](https://www.oecd.org/housing/affordable-housing-2021)
- Okun, A.M. (1975) *Equality and efficiency, the big tradeoff*. The Brookings Institution.
- Olea Ferreras, S., Fernández Evangelista, M., Casla Salazar, K., José Aldanas, M. (2019) *The public housing system in the Spanish State. Without strategy or foundation in Human Rights*. Foessa Foundation. Working paper 4.13
- Panduro, T.E., Veie, K.L. (2013) Classification and valuation of urban green spaces- A hedonic house price valuation. *Landscape and Urban Planning*, 120 (2013) 119-128. doi: 10.1016/j.landurbplan.2013.08.009.
- Paniagua Soto, F.J., Navarro Pascual, R.N. (2010) *Hacienda Pública I, teoría del presupuesto y el gasto público*. Pearson
- Paniagua Soto, F.J., Navarro Pascual, R.N. (2011) *Hacienda Pública II, teoría de los ingresos públicos*. Pearson
- Paniello, U., Ardito, L., Petruzzelli, A.M. (2022) Scoping the state of the sharing economy and its antecedents at the country level: Cross-country differences in Europe. *Geoforum*, Volume 133, July 2022, Pages 140-152. doi: 10.1016/j.geoforum.2022.05.013

- Pearce, D. (2004) Environmental market creation: saviour or oversell? *Portuguese Economic Journal*, 3: 115-144. doi: 10.1007/s10258-004-0034-y
- Pedrajas, M. (2007). *El desarrollo humano en la economía ética de Amartya Sen*. Universitat de València.
- Peterson, G.E. (2006) *Land leasing and land sale as an infrastructure-financing option*. World Bank Policy Research Working Paper 4043
- Pigou, A.C. (1968) *Comparative socialism and capitalism*. Ariel
- Piketty, T. (2014) *Capital in the 21st century*. Fondo de cultura económica.
- Piketty, T., Saez, E. (2014). Inequality in the long run. *Science*, 344(6186), 838-843. doi: 10.1126/science.1251936.
- Piketty, T. (2019) *Capital and ideology*. Deusto
- Polanyi, K. (2001) *The great Transformation, the political and economic origins of our time*. Beacon Press Books
- Pop, V. (2000) Appropriation in outer space: the relationship between land ownership and sovereignty on the celestial bodies. *Space Policy* 16 (2000) 275-282
- Porter, M.E., Millar, V.E. (1985) *How Information Gives you Competitive Advantage*. Harvard Business Review
- Potepan, M.J. (1996). Explaining Intermetropolitan Variation in Housing Prices, Rents and Land Prices. *Real Estate Economics*, 24(2), 219-245. doi: 10.1111/1540-6229.00688.
- Power, E.R., Mee, K.J. (2019) Housing: an infrastructure of care. *Housing Studies*. doi: 10.1080/02673037.2019.1612038
- Prem, H.J. (1992) Spanish Colonization and Indian Property in Central Mexico, 1521-1620. *Annals of the Association of American Geographers*. 82(3), pp. 444-459.
- PriceWaterhouseCoopers (2020) *SOCIMIs in the Spanish real estate market Origin, evolution and main features*.
- PriceWaterhouseCoopers (2021) *Worldwide Real Estate Investment Trusts (REIT) Regimes*.
- Proudhon, P.J. (1983) *What is property?* Orbis
- Rallo, J.R. (2019) Hayek Did Not Embrace a Universal Basic Income. *The Independent Review*, v. 24, n. 3, Winter 2019/20, ISSN 1086-1653, pp. 347-359.
- Ranganathan, J. (1998) *Sustainability rulers: measuring corporate environmental & social performance*. Sustainability enterprise.

- Ricardo, D. (2010) *On the Principles of Political Economy, and Taxation*. The Project Gutenberg eBook #33310
- Ritter, M., Hüttel, S., Odening, M., Seifert, S. (2020). Revisiting the relationship between land price and parcel size in agriculture. *Land Use Policy*, 97, 104771-. doi: 10.1016/j.landusepol.2020.104771.
- Roberts, P. (2004) *The end of oil*. Critical Thinking Library
- Robinson, J (1953) The Production Function and the Theory of Capital. *The Review of Economic Studies*, 1953 - 1954, Vol. 21, No. 2 (1953 - 1954), pp. 81-106.
- Romer, D. (2006) *Advanced Macroeconomics*. McGrawHill
- Rothbard, M.N. (2009) *Man, economy, and State with Power and Market*. Ludwig Von Mises Institute, Scholar's Edition.
- Rothbard, M.N. (2021) *Towards a new freedom, the libertarian manifesto*. Unión Editorial
- Editorial Rothbard, M.N. (2021) *The anatomy of the state*. Unión Editorial
- Rousseau, J.J. (1923) *Discourse on the origin of inequality among men*. Calpe
- Rousseau, J.J. (2017) *The social contract*. Party of the democratic revolution.
- Rudden, B. (1994) Things as Thing and Things as Wealth. *Oxford Journal of Legal Studies*, Vol. 14, No. 1 (Spring, 1994), pp. 81-97. [jstor.org/stable/764763](https://www.jstor.org/stable/764763)
- Rueda 2nz, G. (1997) *La Desamortización en España: un balance (1766-1924)*. Arco
- Libros Samuelson, P.A., Nordhaus, W.D. (2009) *Economics*. Mc Graw Hill
- Sawyer, M. (2022) *Financialization, Economic and Social Impacts*. Agenda Publishing
- Sayyed, J.A.P.Z., Mahmud, M.J. (2012). Exploring Housing Attributes Selection based on Maslow's Hierarchy of Needs. *Social and Behavioral Sciences*, 42. doi: 10.1016/j.sbspro.2012.04.195
- Sazandrishvili, G. (2019) Asset tokenization in plain English. *J Corp Acct Fin*. 2020; 31: 68-73. doi: 10.1002/jcaf.22432.
- Schumpeter, J.A. (2018) *Capitalism, socialism and democracy*. Untamed page
- Segura, A., de Linera, M. Á. (2022). Comparative review of World Bank data and empirical studies on inadequate housing. *11th ACAU 2022: Proceedings of 11th International PhD Students Conference*.
- Segura, A., Núñez, Y., Grijalvo, M., González, R.E., Martínez, I. (2021) Decisions of participation in gamification of learning experiences, for the acquisition of

- soft skills. *University, innovation and research facing the 2030 horizon*. Egregius, ISBN: 978-84-18167-39-3
- Sen, A. (2000) *Desarrollo y libertad*. Editorial Planeta
- Sen, A. (2020) *Sobre ética y economía*. Alianza Editorial
- Sieyès, E.J. (1991) *El tercer estado y otros escritos de 1789*. Espasa calpe
- Slater, S.F., Narver, J.C. (1994) Market orientation, customer value, and superior performance. *Business Horizons*, Volume 37, Issue 2, March-April 1994, Pages 22-28. doi: 10.1016/0007-6813(94)90029-9
- Smith, A. (2001). *The Wealth of Nations*. Alianza.
- Smith, A. (2007) *An inquiry into the nature and causes of the wealth of nations, Books I, II, III, IV and V*. ΜεταLibri.
- Solow, R.M. (1956) A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, Vol. 70, No. 1, pp. 65-94. [jstor.org/stable/1884513](https://www.jstor.org/stable/1884513)
- Somerville, P. (1997) The social construction of home. *Journal of Architectural and Planning Research*. Autumn, 1997, Vol. 14, No. 3. pp. 226-245. [jstor.org/stable/43030210](https://www.jstor.org/stable/43030210)
- Soros, G. (1999) *The crisis of global capitalism, the open society in danger*. Topics for discussion
- Soto (de), H. (2000) *El misterio del capital*. Ediciones península
- Stiglitz, J.E. (2014) *El precio de la desigualdad*. Punto de lectura
- Swinkels, L. (2023) Empirical evidence on the ownership and liquidity of real estate tokens. *Swinkels Financial Innovation*. 9:45. doi: 10.1186/s40854-022-00427-5.
- Temin, P. (2009) The Economy of the High Roman Empire. *Market Processes: European Journal of Political Economy*. Vol. VI, No. 2, Autumn 2009, pp. 265-290.
- Tocqueville, A. (1984) *Democracy in America I*. Sarpe
- Tostevin, P. (2021, September 9) *The total value of global real estate*. Savills Impacts. [savills.com/impacts/market-trends/the-total-value-of-global-real-estate.html](https://www.savills.com/impacts/market-trends/the-total-value-of-global-real-estate.html).
- Tostevin, P., Rushton, C. (2023, September 20) *Total Value of Global Real Estate: Property remains the most valuable asset in the world. the world's biggest store of wealth*. Savills Impacts. [savills.com/impacts/market-trends/the-total-value-of-global-real-estate-property-remains-the-worlds-biggest-store-of-wealth.html](https://www.savills.com/impacts/market-trends/the-total-value-of-global-real-estate-property-remains-the-worlds-biggest-store-of-wealth.html).

- Turner, J.F.C. (1976) *Housing by people, towards autonomy in building environments*.  
Pantheon Books
- Uriel Jimenez, E. Albert Pérez, C., Benages Candau, E., Cucarella Tormo, V. (2009) *El Stock de Capital en Viviendas en España y su Distribución Territorial (1990-2007)*. BBVA Foundation. ISBN: 978-84-96515-86-4
- Valenzuela Rubio, M. (2023) New housing models. Collaborative housing or cohousing: an approach to its implementation in Spain. *Boletín de la Real Sociedad Geográfica*, [S.l.], n. CLXI, p. 275-292, dec. 2023. ISSN 2603-6010.
- Van Parijs, P. (1997) *Real freedom for all. What can justify capitalism*. Oxford University Press
- Van Parijs, P., Vanderborght, Y. (2015) *The Basic Income*. Ariel
- Varian, H.R. (2010) *Intermediate microeconomics, a current approach*. Antoni Bosch editor
- Vercelli, A. (2013) Financialization in a Long-Run Perspective, An Evolutionary Approach. *International Journal of Political Economy*, vol. 42, no. 4, Winter 2013-14, pp. 19-46. doi: 10.2753/IJP0891-1916420402
- Versmissen, J., Zietz, J. (2017) Is there a leverage target for REITs? *The Quarterly Review of Economics and Finance* 66 (2017) 57-69. doi: 10.1016/j.qref.2017.01.001.
- Von Braun, J., Meinzen-Dick, R. (2009) "Land Grabbing" by Foreign Investors in Developing Countries: Risks and Opportunities. *IFPRI Policy Brief* 13
- Wackernagel, M., Rees, W. (1996) *Our ecological footprint, reducing human impact on the earth*. New Society Publishers
- Ward, C. (2002). Cotters and Squatters: Housing's Hidden History. *Utopian Studies* 13 (2):238-239.
- Wen, H., Goodman, A.C. (2013). Relationship between urban land price and housing price: Evidence from 21 provincial capitals in China. *Habitat International*, 40(), 9-17. doi: 10.1016/j.habitatint.2013.01.004.
- Wheaton, W.C. (1993) Land capitalization, Tiebout Mobility, and the Role of Zoning Regulations. *Journal of Urban Economics*, 34, 102-117.
- Wicksteed (1894) *An Essay on the Co-ordination of the Laws of Distribution*.
- Wijburg, G., Aalbers, M.B., Heeg, S. (2018) *The Financialisation of Rental Housing 2.0: Releasing Housing into the Privatised Mainstream of Capital Accumulation*. doi: 10.1111/anti.12382

---

Wijburg, G. (2021) The de-financialization of housing: towards a research agenda.

*Housing Studies*. Vol. 36, p. 1276-1293.

Wolf, C. (2009). Does ownership matter? The performance and efficiency of State Oil vs. Private Oil (1987-2006). *Energy Policy*. 37(7), 2642-2652. doi:

10.1016/j.enpol.2009.02.041.

Woo, J. (2020) Inequality, redistribution, and growth: new evidence on the trade-off between equality and efficiency. *Empirical Economics* 58, 2667-2707. doi:

10.1007/s00181-019-01815-0.

Xu, Y., Huang, X., Bao, H.X.H., Ju, X., Zhong, T., Chen, Z., Zhou, Y. (2018) Rural land rights reform and agro-environmental sustainability: Empirical evidence from China. *Land Use Policy*, 74, 73-87. doi: 10.1016/j.landusepol.2017.07.038.