Fundación MAPFRE

REAL ESTATE MARKETS AND THE INSURANCE SECTOR

MAPFRE Economics

Real Estate Markets and the Insurance Sector

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Presentation

The real estate market is a vital sector in any country's economy, as it significantly impacts people's lives and economic activity in general. In addition, the real estate market is one of the most relevant economic activities in the dynamic of the insurance sector, both on the insurance demand side, which includes the homes, companies, and other public and private institutions that own the properties or hold any rights over them, and the supply side, which includes real estate promoters, builders, financial entities, engineering and architecture professionals, real estate agents or assessors, among many others. Insurance, in turn, plays a fundamental role in the real estate market, as it helps protect people's and companies' equity and promotes the economic stability of homes, which contribute to the well-being of society as a whole.

This new MAPFRE Economics report, entitled *Real estate markets and the insurance sector,* shows the existing inter-relationship between the two sectors and offers information about the most relevant indicators of the real estate industry that influence the development of insurance activities, such as housing stock and new construction, real estate transactions, mortgage balance and new mortgages taken, reverse mortgages, real estate investment instruments in the investment portfolios of insurance companies, housing prices, and mortgage interest rates, the household credit gap, residential leasing, affordability and homebuyer assistance programs, as well as the development of home insurance, life insurance, engineering insurance and other coverage associated with the residential construction process. The analytics have focused on the *residential real estate market* for a set of selected countries. Furthermore, it presents the development of a potential real estate market indicator for insurance activity, which permits a broad exercise in international comparison.

Once more, Fundación MAPFRE is pleased to present this new study by MAPFRE Economics, which addresses a subject of interest to society, protecting one of its most important assets, the household. The comparative analysis of the experiences of the real estate and insurance industries in various countries contributes to a better understanding of its operation. It offers a working tool for those involved in its potential growth and for the research community in general.

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Introduction

Due to their orientation toward covering the risks to which individuals, families and companies are exposed, insurance activities touch on a wide range of areas in the economy, and in society. Among them, real estate activities are of particular interest insofar as, based on their characteristics, they are linked to many risks. In this sense, this report analyzes the main characteristics of this important economic activity as a way to assess its impact on the performance of the insurance sector.

To this end, based on a conceptual framework that describes the main interrelationships between the two activities, the report analyzes a set of benchmark countries, both from the perspective of the dynamics of their residential real estate markets and the performance of their insurance markets. This analysis has sought to include a sampling of countries that allows us to capture the main characteristics of both markets based on both the regional details and relative levels of development.

Furthermore, to supplement the specific analysis of the benchmark countries, the report proposes a relative measurement of the degree of potential for the insurance sector derived from the energy of the real estate markets. This relative measurement, taken for the universe of 43 countries, is based on the construction of two indicators: the *Real Estate Potential Indicator* and the *Real Estate Potential for the Insurance Sector Indicator.* The first focuses on the economic and demographic factors that explain the energy of the real estate activity. In contrast, the second is intended to assess the relative capacity of the insurance sector to transform the drive of the real estate market into new demand for insurance, based on an analysis of the behavior of insurance demand given variations in personal disposable income.

We hope this report contributes to the analysis of the importance of the inter-relationship between the insurance sector and the different areas of the economy and society, and that, to that extent, contributes to a better understanding and development of insurance activities.

MAPFRE Economics

Executive summary

The level of development and maturity of the real estate market and the degree of energy of its mortgage market are matters of great relevance in the performance of the economy, in general, and the insurance industry, in particular. Thus, residential housing stock and new construction are fundamental indicators, directly linked to risk coverage related to household risk coverage, homeowners' associations and those covering construction risks. Meanwhile, the outstanding mortgage balance and the granting of new mortgages are indicators that are directly linked to the potential capital at risk, insurable with life insurance as coverage in the event of death, and those covering other possible contingencies such as disability, temporary disability, illness or unemployment of mortgagors.

In this way, due to its broad and diverse coverage needs, the real estate market is one of the most relevant economic activities in the dynamic of the insurance sector. This is true, both on the *insurance demand* side, which includes the homes, companies and other public and private institutions that own the properties or hold any rights over them, and the *supply side*, which includes real estate promoters, builders, financial entities, engineering and architecture professionals, real estate agents or assessors, among many others.

In addition to activity related to insurable risk coverage, securities issued with mortgage coverage and securitizations are financial assets in which insurance companies generally invest, as these issues adapt very well to their risk profile. These financial assets are extremely important to the development of the real estate market, and their existence depends to a large degree on the maturity level of each country's capital markets, facilitating the liquidity of mortgage credits as supplementary routes to the banking channel. Furthermore, while they are not the majority, they have a significant weight in the insurance companies' investment portfolios, which would vary based on the market. In this sense, the role played by insurance companies, which channel medium- and long-term savings toward residential investment by investing in this type of instrument on the mortgage market, is notable. Meanwhile, in addition to constituting household protection coverage, insurance activities protect the mortgage creditor, reducing the risk to which they are exposed and facilitating liquidity for the originating financial entities through mortgage securitization.

Residential real estate market and insurance activities

Insurance activity related to household risk coverage is one of the main pillars of the Non-Life insurance segment, along with auto and health insurance, especially in the most developed economies. Insurance companies also offer numerous coverages associated with the residential construction process, of risks related to mortgage loans and other types of coverage such as rent default insurance or reverse mortgage. The specific circumstances in the form of contracting life insurance with death and disability coverage are wide-ranging, from annually renewable temporary policies, in which the mortgagee may or may not be designated as the beneficiary of the insurance contract, to single premium insurance modalities, sometimes financed through the real estate loan itself.

Meanwhile, the behavior of the real estate market is ever more marked by losses suffered in natural disasters, which have led to an increasing loss ratio by insurance companies in recent years. This generates protection gaps for the risks the insurance companies and reinsurers cannot cover. There are mechanisms to compensate for the lack of available coverage in the higher-risk areas present in multiple markets, but they are very heterogeneous in nature. Among the countries analyzed, in the United States, FAIR (*Fair Access to Insurance Requirements)* plans are applied, and in South Korea, there is an insurance policy subsidized by the central and local governments against storms and floods that cover damages suffered to homes, greenhouses, small stores, and factories due to typhoons, floods, heavy rain, heavy wind, storms, tidal waves, heaving snow and earthquakes. For its part, the Spanish insurance system for extraordinary risks is considered a benchmark of good management internationally, with a particularly important body, the Insurance Compensation Consortium, which provides technical stability to the multirisk insurance segment.

Like many other regions of the world, the European Union is vulnerable to nearly all types of natural disasters. Storm surges, floods and flash floods, once considered "secondary" but increasingly important, are among Europe's major natural disaster risks, causing damage as severe as previously expected only from earthquakes or hurricanes. The European Union recognizes that catastrophic risk insurance is an important element in climate adaptation, as it not only supports risk sharing but also acts throughout the entire cycle of managing these risks and the disasters when they materialize. Each of the countries of the European Union manages catastrophic risks differently, with a private insurance system or a combination of the private and public sector, in some cases on a compulsory basis.

For international organizations working on sustainable development, insurance is critical in improving society's financial resilience and recovery from climate disasters through risk transfer and risk management. Among other initiatives, numerous insurance companies and reinsurers adhere to the *Principles for Sustainable Insurance* established by the United Nations (UN) Environment Program (UNEPFI). The *Principles* serve as a global framework for the insurance industry to address environmental, social and governance risk and opportunities. It is the largest collaboration initiative between the UN and the insurance industry. However, despite all of these mechanisms, there are still significant coverage gaps for these extraordinary risks, which tend to be greater when the disasters strike emerging markets.

Analysis of the selected real estate markets

Under this conceptual framework, the subject of analysis in this study has focused on the *residential real-estate market* and contains a specific review of a series of reference markets, including the United States, Mexico, Brazil, United Kingdom, Spain, Germany, Japan and South Korea. The indicators selected for the analysis of these real estate markets have been classified according to their relevance for the insurance sector, including, among those of greatest importance, housing stock and mortgage balance, in addition to population projections, gross private housing capital formation, personal disposable income, real estate transactions, housing prices, mortgage interest rates and the household credit gap, among others. In those markets where information has been available and considered relevant, a brief reference to affordability issues and some of the programs implemented to assist the most disadvantaged households in acquiring housing has been included.

Mortgage interest rates and credit are two relevant indicators that influence the number of new housing starts and launches, the number of transactions and the price of housing. For example, according to European Central Bank estimates for the Eurozone, a 1% increase in mortgage interest rates can lead to a drop in the average price of real estate of about 5% over roughly two years. For housing investments, this 1% increase in mortgage rates could lead to a drop of around 8% in investment value over a period of around two years. Concerning mortgage credit, a historical series of the credit to households to GDP gap has been included in the analysis, calculated following the methodology of the Bank for International Settlements for the countercyclical buffer requirements for credit institutions.

Relative measurement of the real estate potential for the insurance sector

Following the specific analysis of the eight real estate markets included in the report, the sample was expanded to a total of 43 countries for which the necessary information was available to carry out a relative measurement of the degree of potential for the insurance sector in its real estate markets. This relative measurement was based on the construction of two indicators. The first is the *Real Estate Potential Indicator* (IRP), an intermediate indicator focused on the *economic and demographic factors* that explain the energy of the real estate activity, while the second, the *Insurance Sector Real Estate Potential Indicator* (IRPII) is intended to assess the relative capacity of the insurance sector to transform the drive of the real estate market into new demand for insurance, based on an analysis of the behavior of insurance demand given variations in personal disposable income.

The highest degree of potential measured was the IRPII for India, followed by the Philippines and China. The cases of Canada and Turkey also stand out, above the 75th percentile of the indicator distribution, where the positive elasticity of the insurance business to variations in personal disposable income improves their rating to fourth and fifth place, respectively. Belgium, Bulgaria, the Czech Republic, Indonesia, Taiwan and Singapore complete the list of markets above the 75th percentile of the IRPII distribution. Japan stands out at the bottom of the ranking, below the 25th percentile, with indicators typical of a very mature market and a shrinking population, thus obtaining weak scores in all the sub-indexes that influence the indicator. Romania, Greece, Italy, Finland, South Africa, Slovakia, Malaysia, Spain, the Netherlands and Switzerland complete this percentile distribution.

1. Conceptual framework

1.1 Residential real estate market and insurance activities

The level of development and maturity of the residential real estate market, as well as the degree of energy of its mortgage market, are matters of great relevance in the performance of the insurance industry. Thus, *residential housing stock* and *new construction* are two fundamental indicators, directly linked to risk coverage related to household risk coverage, condominiums and those covering construction risks. Likewise, the outstanding *mortgage balance* and the *granting of new mortgages* are indicators that are directly linked to the potential capital at risk, insurable with life insurance as coverage in the event of death, and those covering other possible contingencies such as disability, temporary disability, illness or unemployment of mortgagors. In addition to providing protection coverage to households to prevent them from seeing their purchasing power diminished by the occurrence of some of the aforementioned events, these insurance policies protect the mortgage creditor, thereby reducing the risk to which they are exposed and facilitating the acquisition of liquidity by the originating financial institutions through mortgage securitization.

Moreover, from the point of view of insurance companies' balance sheet assets, the residential real estate market generates financial instruments in which they can invest a portion of their portfolios, depending on the characteristics of their liabilities. Likewise, residential real estate markets generate other types of operations in which an insurance company may participate, such as *reverse mortgages.*

This close link between the operation of residential real estate markets and the insurance sector results in several products offering various types of risk coverage. The main characteristics of the coverages identified in the analysis of the markets considered in this report are summarized below.

Coverage of risks affecting homes

Home insurance is one of the main pillars of insurance activity in the Non-Life insurance segment, together with auto and health insurance, especially in the more developed economies. There are limitations to the breakdown of available data, but in markets such as the United States, the penetration rate of home insurance in the economy, as represented by the weight that home insurance premiums have over gross domestic product (GDP), is estimated to have increased from 0.34% in 2000 to 0.52% in 2021. In emerging markets, however, this percentage tends to be lower, although, for this same reason, their growth potential is greater.

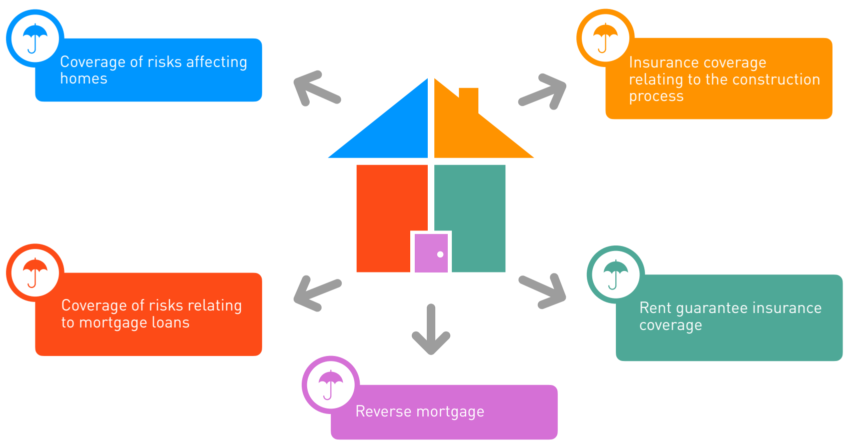
Insurance coverage for the risks to which residential properties are exposed has been evolving based on the degree of development of the markets, from basic coverage, mainly fire insurance, to other more complex modalities that include civil liability for damages to third parties, natural events, electrical damage, explosions, theft, damage to contents, family civil liability and a wide variety of other coverages. Likewise, the type of benefits offered by insurance companies has evolved, including not only indemnity-type benefits but also the provision of services, in which the insurance company itself is responsible for the selection and contracting of service providers to carry out the necessary repairs after the materialization of any of the covered risks. On the other hand, multi-risk insurance for homeowners' associations, in addition to guaranteeing coverage of the building, also covers the common parts of the condominium with coverage similar to home insurance in which the liability or damage refers to the common elements.

In some markets, such as the United States, the complexity of insurance contracts, given the wide range of coverages offered by insurance companies, has led to the development of a series of standardized policies that are easy for policyholders to understand, as they are identified by a code associated with predefined coverages. It should be noted, however, that in practice not all entities follow it, and some use their own forms, but this instrument is widely used and facilitates knowledge regarding the operation of the products, as well as the comparison for their mass marketing. In that particular market, many factors affecting the cost of homeowners insurance lead to large differences in average premiums. For example, real estate values and construction costs generally tend to be higher in more densely populated areas.

The behavior of the U.S. real estate market is also marked by the damage caused by natural catastrophes (wind, floods, forest fires and earthquakes, among others), which has increased the loss ratio in recent years. As a result, insurance companies have begun to increase premiums for exposure to this type of risk. For example, exposure to hurricanes is greatest in areas near the Gulf of Mexico and the Atlantic Ocean, while exposure to tornado damage is greatest in the central and southwestern United States and to earthquakes on the west coast of the United States.

This characteristic of the United States' market generates protection gaps for the risks the insurance companies and reinsurers are not able to cover. To compensate for the lack of available coverage in risk areas, the country applies the so-called FAIR (Fair Access to Insurance Requirements) plans, designed to facilitate access to insurance for those who find it difficult to obtain from private insurers because they have a property in an area considered to be high risk. In this regard, Fannie Mae and Freddie Mac require that each property be covered by property and liability insurance for the life of the mortgage loan as a prerequisite to acquiring mortgage loans for securitization. These insurance policies must include coverage for fire, wind, hurricane, hail, flood and localized risks, where

Chart 1.1
Link between the residential real estate market and insurance activity



Source: MAPFRE Economics

applicable, and provide for claims to be settled on a replacement cost basis.

The various studies analyzing the impact of disasters on the insurance sector have observed that the general increase in the assets exposed and the grade of insurance coverage make hazards once considered "secondary" (such as tornadoes, forest fires, winter storms, etc.) are causing damage as severe as that previously expected only from earthquakes or hurricanes. Thus, given the technical complexity for the insurance industry of covering this type of catastrophic risk, mechanisms to increase coverage in the event of natural catastrophes, such as those illustrated above, are present in many markets, although they are very heterogeneous in nature. Among the countries analyzed, in South Korea there is an insurance policy that covers damages suffered to homes, greenhouses, small stores and factories due to typhoons, floods, heavy rain, heavy wind, storms, tidal waves, heaving snow and earthquakes. It is marketed only by insurance companies designated by the government of that country to protect people's property against unexpected natural disasters. It should be noted that central and local governments subsidize more than 70% of the insurance premiums payable by subscribers.

Like many other regions of the world, the European Union is also vulnerable to almost all types of natural disasters. Storm surges and sudden or flash floods are among Europe's main natural disaster risks. The European Union recognizes that catastrophic risk insurance is an important element in climate adaptation, as it not only supports risk sharing, but also acts throughout the entire cycle of managing these risks (identify, analyze, plan, apply and evaluate) and the disasters (prevent and protect, prepare, respond and recover)[1].

Each of the countries of the European Union manages catastrophic risks differently, with a private insurance system or a combination of the private and public sector. A study conducted by the European Commission, published in 2017, inventoried the insurance mechanisms covering climate-related disaster risks applied in the European Union and other countries. Of the 12 countries selected for the study, it is concluded that, in general, insurance markets can be divided into three major groups: *voluntary insurance* (Germany, Austria, Italy and Bulgaria), *semi-voluntary insurance* (Denmark, Switzerland, Poland, Hungary and the United Kingdom) and *mandatory purchase* (France, Spain and Romania). In *semi-voluntary insurance*, freedom may be restricted in the sense that there is an informal obligation, for example, for mortgage providers or participants in an implicit contract between interested parties to participate in the insurance market[2].

On the other hand, the Spanish insurance system for extraordinary risks is considered a benchmark of good management internationally. The *Consorcio de Compensacion de Seguros (*Insurance Compensation Consortium - CCS) is an especially important body in the Spanish insurance market, which provides technical stability to the multi-risk insurance segment. One if its main activities is the coverage of Extraordinary Risks. This coverage is the main source of income for the CSS and, to meet its obligations, it uses the surcharges paid by policyholders and deposited with the CCS by the insurance companies. This coverage is linked to contracting an insurance policy in certain lines of business in which the legislation establishes the obligation to include the guarantee of these risks. In exchange for providing this coverage, the CCS charges a surcharge that companies include in the corresponding premium, which is calculated by applying the established rate to the insured amounts. The surcharges levied are used to cover extraordinary event claims and the operation of the CCS itself, and the portion of the surplus for the year is accumulated in the stabilization reserve, which allows for dealing with claims deviations.

Despite the existence of such mechanisms, however, there are still significant gaps in the coverage of these extraordinary natural risks. It is estimated that, in 2022, natural disasters caused global economic losses of US$275 billion, of which US$125 billion were covered by insurance, representing about 45% of the total[3]. This result continued a streak of elevated overall insured losses from 2017, following a benign period from 2012 to 2016, reaffirming an average annual growth rate of 5% to 7% in losses in force since 1992. This trend is expected to continue, driven by growth in loss severity due to increased property and value exposures at risk, continued urban sprawl, economic growth, and a context of intensifying threats due to the effects of climate change.

Moreover, global Property & Casualty premiums are forecast to double to $4.3 trillion by 2040 (from $1.8 trillion in 2020). This is because the relative weight of automobile insurance (lower risk) is expected to drop in the composition of the Property & Casualty portfolio, compared to property and third-party liability insurance, which carries a higher risk. In this context, weather-related risks would induce a 22% increase in global damage premiums to $183 billion over the next 20 years, as weather-related catastrophes are likely to become both more intense and more frequent[4].

Finally, it should be noted that for international organizations working on sustainable development, insurance plays a key role in improving society's financial resilience and recovery from climate disasters through risk transfer and risk management. Among other initiatives, numerous insurance companies adhere to the *Principles for Sustainable Insurance* established by the United Nations Environment Program (UNEPFI), which were presented during the Conference on Sustainable Development 20+. The *Principles* serve as a global framework for the insurance industry to address environmental, social and governance risk and opportunities. It is the largest collaboration initiative between the United Nations and the insurance industry.

Insurance coverages relating to the construction process

Insurance companies offer numerous coverages related to the residential construction process, including all those covering the risk of accidents that could damage constructions, assemblies and machines in operation or theft of materials, as well as contractual and/or extra-contractual third-party liability, personal injury liability insurance or occupational illness of employees, professional civil liability insurance or quality assurance insurance, among others. These insurance policies normally cover contractors, subcontractors, building owners or professionals such as engineers or architects from legal liability, property damage and other construction-related indemnification.

Although there are insurance companies in some markets that specialize in this type of construction insurance (called "monoliners"), they do not usually have large market shares since such coverages are also offered by insurance companies operating in general insurance and, in particular, by the large international insurance groups. In most jurisdictions this insurance coverage is often a legal requirement, at least for specific coverages. Furthermore, in other cases the insurance may act as an alternative to posting bonds or sureties, protecting injured parties against accidental acts or omissions.

Risk coverages related to mortgage loans

It is common for financial institutions that grant mortgage loans (as part of their origination scheme or in compliance with regulatory standards) to require the purchase of insurance against property damage. It may also request the purchase of life insurance in the event of the mortgagors' death (if compulsory, these are usually called *linked insurance sales*). However, in most cases, the only insurance that is compulsorily linked to the mortgage loan is damage insurance, and the borrower is free to choose the insurance company of their choice, whose product must meet certain minimum characteristics (equivalent conditions and level of benefits both when the policy is first taken out and at each renewal).

In many cases, and even though they are not compulsory, mortgage originating or marketing entities offer the possibility of acquiring a series of insurance products or combined services, which apply various discounts that reduce the interest rate to be applied to the mortgage loan. Among the products offered are life, home, payment protection, health and even auto insurance, which must be acquired and the insurance contract must be in force and paid up to date (these policies, which are not compulsory for the loan to be granted, are usually referred to as *combined insurance sales*).

The specific circumstances in the form of contracting life insurance with death and disability coverage are wide-ranging, from annually renewable temporary policies, in which the mortgagee may or may not be designated as the beneficiary of the insurance contract, to single premium insurance modalities, sometimes financed through the real estate loan itself. Payment protection insurance is usually another additional coverage offered in the event of unemployment or temporary disability, to guarantee that mortgage payments will be covered for the duration of this situation. In some cases, their cost is integrated into the monthly loan installment covered by these policies, and deductibles and/or a grace period may be established in the policy.

Finally, it should be noted that it is common in different jurisdictions to limit the possibility of conditioning granting the mortgage loan on the obligation to acquire this insurance with entities related to the originating entity. This seeks to stimulate competition and try to avoid risks related to market behavior[5], whereby the originating entities must admit alternative policies from other providers with equivalent conditions and level of benefits both when the policy is first taken out and in each of the renewals[6].

Rent default insurance coverage

Rent default insurance protects property owners from loss of rental income in the event of tenant default, in most cases providing legal defense coverage for the landlord. In some cases, rent default coverage is included in a homeowner's insurance policy and other covered guarantees. Typically, it is a product that is aimed at both residential homes and commercial premises and is usually acquired by individuals or real estate companies. Although homeowners usually acquire this product, it can also be acquired by tenants. In general terms, in the event of non-payment of rent, the insurance covers the outstanding monthly payments according to the policy taken out, which usually sets a limit of 6 to 12 months, also applying maximum indemnity amounts.

In addition to rent default coverage, insurance companies offer property owners products with broader coverage, such as: legal defense of the landlord against disputes arising from the contract, such as eviction proceedings for non-payment of rent, claims for damages, criminal defense of the landlord and professional actions and fees; advances for the total unpaid rent once eviction proceedings have been filed, which will be settled once the legal proceedings have concluded; compensation for property damage caused by vandalism by the tenant; telephone legal counseling service; locksmith and additional technical services, among others.

In order to formalize rent default insurance, usually the insurer must first conduct a study of the tenant's economic viability. The price of the insurance will depend on the rental price, the characteristics of the property and the additional coverage to be acquired. Other factors that influence the cost of insurance are the deductible and the limits established for indemnity payments.

Delinquent tenants and those causing property damage are a concern for landlords and real estate investors globally, even in those countries where the non-performing loans ratio is very low. In practically all the markets analyzed in this report, there is specific coverage for rent default through insurance, a bond or surety bond, or some other rental guarantee. For example, the nomadic renter's insurance (*Mietnomadenversicherung*) has extensive property damage coverage in Germany. So-called *"rent nomads"* are tenants who often do not pay the rent and when they leave, they leave the property devastated. Meanwhile, in Japan, tenants must provide rental coverage by presenting a joint and several guarantor or a guarantor company upon lease signing. In Brazil, the insurance called *Fiança Locatícia* replaces the role of the guarantor or surety, and covers the risks associated with the lease. In Spain[7], the United States, Mexico and the United Kingdom, the most comprehensive household insurance may include rent default coverage or specific products may be sold that cover this risk (e.g., bonds or surety bonds) along with other rental-related risks.

Finally, the digital transformation process taking place in all sectors of the economy must be mentioned, which, in the real estate market, has given rise in recent years to the birth of so-called "proptech" companies which apply digital technological innovations in this sector. Their knowledge of real estate customers allows them to offer new financial services related to the rental market, such as insurance, which they manage through agreements with insurance companies.

Reverse mortgage

Finally, as mentioned above, there is another activity linked to the insurance sector associated with the operation of the residential real estate market. This is the so-called *reverse mortgage*; a mortgage loan granted by a financial intermediary or an insurance company, through which the homeowner offers their house as collateral for the loan, receiving in exchange monthly payments, a lump sum or a combination of both. This product is fundamentally aimed at older adults who need financing to diversify their income to supplement their retirement pension.

The analysis in the second chapter of this report shows that, for the moment, although reverse mortgages are gaining importance, they are still not widely used, as they are a complex product that cannot be mass marketed. The loan amount is an individual calculation of the percentage of the home's value, determined by elements such as the homeowner's age, life expectancy or the country's interest rates. The greatest degree of development of this market is currently in the United States, where, as of November 2022, approximately 1,296,065 reverse mortgages have been sold[8]. In that market, the most common product is the Home Equity Conversion Mortgage (HECM), which is a reverse mortgage insured by the federal government, backed by the Department of Housing and Urban Development (HUD), and available only through lenders that have been approved by the Federal Housing Administration (FHA). It is a product normally subject to specific regulations.

Thus, reverse mortgages are a developing product in most financial markets, although still with very different levels of progress. Table 1.1 presents a summary of the main characteristics of the reverse mortgage regulations identified in the markets analyzed in this report.

1.2 Key financial figures

As we have established, due to its broad and diverse coverage needs, the real estate market is one of the most relevant eco-

Table 1.1
Selected countries: main characteristics of the reverse mortgage

	United States[1]	Spain[2]	United Kingdom	Germany[3]	Mexico	Japan[4]	South Korea
Requirements							
Minimum age	62 (55)	65 (70)	55	65	60 (65)	60 (50)	55
Housing							
Primary residence mandatory	Yes	Yes	Yes	Yes	Yes	Yes	-
Free of liens mandatory	No; own 50% of the capital	Yes	Yes	Yes	Yes	-	-
Sale allowed	No	No	No	No	No	No	-
Rental allowed	No	Yes	No	Yes	Yes	No	-
Minimum home value	-	USD 160,539.3 (EUR 150,000)	USD 84,645.4 (GBP 70,000–100,000)	-	USD 108,520 (MXN 200,000,000)	USD 453,960 (JPY 60,000,000)	USD 680,256.68 (KRW 900,000,000) maximum
Apartments allowed	Yes	Yes	Yes	Yes	Yes	Excluded	80% luxury apartments
Loan amount							
Maximum amount	USD 1,100,000	Based on life expectancy and property value	USD 120,922 (GBP 10,000–45,000)	-	Based on age and interest rates at the time	USD 118,653.12 (JPY 16,220,000)	-
Percentage	51–77	80 (maximum)	25-60	60–80	70 (minimum)	50 (30)	-
Taxes							
Income	Exempted income	Exempted income	Exempted income	Exempted income	Exempted income	-	Exempted income
Interest rates paid	Deductible when the loan is paid	Not deductible	-	-	-	-	-
Characteristics							
Year of first record	1961	2005	1965	-	2009	1982	2007
Year of regulation	1980	2007	1991	-	2013	2007	2009
Life expectancy (latest year available)	77.28	83.3	80.9	80.9	75.13	84.62	83.5
Home ownership in population age 65 and older (%)	80.7	77.8	69	75.6	80.9	80.7	79.1
Average applicant age	73	67–74	68–70	-	-	69	-

Table 1.1 (continued)
Selected countries: main characteristics of the reverse mortgage

	United States[1]	Spain[2]	United Kingdom	Germany[3]	Mexico	Japan[4]	South Korea
Legislation							
Regulatory body	FHA (Federal Housing Administration)	General Directorate for Insurance and Pension Funds	FCA (Financial Conduct Authority)	BaFin (Federal Financial Supervisory Authority)	CNBV (National Banking and Securities Commission)	JHF (Japan Housing Finance Agency)	FSC (Financial Services Commission)
Current regulatory law	Federal Home Insurance Act of 1987, Reverse Mortgage Stabilization Act of 2013	Law 41/2007, December 7, BOE	Financial Services and Markets Act, 2000	Insurance Supervision Act ("VAG")	Law on the Transparency and Regulation of Financial Services	Law on Financial Consumer Protection and the Ministry of Finance	Law on Financial Services and the Financial Services Commission
Inheritance	Distinguishes between issuance before or after 08/04/2014	After the death of the owner and last beneficiary, pay off debt	Pay off debt for ownership	Enter into the loan contract and return the financing	Pay off debt for ownership (6 months to decide)	Pay off debt for ownership	Spouse and then heirs
Ownership							
Transfer takes place	No	Home reversion	Lifetime mortgages	Only in real estate annuities	No	-	-
Transfer does not take place	Yes	Reverse mortgage	Home reversion plans	Yes	Yes	-	-
Sales characteristics							
Primary product	HECM 90%	Vitalicia (life annuity)	Lifetime mortgages	Umkehrhypothek	Pensión hipotecaria (mortgage for retirees)	Reverse 60	JooTaekYeonKeum
Modalities	Lump-sum or monthly payment	Life annuity, temporary annuity, or one-time payment	Lump sum or drawdown	One-time payment (15-35% value), monthly payment	-	Direct (government), indirect (financial institution)	By type of property, type of modified property or in installments
Interest rates	Fixed (lump sum payment) and variable (monthly payment)	Fixed	Variable and high	Variable	Fixed	Monthly variable	-
Purpose of funds	Diversify income	Pension supplement	Diversify income	Pension supplement	Need for liquidity in retirement	Mandatory home construction, purchase, or renewal; refinancing	Need for liquidity
Supplements	Mandatory flooding insurance (FEMA zones)	-	-	-	-	Includes fire insurance	25% discount on real estate tax, 75% discount on registration tax and local education tax

Source: MAPFRE Economics

1/ Issued before, Mortgagee Optional Election (MOE) Assignment, the spouse can continue residing in the home. Issued after, the spouse must meet a series of requirements for eligibility to continue residing in the home.
2/ Age requirement or degree of disability >= 33%. Except for the atypical reverse mortgage (which does not meet any of these requirements), the tax benefits or tariff reductions provided by law will not apply to it.
3/ One-time payment (15–35% value), monthly payment (60–80% value).
4/ 30% financing between the ages of 50–60 and 50% at 60+.

nomic activities in the dynamic of the insurance sector. This is true, both on the *insurance demand* side, which includes the homes, companies and other public and private institutions that own the properties or hold any rights over them, and the *supply side*, which includes real estate promoters, builders, financial entities, engineering and architecture professionals, real estate agents or assessors, among many others.

In this context, it is important to note that the subject of analysis in this study[9] has focused on the *residential real estate market*. Thus, the indicators selected for the analysis have been classified according to their relevance to the insurance markets, including, among other things, the housing stock and the mortgage balance, in addition to population projections and macroeconomic indicators used to prepare a synthetic index of real estate market potential for the insurance sector[10].

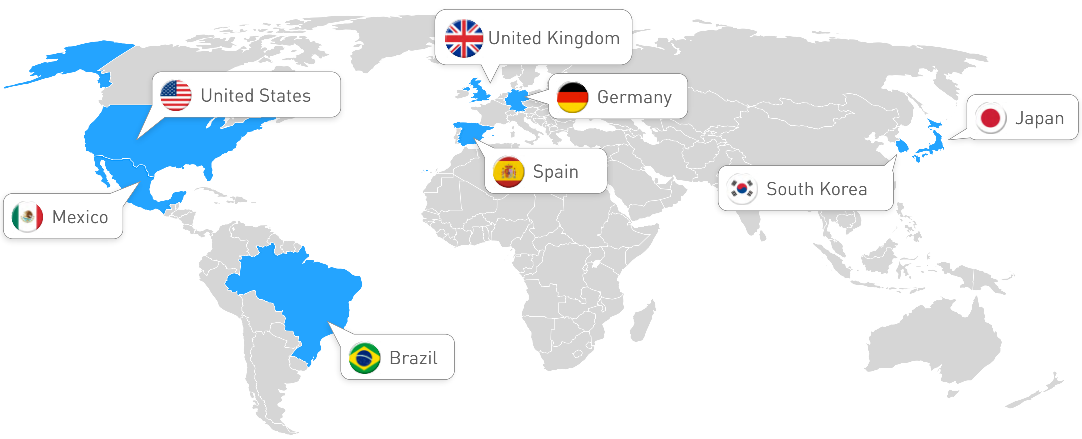
In this regard, the set of indicators used in the analysis of this study[11] is detailed below. As noted above, these are indicators related to real estate activity, specifically oriented to the *residential market.* These indicators have been used to conduct a comparative assessment of international experience, which is included in chapter two of this report. The real estate markets of eight countries have been selected for this analysis in an attempt to capture the main characteristics of these markets in terms of both their regional particularities (America, Europe and Asia Pacific) and their relative levels of development (advanced and emerging). The sample analyzed includes the real estate markets of the United States, Mexico, Brazil, the United Kingdom, Spain, Germany, Japan and South Korea.

Analysis of the most relevant indicators for the development of insurance activities

Housing stock and new construction

Two indicators of special importance for the insurance sector are the housing stock and its growth (construction of new homes), given that its growth generates potential insurance policies with coverage for homes and homeowners' associations, in addition to specific insurance policies related to the construction period and potential liabilities that may arise once the work has been completed, related to its execution.

Chart 1.2
Markets of reference for the analysis



Source: MAPFRE Economics

Mortgage balance and new mortgages taken out

The balance of outstanding mortgage loans and the creation of new mortgages are also important indicators for the insurance business. They are directly related to the capital insured in life insurance policies covering the risk of death and disability of mortgage debt owners. The mortgage loan balance is also one of the components selected to prepare the synthetic indicator of real estate market potential for the insurance sector.

Gross capital formation (investment in private housing)

The component of gross domestic product (GDP) corresponding to investment in private housing is also one of the fundamental macroeconomic indicators for understanding the dynamics of real estate activity and, therefore, for assessing the impact on insurance activity. Therefore, this is another of the indicators selected to prepare the synthetic indicator of real estate market potential for the insurance sector included in this report. This is due to its relationship to new housing construction and its availability in a broad universe of countries that provide this breakdown in their national accounts.

Population projections

Current population data and projections of its development in the coming decades[12] is another relevant indicator for estimating a country's real estate activity potential. This is another factor that has been considered in preparing the synthetic indicator of real estate market potential for the insurance sector, specifically because of its importance in the future evolution of the housing stock.

Personal disposable income

This is a relevant macroeconomic indicator from the perspective of both the real estate market and the insurance market due to its high correlation with the behavior of business volume measured in terms of insurance premiums. It also constitutes another of the relevant components considered in the preparation of the synthetic indicator of real estate market potential for the insurance sector.

Development of home insurance, life insurance, engineering insurance and other coverages associated with the residential construction process

In each of the markets analyzed in the second chapter of this report, we refer to the lines of insurance business related to the residential real estate market. This is a descriptive analysis of the most common coverages found in each of them and, to the extent that information was available, the business volume and profitability[13].

Real estate investment instruments for insurance companies' investment portfolios

Covered bonds and securitizations are financial assets derived from real estate activity in which insurance companies usually invest, as many of these issues fit their risk profile. This is especially significant for those that meet eligibility requirements that subject them to lower capital requirements than unsecured corporate bonds, depending on the regulatory requirements applicable in the different jurisdictions, particularly in those that apply quantitative criteria sensitive to the risk decrease provided by the collateral value of the real estate provided as collateral. For the different reference markets covered, this study includes an analysis of the degree of development and volume of issues of this type of financial assets, as well as a series of indicators that are taken as a reference in risk assessment[14], such as the loan-to-value ratio, loan income, the non-performing loans ratio, or the evolution of foreclosures.

Reverse mortgage

The need to supplement public retirement pensions with other income sources has opened the possibility for insurance companies to offer products for this purpose. These include the *reverse mortgage*, which is configured as a mortgage loan through which the owner grants their home as collateral, retaining its use, receiving in exchange monthly payments, a lump sum or a mixture of both. This report includes a specific reference to the main characteristics of the reverse mortgages offered and their degree of development in analyzing the different reference markets.

Other relevant indicators

Real estate transactions and home prices

Information on the number and volume of housing real estate transactions has been included for each of the relevant markets analyzed in this study. It also offers a comparative analysis between the evolution of housing prices and the general price index in a historical series[15] in order to identify the different patterns of price growth.

Mortgage interest rates and household credit gap

Mortgage interest rates and credit are two relevant indicators that influence the number of new housing starts and launches, the number of transactions and the price of housing[16]. Furthermore, in relation to the mortgage loan, it demonstrates an historical series of the credit to households to GDP gap has been included in the analysis, calculated following the methodology of the Bank for International Settlements for the countercyclical buffer requirements for credit institutions[17], including a comparison with the development of a price index and new home starts.

Residential leasing, affordability and home acquisition assistance programs

Finally, in those markets where information has been available and considered relevant, a brief reference to affordability issues and some of the programs implemented to assist the most disadvantaged households in acquiring housing has been included.

2. Reference market analytics

2.1 United States

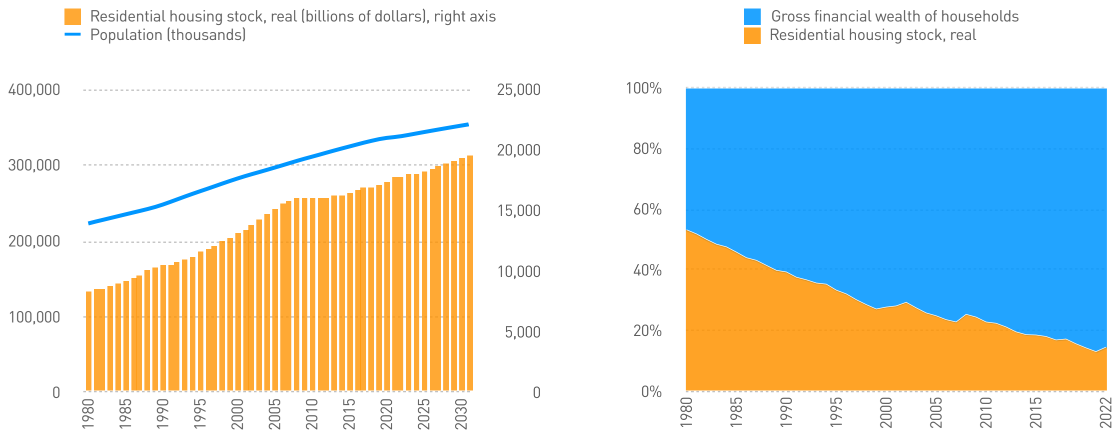
Introduction

The estimated residential housing stock value in the United States in 2023 is 17.9 trillion dollars[18]. This value represents about 90% of the GDP, against a gross household wealth value in that country estimated at 107 trillion dollars[19] (538% of GDP). It must be noted that the development of the housing stock over the last four decades in this country has grown in real terms, while its relative weight in household wealth has decreased slightly over the same period (see Chart 2.1-a).

On the other hand, the analysis of gross capital formation in housing construction relative to U.S. GDP shows two distinct periods. The first period, from 1980 to 2006, averaged around 5% of GDP (with a maximum of 5.9% in 2005), and the second period, from 2007 to 2022, averaged around 3.1%, with a minimum of 2.4% in 2011 (see Chart 2.1-b).

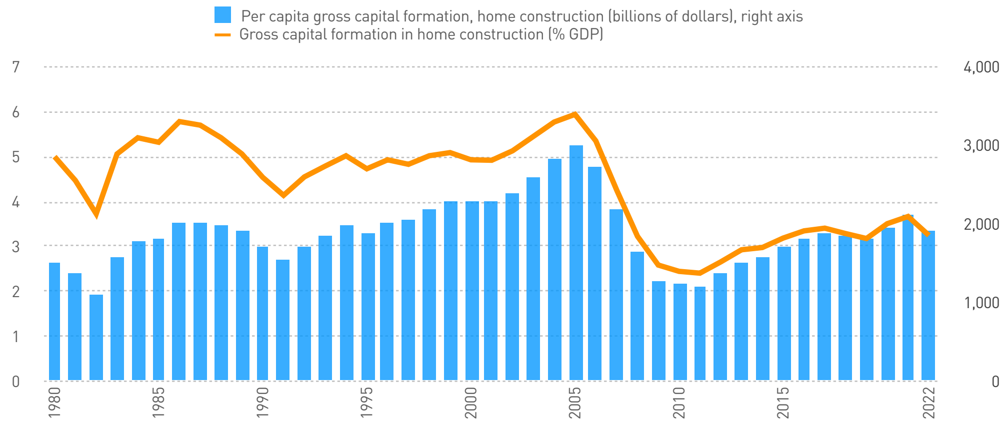
As we know, the United States has the most developed capital market in the world. This feature has facilitated the financing of the real estate market, resulting in a significant issuance of financial instruments that complement and provide liquidity to bank financing, also facilitated by the operation of a number of government-sponsored enterprises (GSEs). The three main GSEs are: Fannie Mae, Freddy Mac (these two agencies take the form of private companies listed on the New York Stock Exchange), and Ginnie Mae (the latter agency takes the form of a public company linked to the U.S. Department of Housing and Urban Development, the Federal Housing Administration, FHA).

Chart 2.1-a
United States: real residential housing stock, gross financial wealth of households and population



Source: MAPFRE Economics (based on data from Oxford Economics, Haver Analytics and the United Nations)

Chart 2.1-b
United States: gross capital formation in home construction



Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

Analysis of relevant indicators for the development of insurance activities

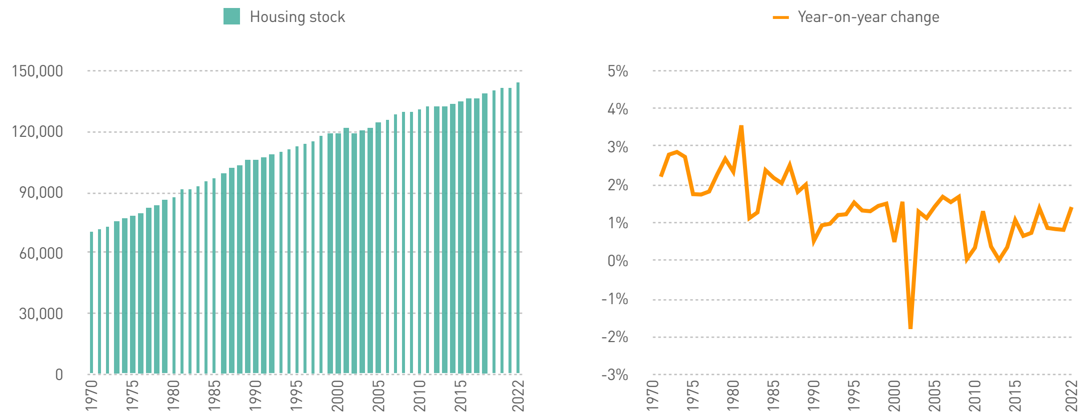
Housing stock and new construction

Housing stock

In the United States, the housing stock in December 2022 was at 143.9 million units[20], of which occupied homes accounted for 89.9%. A comparison of the development since 1971 shows that the total number of homes has doubled (71.3 million in 1971) with an increase since then of 101.8% (see Chart 2.1-c and Table 2.1-a). This growth has always been positive and sustained over time, with variations of more than 1% per year, except in 2002 when the base index changed to 2000.

It should be noted that one of the factors that has contributed to boosting the housing stock in that country has been the accelerated growth of new households in the 35 to 44 year-old population. However, in the series analyzed, it is evident that since 2007 the growth of the housing stock has slowed and, since 2010, new construction

Chart 2.1-c
United States: housing stock
(number of homes, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on Census data)

Table 2.1-a
United States: total housing inventory estimates
(thousands)

	December 2021	December 2022	2022–2021 change	% over 2021 total	% over 2022 total
All housing	**142,602.0**	**143,950.0**	**0.9%**		
Vacancy	14,999.0	14,554.0	-3.0%	10.5%	10.1%
Vacant all year round	11,227.0	10,950.0	-2.5%		
For rent	2,647.0	2,760.0	4.3%		
Only for sale	727.0	719.0	-1.1%		
Rented or sold	946.0	813.0	-14.1%		
Kept off the market	6,907.0	6,657.0	-3.6%		
For occasional use	2,050.0	2,010.0	-2.0%		
Temporarily occupied with primary residence elsewhere	1,169.0	1,110.0	-5.0%		
For other reasons	3,687.0	3,536.0	-4.1%		
Seasonal vacancy	**3,771.0**	**3,604.0**	**-4.4%**		
Occupied	**127,604.0**	**129,396.0**	**1.4%**	**89.5%**	**89.9%**
Owner occupied	83,583.0	85,224.0	2.0%	58.6%	59.2%
Tenant occupied	44,021.0	44,172.0	0.3%	30.9%	30.7%

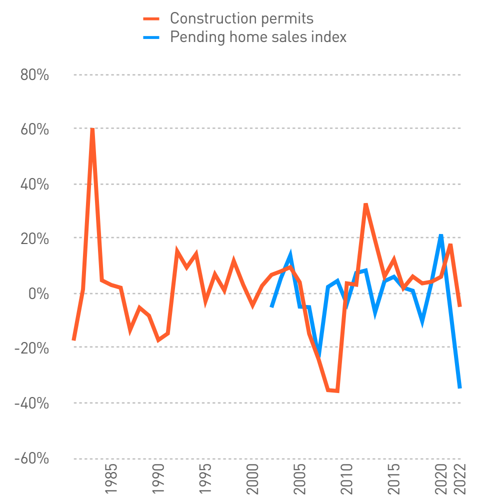
Source: MAPFRE Economics (based on Census data)

has not kept pace with household growth. This situation has produced an increasingly tight real estate market, with the supply of new housing increasingly concentrated in larger and less affordable homes, which has impacted the market by increasing the demand for rentals[21]. The pandemic, in turn, increased the demand for single-family homes.

New home construction and sales

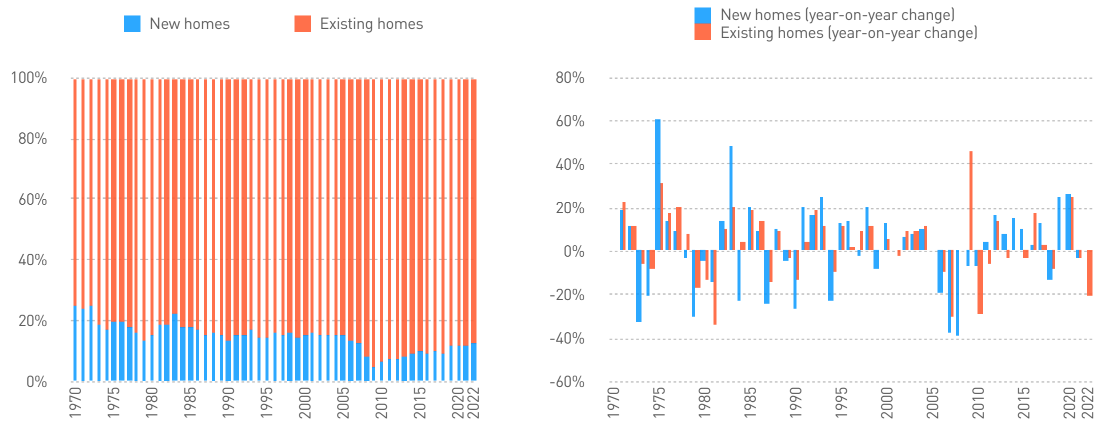
In 2022, the number of new home construction permits approved in the United States reached 1,651,857 units, a drop of -4.9% versus the previous year (with 1,736,982 permits). This represented a -5.0% drop year-on-year, which may be related to labor shortages, supply problems, inflation and rising interest rates slowing household growth along with the economy. Buy region, the Northeast registered 142,199 construction permits, followed by the West with 392,202 permits, both above the total average[22]. Chart 2.1-d shows how construction permits have evolved since 1980, with three significant moments: the first, in 1984, when the number of permits granted for construction increased by 60%; the second, covering the period 2007-2010, when it decreased to -35%; and the third, with the rebound in 2013 when it reached 20% growth.

Chart 2.1-d
States: change in number of
construction permits and pending home sales index
(%)



Source: MAPFRE Economics (based on Census Bureau and Investing data)

Chart 2.1-e
United States: sales of new homes vs. sales of existing homes
(breakdown, %; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Federal Reserve Bank of St. Louis)

As for total new home sales[23], a particularly relevant figure for the insurance sector as it represents a potential for new home insurance policies, in 2022, it is estimated to have been approximately 641,000, of which about 20% were homes sold off-plan, 49% were homes under construction and the remaining 31% were sold after construction had been completed. Meanwhile, about 76% of new homes were financed conventionally (i.e., without government involvement), 18% were financed by the Federal Housing Administration (FHA), and the remainder were paid for in cash. At the end of that year, there were 456,000 homes pending sale, with a ratio of 71.1% of homes sold. This means that the average number of months from completion of construction is 2 months, compared to 3.2 months in the previous year. Finally, Chart 2.1-e illustrates the proportion new home sales represented with respect to home resales.

Home-linked insurance developments

In the United States, the percentage of households with home insurance is very high (approximately 95%), as mortgages often require a policy to grant the loan. The penetration rate of home insurance in the economy, as represented by the weight that home insurance premiums have over gross domestic product (GDP), is estimated to have increased from 0.34% in 2000 to 0.52% in 2021[24]. It should also be noted that approximately 65% are homeowners. Of the remaining 35% (in rentals), about 40% purchase renter's insurance. In addition, many insurance companies combine home policies with automobile and offer a lower premium for combined coverage.

According to the latest available information produced by the Insurance Information Institute for 2019, homeowners insurance premiums averaged $1,272, while home insurance premiums for rental housing averaged $174. In 2000, however, these figures were $508 and $175, respectively.

Meanwhile, the loss and expense ratios, respectively, have gone from 72.8% and 29.7% in 2012 to 76% and 27.9% in 2021. As a result, the combined ratio ("after dividends") has worsened from 103.0% to 104.3% in this period. Analyzing the loss ratio by coverage, it can be seen that the largest number of household losses are due to wind (45.5%), followed by those caused by fire (23.8%) and water (19.9%). It should be noted that the National Flood Insurance Program (NFIP) is a special flood program that allows homeowners, business owners and renters in participating communities to purchase federally-backed flood insurance. This insurance helps to cover repair costs of damages caused to buildings and their contents by floods. It is important to note that federal flood insurance is not a disaster assistance program but an insurance program established to help homeowners recover more quickly after a loss. According to information from the Insurance Information Institute, in 2021, private flood insurance premiums reached $506 million.

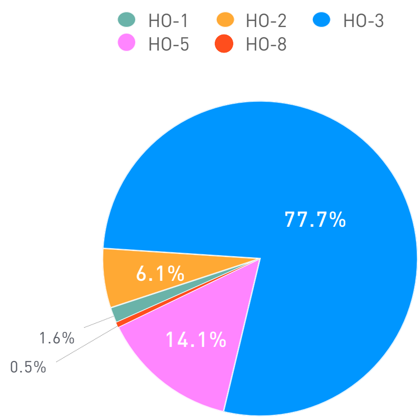
Homeowners policy coverages are categorized into different standard forms depending on whether the property is owner-occupied (the forms are HO-1, HO-2, HO-3, HO-5 and HO-8), or tenant-occupied (HO-4 covers third-party liability and risks per HO-2), or by the condominium unit owners/coop policy owner form (HO-6), although many insurers use their own forms[25].

HO-3 policies are all risk coverage that cover the risk of loss of physical assets, with exclusions for earthquakes and floods. HO-2 policies are extended coverage policies, i.e., in addition to the risks covered in HO-1 (only basic coverage for buildings) they cover building collapse among others, while HO-5 policies cover all risks on real estate and personal property, and HO-8 policies offer coverage with replacement cost well above market value, covering the owner of an old home who has problems obtaining a standard insurance policy. Most of the plans will cover the cost of alternate lodging after an insured risk claim is filed. According to data from the National Association of Insurance Commissioners (NAIC), in 2019, 77.7% are HO-3 policies. The complete distribution structure of these different modalities is presented in Chart 2.1-f.

It should be noted that many factors affect the cost of homeowners insurance, resulting in large differences in average premiums in the United States. In general, real estate values and construction costs tend to be higher in more densely populated areas. Likewise, the degree of exposure to earthquakes, hurricanes or tornadoes affects homeowners' insurance cost. Exposure to earthquakes is greater in the California zone, while that of hurricanes is higher in areas close to the Gulf of Mexico and the Atlantic Ocean, and exposure to tornado damage is higher in the central and southeast United States.

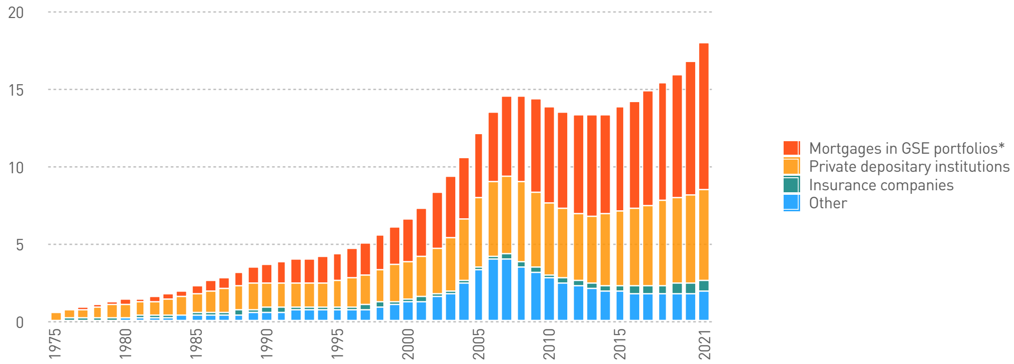
In this regard, the behavior of the U.S. real estate market is very marked by losses suffered by natural catastrophes (winds, floods, forest fires and earthquakes), an aspect that has led to an increase in the loss ratio in recent years, which is why since 2018 insurance companies have begun to increase premiums for exposure to this type of natural risks, generally increasing all rates. This generates protection gaps for the risks the insurance companies are not able to cover. Among the mechanisms that attempt to compensate for the lack of available coverage in risk areas, the country applies the so-called *Fair Access to Insurance Requirements* (FAIR) plans, designed to facilitate access to insurance for those who find it difficult to obtain from private insurers because

Chart 2.1-f
United States: percentage of homeowners per policy form, 2019



Source: MAPFRE Economics (based on NAIC data)

Chart 2.1-g
United States: total mortgage debt breakdown by investors
(trillions of dollars)



Source: MAPFRE Economics (based on Federal Reserve data)

*Freddie Mac, Fannie Mae, Ginnie Mae

they have a property in an area considered to be high risk.

Mortgage balance and new mortgages taken out

Mortgage balance

The balance of outstanding mortgage loans and the creation of new mortgages are two important indicators for the insurance business, as they are directly related to the capital insured in life insurance policies covering the risk of death of the mortgage holders. In the United States, in 2021 (latest available data), mortgage debt totaled $18.04 trillion, of which $12.5 trillion pertains to one- to four-family residential mortgages, $1.9 trillion to multi-family residential mortgages, and $3.3 trillion to commercial mortgages[26]. From 2007 to 2019, this debt averaged $13.9 trillion, while in 2021, the debt has increased by 7.5%, or by $1.3 trillion (see Chart 2.1-g).

New mortgages taken out

The total of mortgages in the United States has grown significantly, especially between 1998 and 2007, when it stagnated due to the Great Recession. It was not until 2014 that this amount began to grow steadily again, reaching US$18.04 trillion in 2021 (latest available data). Of that total, $9.42 trillion (52.2%) is part of the assets of government-sponsored enterprises (basically Fannie Mae, Freddie Mac and Ginnie Mae) and $5.9 trillion (32.7%) is held by private depository institutions. Meanwhile, insurance companies held $0.72 trillion (4.0%) of mortgage assets in their portfolios.

Fannie Mae and Freddie Mac require that each property be covered by property and liability insurance for the life of the mortgage loan[27]. These insurance policies must include coverage for fire, wind, hurricane, hail, flood and localized risks, where applicable, and provide for claims to be settled on a replacement cost basis[28]. However, they do not require life insurance in case of death associated with the mortgage loan, but if they have it, it may facilitate their status as eligible for acquisition by these agencies.

Development of Risk life insurance

In the United States, in addition to traditional risk life insurance[29] that can act as independent loan coverage, there is a type of risk life insurance specifically linked to loans whose premiums reached 581.5 million dollars[30] in 2021, with a loss ratio of 64%, more than 17 percentage points (pp) higher than the average (47.6%) of the last ten years, as a result of the excess mortality suffered during the worst phases of the pandemic[31]. This situation also affected production volume, which decreased significantly over those two years. This, added to the trend presented for premiums in the historical series of the 2012-2021 decade, resulted in a -23.1% decline in the premium volume of this type of insurance (see Table 2.1-b).

Analyzed by insurance company, the four with the highest Life premiums and the highest loss ratios were CMFG Life Ins, American Health, Life of the South and Minnesota Life Ins. The first 4 companies assumed more than 69% of the market share of net Life credit written premiums. Meanwhile, analyzed by states, Texas (14.05%), Louisiana (7.19%), Florida (5.23%) and North Carolina (5.03%) represent those with the highest market share of net Life credit written premiums.

In terms of loss ratios, Texas at $50.7 million, North Carolina at $23.2 million, Georgia at $22.5 million, and Florida at $21.4 million led the way with the highest claims volume in 2021. In relative terms, the four states with the highest loss ratio (claims/imputed premium) were: Rhode Island (182%, completely atypical data as a consequence of the mortality caused by the pandemic), Maine (99.8%), Georgia (92%) and Pennsylvania (93%).

Reverse mortgage

According to the United States Census Office, 36% of United States homes are currently occupied by single people 50 years or older, representing nearly 26 million people. In addition, one of every six United States residents 55 years or older has no children, and more than 60% of older adults who live alone are women.

Reverse mortgages are a versatile financial tool. According to data from the National Reverse Mortgage Lenders Association, as of November 2022, approximately 1,296,065 households in the United States have used the reverse mortgage mechanism, converting the net capital in their home into cash without having to sell the property. The most recent data from the Department of Housing and Urban Development (HUD) reveals that the average age of reverse mortgage applicants has decreased from 77 to 73 years (2022). Also, according to the Housing Market Research Institute, most reverse mortgage holders come from the states of California, Florida, Texas and New York, while the average re-

Table 2.1-b
United States: credit Life insurance performance
(thousands of dollars)

	Net written premiums	Real accrued premiums	Direct claims occurred	Loss ratio (%)
2012	756,054	799,020	365,302	45.7%
2013	740,184	738,353	352,190	47.7%
2014	738,758	726,912	345,629	47.6%
2015	731,494	722,012	326,421	45.2%
2016	671,891	704,773	312,016	44.3%
2017	627,490	654,925	299,557	45.7%
2018	635,552	637,715	291,506	45.7%
2019	661,581	642,365	274,304	42.7%
2020	534,885	583,929	297,615	51.0%
2021	581,469	566,604	362,629	64.0%
2012–2021 average	**667,936**	**677,661**	**322,717**	**47.6%**

Source: MAPFRE Economics (based on NAIC data) verse mortgage was estimated to be around $90,000.

According to figures from the National Association of Homeowners, the reverse mortgage participation rate among homeowner households over the age of 62 has remained steady at about 13% since 2014, while the number of reverse mortgages in 2022 was approximately 64,489 with a total of $10 billion borrowed in reverse mortgages in 2021.

Different modalities of reverse mortgages are sold in the United States: (i) *private reverse mortgages* offered by individual lenders; (ii) *single purpose reverse mortgages*, which are offered by state or local government agencies, with the approved purpose specified by the lender; and (iii) so-called *Home Equity Conversion Mortgages* (HECMs), which are the only federally insured, HUD-backed reverse mortgages. In the latter case, these loans are available only through lenders authorized by the Federal Housing Administration (FHA), the money can be used for any purpose, and the FHA loan limit for a HECM is $1,089,300 for FY 2023.

The U.S. federally insured HECM program allows homeowners 62 years of age or older to borrow against the equity in their home and is the most common in the United States. Borrowers receive between 51 and 77% of the property valuation, or the FHA loan limit, whichever is lower, depending on age and choice of product. These payments will come from the lender every month, or the lender may choose to open a line of credit to use as needed to generate a tax-free income stream. The Internal Revenue Service (IRS) considers this money a loan advance and not taxable income. When the lender grants the reverse mortgage, the borrower, in addition to receiving the proceeds for the net value of the mortgage, no longer pays the mortgage payments that were previously owed (in other markets, these transactions are not possible as the properties must be free of liens).

The interest rate for these operations varies between fixed and variable, depending on whether the payment is a lump sum payment for all available funds at once or monthly. The amount available is less than when the payment is made on a monthly basis. In addition to the interest generated by the reverse mortgage, an appraisal, loan origination fee (not to exceed $6,000) and sometimes an initial mortgage insurance premium (reduces the lender's risk in the event of borrower default) of 0.5% of the outstanding mortgage balance is required.

Upon the death of the borrower and eligible non-borrowing spouse, the loan becomes due and payable. After receiving the due and payable notice from the lender, the heirs will have 30 days to buy, sell or deliver the home to the lender to pay off the debt. However, extending this period for up to one year is possible so that the heirs can sell the house or obtain financing to buy it. Heirs who do not want to sell the home will have to pay the lesser of the full loan balance or 95% of the home's appraised value. If the heirs wish to sell the home, the lender takes the proceeds from the sale as payment on the loan, and the remaining balance, if any, will be covered by Federal Housing Administration (FHA) insurance.

Additional consumer protections were implemented in 2013 to help borrowers preserve more of their home equity during the first year of the loan. Under the requirements for a HECM reverse mortgage, borrowers must be at least 62 years old, own the home and use it as their primary residence. A reverse mortgage is a non-recourse loan, which means that the borrower or the borrower's estate will never be obligated to pay the lender more than the balance of the loan or the home's current value, whichever is less. As noted above, when a loan is called due and payable, the reverse mortgage borrower or the borrower's estate need only pay the balance of the loan or 95% of the appraised value of the home at that time, whichever is less. If you have Medicaid or receive Supplemental Security Income (SSI), the proceeds from the reverse mortgage may affect your welfare benefits. A loan is considered due when a borrower sells the home, conveys title to the property to another person, dies, resides outside the primary residence for a period exceeding 12 consecutive months due to physical or mental illness, fails to pay property taxes, insurance premiums, condominium fees and other *mandatory liabilities*, and all options to bring the loan current have been exhausted, or fails to properly maintain the home and allows it to deteriorate.

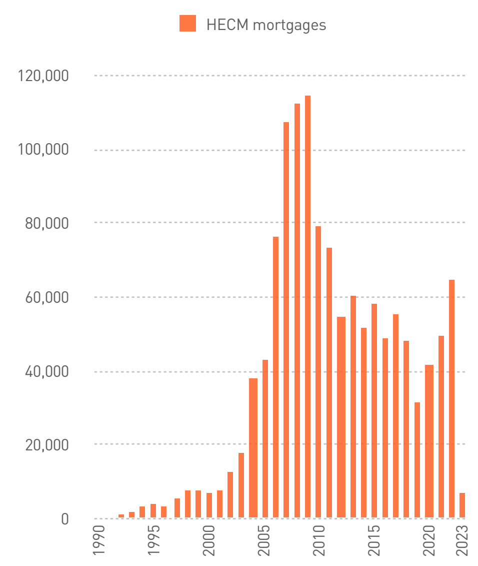
Independent third-party advice is required if it is a private reverse mortgage or an FHA-insured HECM. Most lenders require applicants to have no federal debt, especially in the case of HECMs. This includes, for example, federal income taxes and federal student loans.

There is a 3-day period for the right of rescission. To cancel, the lender must be notified in writing. In 2014, HUD announced that, under certain circumstances, a spouse who does not apply for the loan may continue to reside in the home, even if the debtor spouse dies, but will no longer receive monthly payments. The widow or widower must continue to pay the taxes and insurance on the home, in addition to any necessary repairs if the home deteriorates. For reverse mortgages signed prior to that date (August 4, 2014), upon the borrower's death, the lender could either repossess the home or initiate a *mortgage optional election assignment* (MOE) process that allowed the non-borrowing spouse to remain in the home.

Currently, HECM reverse mortgages have a share of over 90% of the market for reverse mortgages in the United States, due to the financial benefits and guarantees that the FHA offers to lenders and borrowers. Using HUD data (see Chart 2.1-h), from 1990 through 2002, the number of reverse mortgages was irrelevant. However, after 2003, its number began to increase, with very high growth rates (109% in 2004, 77% in 2006), reaching the highest figure seen so far in 2009 with 114,692 HECM mortgages taken out that year. Since that date, there was a 31% decrease in 2010 with 79,106 mortgages, and since 2010, due to the tightening of conditions to access this type of loan (high costs, program requirements, etc.), there has been a substantial decrease in the number of mortgages taken out. However, in the last two years, 2021 and 2022, these have grown by 57% and 31%, respectively, to 49,207 and 64,489 reverse mortgages by federal fiscal year (each federal fiscal year begins on October 1 and ends on September 30 of the following year).

Historically, some large banks have offered reverse mortgages, with Bank of America and Wells Fargo being two of the largest lenders. However, following the 2008-2009 financial crisis, both announced their exit from this business in 2011 due to difficulties with the regulatory environment (Dodd-Frank). Today, many banks still offer reverse mortgages, such as FirstBank, Quontic Bank, M&T Bank, The Federal Savings Bank, Townebank or Goldwater Bank.

Chart 2.1-h
United States: number of HECM mortgages



Source: MAPFRE Economics (based on data from HUD, Department of Housing and Urban Development)

Table 2.1-c
United States: top 15 companies by amount of initial capital for mortgage transactions, 2022
(dollars)

	Initial capital limits	Percentage
American Advisors Group	3,098,910,946	19.34%
Mutual of Omaha Mortgage, Inc.	1,243,819,449	7.76%
Reverse Mortgage Funding LLC	706,818,595	4.41%
Fairway Independent Mortgage Corporation	698,741,840	4.36%
Finance of America Reverse LLC	614,487,528	3.83%
Longbridge Financial LLC	575,190,957	3.59%
PHH Mortgage Corporation	563,922,050	3.52%
South River Mortgage LLC	369,335,641	2.30%
Premium Security Inc. D/B/A Homecision	312,467,794	1.95%
Ennkar Inc	275,184,960	1.72%
Finance of America Mortgage LLC	258,799,247	1.62%
Cherry Creek Mortgage LLC	239,924,729	1.50%
All Reverse Mortgage Inc	203,398,503	1.27%
High Tech Lending Inc	178,452,436	1.11%
Advisors Mortgage Group LLC	175,328,754	1.09%
Total market	**16,024,603,101**	**100.00%**

Source: MAPFRE Economics (based on data from HUD, Department of Housing and Urban Development)

During 2022, 58,778 HECM reverse mortgages were approved for $16.024 billion; 98% at a variable interest rate (standing at an average of 7.01% variable interest for December 2022). Five percent of the mortgage funds were used for purchases, 18% for loan refinancing, and the remaining 77% for traditional purposes. Taking the top 15 companies by the amount of initial principal of mortgage transactions in dollars, we see that American Advisors Group leads the ranking with 19.34% of total loan principal, which is equivalent to the present value of loan proceeds available to the borrower (see Table 2.1-c). However, if ordered by the number of transactions approved during 2022, it becomes apparent that American Advisors Group remains in the top position with 26.7% of the market's approved transactions, although there are movements in subsequent positions (see Table 2.1-d).

From the standpoint of real estate value or equity of those aged 62 and older, calculated by difference between home value and outstanding debt, homeowners aged 62 and older saw their real estate wealth grow by 1.95% ($226 billion) in the third quarter of 2022, to $11.81 trillion[32] (see Chart 2.1-i). The increase in senior homeowner wealth was primarily due to a 1.95% (268 billion) growth in home values, offset by a 1.93% (42 billion) increase in senior mortgage debt.

Finally, regarding the legislative history of reverse mortgages in the United States, it is worth noting that Section 255 of the National Housing Act was passed in 1934, as part of the U.S. National Housing Act. It was created to improve housing loan availability and help to secure affordable housing for low- and moderate-income consumers. Since its approval, it has been amended several times, including in the 1980s, to include reverse mortgage loans.

In the late 1980s, Ronald Reagan signed the Housing and Community Development Act authorizing HUD to create the HECM pilot program, providing financial support for reverse mortgage borrowers through the Home Insurance Fund. Meanwhile, Fannie Mae agreed to purchase FHA insurance to provide liquidity to the system. Between 1995 and 1998, Fannie Mae created its own reverse mortgage, the National Re-

Table 2.1-d
United States: top 15 companies by number of mortgage transactions, 2022
(dollars)

	Number of transactions	Percentage
American Advisors Group	16,828	26.70%
Finance of America Reverse LLC	6,780	10.80%
Mutual of Omaha Mortgage, Inc.	5,708	9.10%
Longbridge Financial LLC	5,401	8.60%
Reverse Mortgage Funding LLC	4,804	7.60%
PHH Mortgage Corporation	4,181	6.60%
Fairway Independent Mortgage Corporation	2,747	4.40%
Open Mortgage LLC	2,206	3.50%
High Tech Lending Inc	1,036	1.60%
Cherry Creek Mortgage LLC	917	1.50%
Premium Security Inc. D/B/A Homecision	895	1.40%
Traditional Mortgage Group LLC	819	1.30%
Advisors Mortgage Group LLC	775	1.20%
Money House Inc	694	1.10%
All Reverse Mortgage Inc	677	1.10%
Total market	**62,984**	**100.00%**

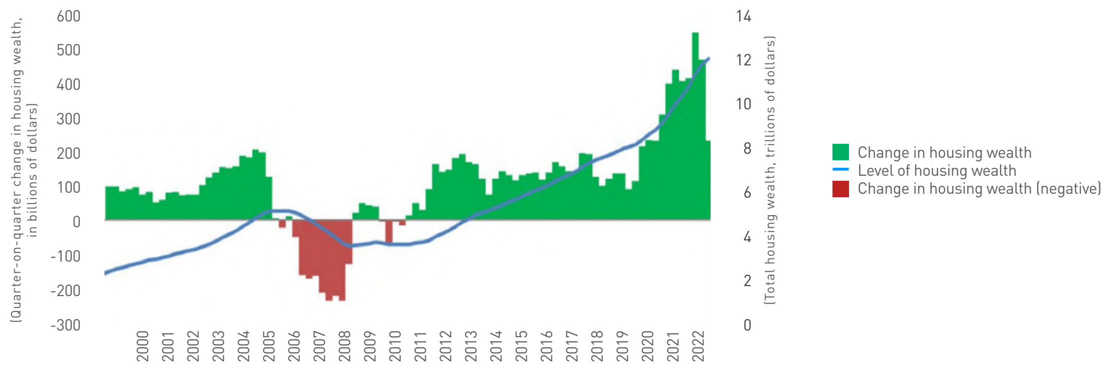
Source: MAPFRE Economics (based on data from HUD, Department of Housing and Urban Development)

verse Mortgage Lenders Association (NRMLA) was established in Washington to defend lenders' interests, and finally, the HECM program became permanent and increased the volume of reverse mortgages to 150,000.

Moreover, in 2007, Ginnie Mae began underwriting HECM reverse mortgage securitizations, which generated competition with Fannie Mae and caused it to leave the business. In 2008, the FHA permitted the introduction of a fixed and closed rate for HECMs. Finally, in 2008, the first generation of *baby boomers* (43 million households) met the requirements to take out a reverse mortgage.

In 2011, the Dodd-Frank Act created the Consumer Financial Protection Bureau

Chart 2.1-i
United States: housing wealth (senior home equity)



Source: MAPFRE Economics (based on data from NRMLA, American Community Survey, Census, FHFA)

(CFPB) and established stricter regulations for lenders in all industries, including reverse mortgage lenders. In 2013, President Barack Obama signed the Reverse Mortgage Stabilization Act, which authorized HUD to take funds to bolster mortgage insurance funds. That same year, HUD limited the amount of funds available to 60% of the loan amount for the first twelve months.

In 2016, FHA reached 1 million HECMs, and in 2018 began implementing collateral risk assessment to prevent appraisal values from being artificially inflated. From 2019 to 2022, FHA modified the requirements for loan assignments under the optional mortgagee election (MOE) process and took steps to respond to the COVID-19 pandemic. Thus, in 2022, the maximum mortgage loan limit increased to $970,800 (with the maximum home value amount to be mortgaged set at $1,100,000). Finally, it is important to keep in mind that, in addition to federal regulations, there are certain regulatory aspects of reverse mortgages at the state level, which may vary from state to state.

Real estate investment instruments for insurance companies' investment portfolios

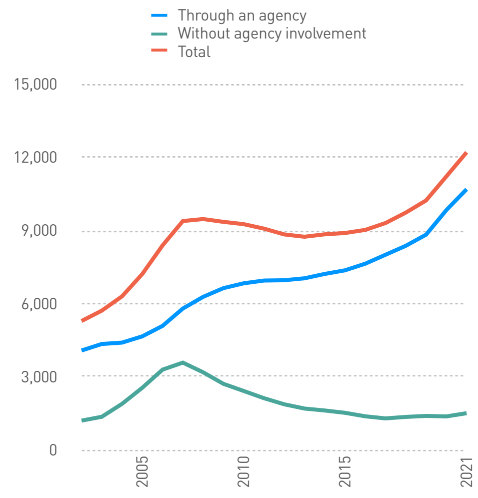
In the United States there is a very active mortgage securitization market. By 2021, about 65% of total residential mortgage debt was estimated to be securitized ($10.8 trillion), up from 60% a decade ago, almost all in the form of Mortgage-Backed Securities (MBS) issued by the agencies and government-sponsored enterprises Fannie Mae, Freddie Mac and Ginnie Mae, basically[33] (see Chart 2.1-j).

Agency vs non-agency Mortgage-Backed Securities

The *agency MBS* has a loan guarantee backed by one of the three housing agencies: Fannie Mae, Freddie Mac or Ginnie Mae. Fannie Mae and Freddie Mac purchase and securitize *conforming* mortgages, which are typically prime loans. These agencies are not authorized to purchase large "jumbo" mortgages above conforming loan limits, or mortgages with loan-to-value (LTV) ratios greater than 80%, unless the loan includes mortgage insurance. As noted above, Fannie Mae and Freddie Mac are government-sponsored enterprises, or GSEs[34]. It should be noted that, although the government does not explicitly own them, their debt is perceived to carry a certain public guarantee.

Meanwhile, Ginnie Mae guarantees MBS built from mortgages explicitly insured by federal government agencies, primarily the Federal Housing Administration (FHA) and Veterans Affairs (VA). Fannie Mae and Freddie Mac, on the other hand, use a different risk distribution model than Ginnie Mae. Fannie Mae and Freddie Mac MBS are not covered by government agency insurance. When mortgages in their portfolio default, they cannot turn to the FHA, VA or USDA as a source of capital to cover the default. If losses associated with mortgage defaults cannot be covered by private mortgage insurance, Fannie Mae and Freddie Mac may be forced to make protection and indemnifi-

Chart 2.1-j
United States: mortgage-backed security balance
(billions of dollars)

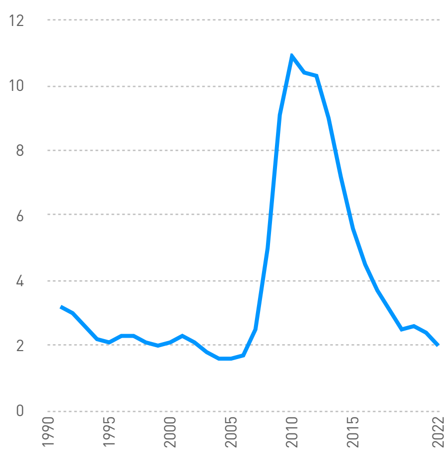


Source: MAPFRE Economics (based on SIFMA data) cation payments to investors from their own capital.

On the other hand, non-agency MBS (mortgage-backed securities securitizations) are issued by private financial institutions and are not collateralized. Instead, the securities are divided into tranches for investors with different credit risk appetites, with higher nominal returns for tranches that assume higher credit risk. By mid-2021[35], depository institutions (commercial banks, savings banks and credit unions) were the largest investor group (33% of the total), followed by the Federal Reserve (23%), international investors (11%), mutual funds (7%) and money market funds (5%). The Federal Reserve is the largest single investor in MBS through its large-scale asset purchase program, with total holdings of $2.5 trillion in October 2021.

The market for securitizations other than those issued by U.S. government-sponsored agencies appears to have stabilized, following the severe problems suffered with the outbreak of the 2008-2009 crisis (which also impacted agency-issued MBS), although their volume is now at levels equivalent to those of the early part of the first decade of this century. The regulatory measures adopted in the wake of the crisis (mainly the Emergency Economic Stabilization Act of 2008 and later the Dodd-Frank Act) further aided the recovery of securitizations issued by the agencies, which began to repay the aid received once they became profitable again. These measures included stricter conditions for securitized loans, risk retention requirements and restrictions on household leverage.

Chart 2.1-k
United States: non-performing loans ratio in single-family residential mortgages
(%)



Source: MAPFRE Economics (based on Federal Reserve data)

Non-performing loans ratio

According to Federal Reserve data, the non-performing loans ratio for single-family residential mortgages, registered in national bureaus with information collected by all commercial banks, has ranged from 3.2% (1991) to 1.6% (2004-2005) between 1991 and 2007. However, from 2008 to 2018, the default rate skyrocketed due to the Great Recession and the Lehman Brothers crisis (see Chart 2.1-k). Currently, it is at about 2%. It should be noted that the CARES (Coronavirus Aid Relief and Economy Security) Act, enacted on March 27, 2020, and extended on February 18, 2022, allows for loan extensions that can extend up to 360 days and is reflected in mortgage performance data.

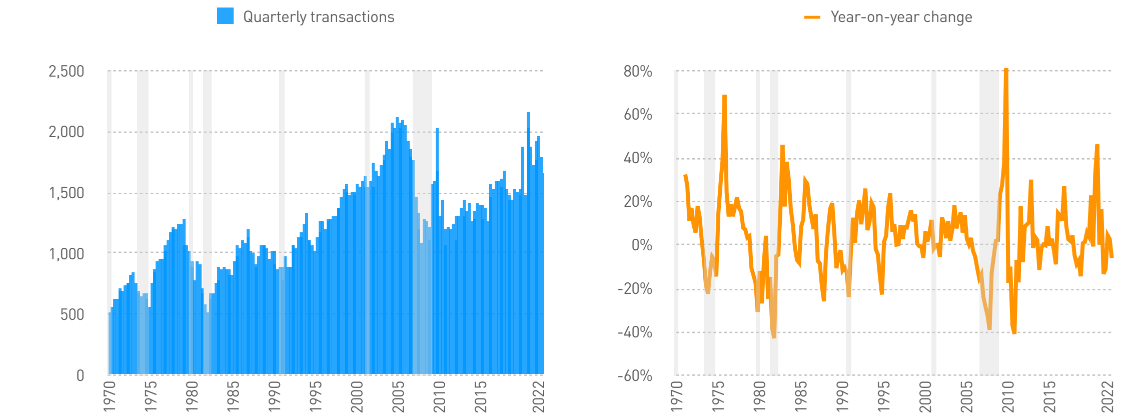
Real estate transactions, home prices and mortgage interest rates

Real estate transactions

In the United States, a generally favorable trend in the total number of home sales can be observed since the 1970s (see Chart 2.1-l). However, the historical series shows periods when this trend has been clearly interrupted, as occurred in 1973, 1979 and 2006, acting as a leading indicator for periods in which the U.S. economy entered recession (November 1973, July 1981 and December 2007).

Data released by the Federal Reserve Bank of St. Louis show that the total cumulative volume of real estate transactions completed through the third quarter of 2022

Chart 2.1-l
United States: home sales*
(number of transactions, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Federal Reserve Bank of St. Louis, National Association of Realtors, Investing and Census Bureau)
*The shaded areas indicate periods of recession in the United States

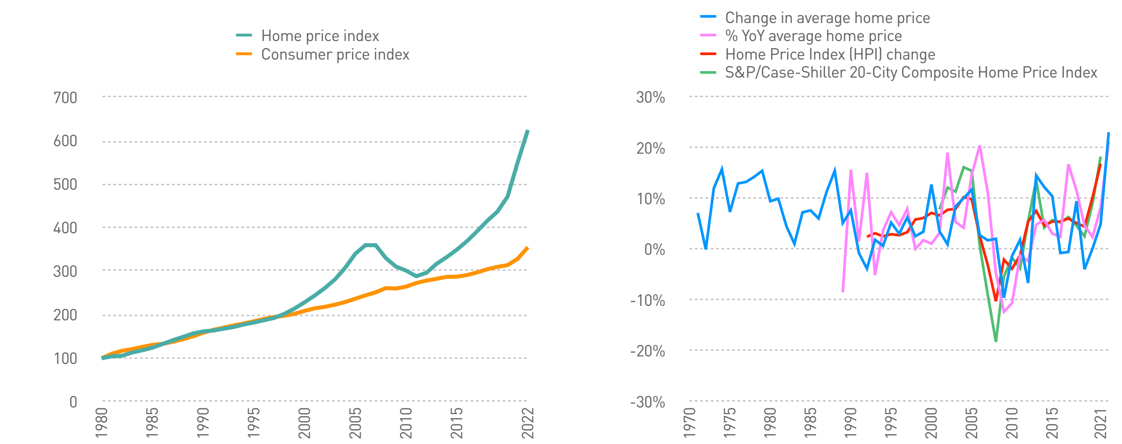
(5.4 million units), is 17.7% less than that achieved in the third quarter of the previous year when it slightly exceeded 6.7 million homes. This overall performance has been explained by the decline in home resales (-19.7%), which accounted for 87.3% of total sales in the third quarter of 2022 and includes single-family homes, townhouses, condominiums and cooperatives.

With regard to the characteristics of buyers, it is noteworthy that, in 2021, the age of first-time homebuyers increased from an average of 29 years old (44% of buyers) to 33 years old (34% of buyers). Thus, the age of a normal buyer has gone from 36 years in 1981 to 56 years in 2021.

Home prices

As shown in Chart 2.1-m, a comparison of the development of U.S. median home prices with the evolution of the general price index, in a series since 1980, shows that both indexes follow a similar path until the late 1990s. Since then, the two trends

Chart 2.1-m
United States: home and consumer price indexes
(index, 1980=100; year-on-year change, %)



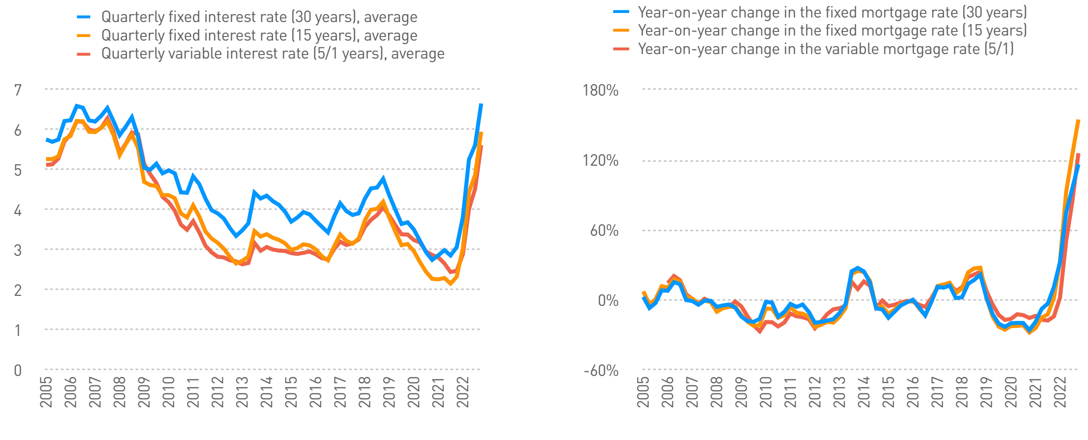
Source: MAPFRE Economics (based on data from the Federal Housing Finance Agency, FRED St. Louis, Oxford Economics, Haver Analytics) have diverged, and the housing price index has risen above consumer prices, despite the sharp downturn suffered as a result of the financial crisis of 2007-2009. Likewise, additionally and for comparative purposes, the variation of the average home price is shown with various indexes in general use in the United States, such as the Case Shiller, the Federal Housing Finance Agency and the St. Louis Federal Reserve; all coincide in the abrupt fall in the 2006-2008 period, a strong recovery since 2012 and growth above historical levels as of 2021.

Low interest rates during the pandemic offset rising housing costs, keeping mortgage payments relatively low. Between the first quarter of 2020 and 2022, 2.2 million new owners were added, raising the national ownership rate to 65.4%. Despite this, during 2022, with interest rates at their highest in 20 years, new homebuyers face affordability issues, with monthly payments that, in some cases, have grown by 50%. The increase in home prices in nominal terms was 18.8% in 2022 (first quarter 2022) and 17.7% by the end of the year in 2021, while in real terms, the increase was 8.4% and 8.9%, respectively[36].

Recent moves by the Federal Reserve to raise interest rates due to the sharp rebound in inflation have begun to cool the for-sale housing markets, as indicated by slower sales and rising inventories of homes on the market, which may end up impacting housing market prices. Analyzed by metropolitan areas, those belonging to California (Anaheim-Santa Ana, Fresno, Los Angeles, Sacramento, Riverside), Florida (Cape Coral, Fort Lauderdale, Miami, Sarasota, Tampa, West Palm Beach) and New York stand out as those with the highest home price increases from 2000 to 2005, and those that also saw their home prices fall the most in 2008 (more than 25% on average) and whose recovery from 2012 to the present has been particularly notable, with nominal growth in prices of 35% (Florida, Cape Coral-Fort Myers and North Port) and 23.7% in the California areas of Sacramento, Stockton and Riverside.

In contrast, home prices grew below average in the United States from 2000 to 2005 in the metropolitan areas of Ohio (Akron, Cincinnati, Cleveland, Dayton) and Michigan (Detroit, Kentwood, and Warren-Troy-Farmington Hills), with growth close to 4.5% on average, although they had a smaller drop (except Detroit with 22.7% in

Chart 2.1-n
United States: 30 and 15-year fixed interest rates and variable (5/1)
(variable and fixed-rate mortgages, %; year-on-year change, %)



Source: MAPFRE Economics (based on data from Oxford Economics and Haver Analytics)

2008) than in the 2008-2012 stage. Currently, these areas present nominal growth of 13% on average. In the southern United States, where incomes are lower on average due to smaller loans, interest rates are higher. The highest home prices are found in Hawaii, California and New York, with the median monthly payment at $1,684, $525 more than the national average, which remains at $1,159. The lowest are located in Iowa, Indiana and Arkansas.

Mortgage interest rates

According to information from Freddie Mac, the average 30-year mortgage rate increased more than 2.0 pp between the first week of January and the first week of May 2022, to 5.27%, its highest level in 10 years. Interest rates have risen higher since then, and although inflation has moderated, in the last quarter of 2022, they were above 6% (see Chart 2.1-n).

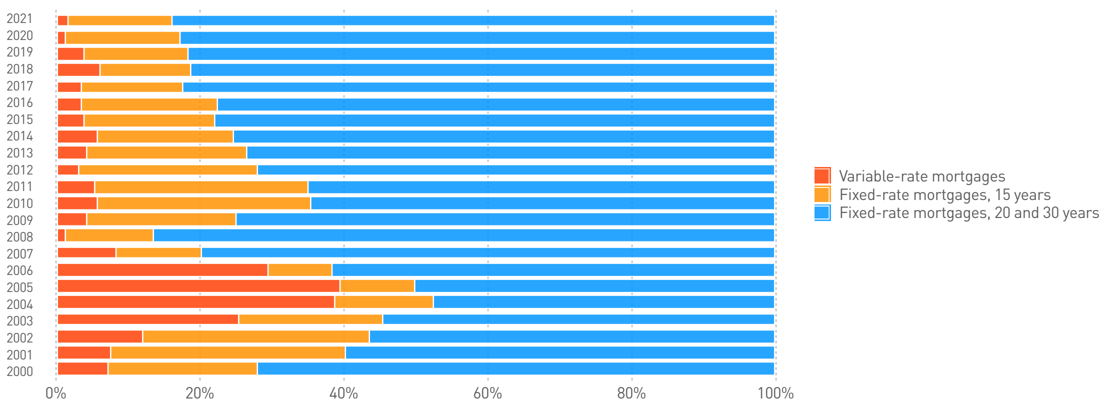
The housing sector continues to experience an adjustment due to interest rate growth, which reached 6.79% for 30-year fixed mortgages in the fourth quarter of 2022. This is the most common type of mortgage in the United States (see Chart 2.1-o). An analysis of their changes over the last two decades shows that, since 2000, the average interest rate on 30-year fixed-rate mortgages has been on a downward trend, from 8.05% at the beginning of the century to levels slightly below 3% in 2021, until they began to rise as a result of the Federal Reserve's tightening of monetary policy following the sharp upturn in inflation, which was exacerbated by the invasion of Ukraine.

Likewise, an analysis of mortgages taken out in the 2001-2021 period (see Charts 2.1-p and 2.1-q) shows that, with some exceptions, approximately 40% (36.6% in 2021) of loans have been used for first-time home purchases, while the remaining 60% (63.4% in 2021) have been used to refinance mortgage debts already incurred. In addition, the average loan maturity is 26 years, although 2006 marked a turning point with an average period of 28 years. Some 76.8% use conventional loans, compared to 19.5% and 3.7% using government assistance loans or Jumbo (a mortgage loan that may have a high credit score, but the amount exceeds conventional conforming loan limits), respectively.

Household credit gap

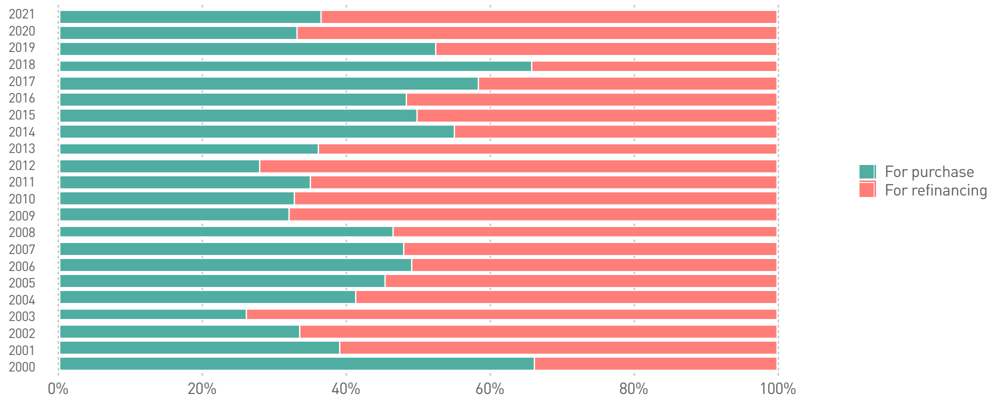
In terms of the development of the household credit gap with respect to its historical average level, three periods can be distinguished in the United States in which the

Chart 2.1-o
United States: breakdown of mortgages by interest rate
(%)



Source: MAPFRE Economics (based on data from FHFA, National Mortgage Database, NMDB)

Chart 2.1-p
United States: breakdown of mortgages by objective
(%)

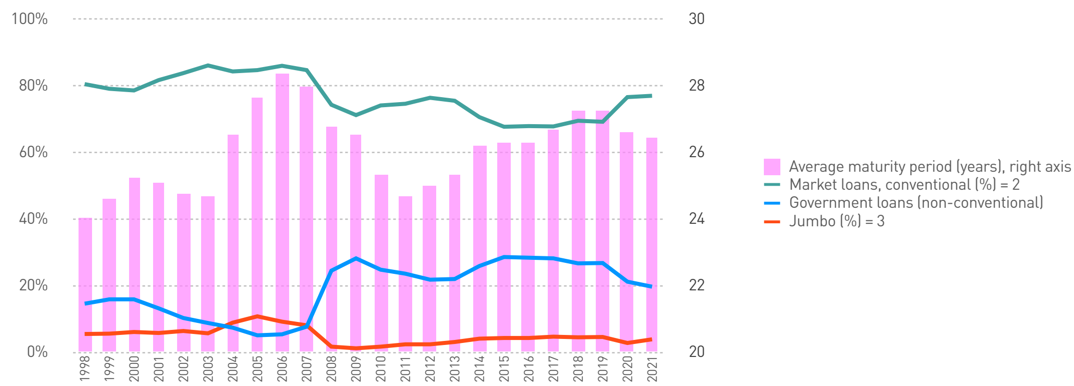


Source: MAPFRE Economics (based on data from FHFA, National Mortgage Database, NMDB)

volume of household debt as a percentage of GDP was significantly higher than its long-term average. The first of these refers to the period from 1984 to 1990, and the second to the period from 2002 to 2006, which were reflected both in the number of new housing starts and in the level of prices, which experienced a strong rebound; in this sense, the credit gap acted as a leading indicator of the 2007-2009 real estate crisis. And the third relates to the period from 2007 to 2021, which is below the average, as reflected in a decline in the number of new homes and prices, especially between 2007 and 2011, after which they began to improve, despite the wide household credit gap. It should be noted that this counterintuitive improvement coincided with the implementation of asset purchase programs (sovereign bonds and mortgage-backed corporate bonds) by the US Federal Reserve starting in 2009 (see Chart 2.1-r).

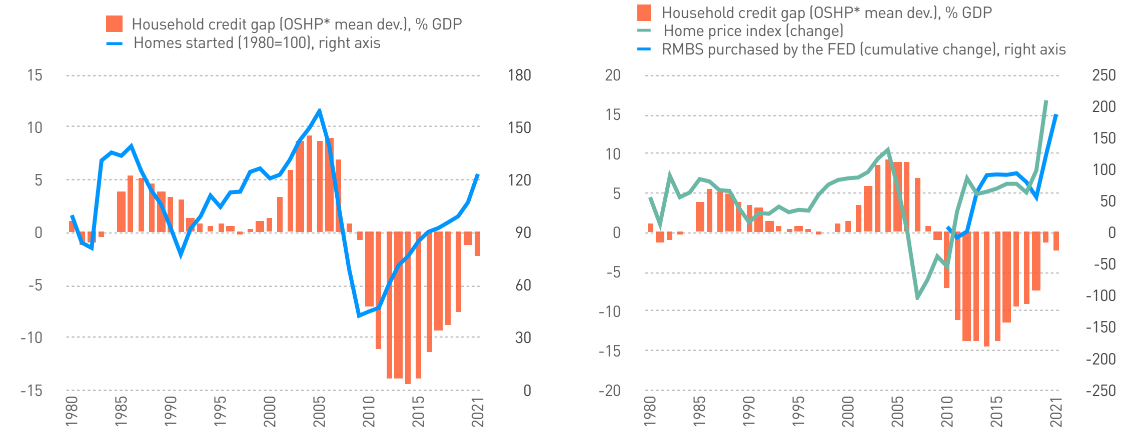
On the other hand, the ratio of mortgage debt to housing stock in the United States has been growing steadily from 1970 ($7,143/home) through 2007 ($114,202/home). Thereafter, the ratio fell to $100,482/home in 2013, and in 2021 it

Chart 2.1-q
United States: average mortgage loan term



Source: MAPFRE Economics (based on data from National Mortgage Database)

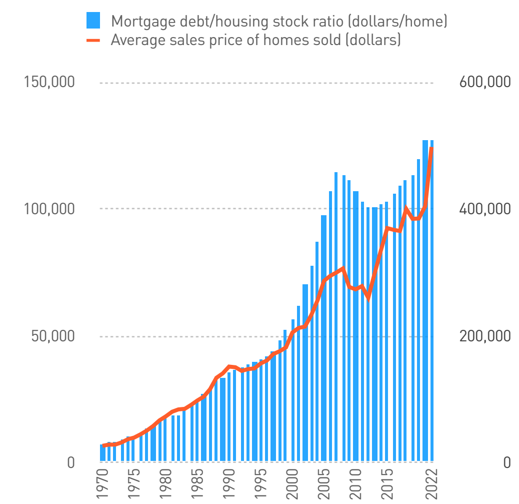
Chart 2.1-r
United States: household credit gap



Source: MAPFRE Economics (based on data from BIS, Oxford Economics and Haver Analytics)
*OSHP = One Sided Hodrick-Prescott

stands at its all-time high of $127,111/home. Compared to the development of the average home price over the same period, the trend was similar through 1992, when debt growth began to diverge from average home price growth, evidenced by the growth of mortgage debt which peaked in 2007 and, after the crisis correction, from 2012 onwards home prices have grown proportionally above the recovery of debt (see Chart 2.1-s).

Chart 2.1-s
United States: mortgage debt to housing stock and average price



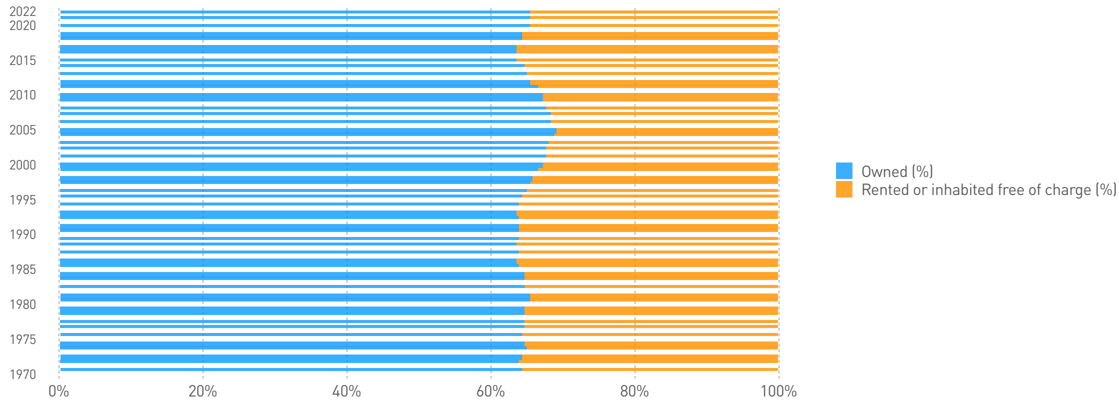
Source: MAPFRE Economics (based on data from the Federal Reserve Bank of St. Louis)

Residential leasing

The development of rental housing shows growth in the percentage of households with home ownership reaching 69.1% in 2020, up from 75.9% in 2005, where it reached its peak value and decreasing through 2016, where the percentage of households with home ownership is at a minimum (63.5%), with the remaining 36.5% of households with rental housing (see Chart 2.1-t).

The annual variation of rental housing in the United States has been positive from 2015 to the present, specifically in 2021, it grew by 11%, compared to 1.2% the previous year, versus 3.8% for the 2015-2019 average. In 2019, 34.4% of all rental housing had been leased by young people under the age of 35, while the rest of the age cohorts are proportionally distributed across the remaining rentals (W31 and W33). In absolute terms, in 2019 the metropolitan areas with the most rentals for the under-35 population were Atlanta (289,000), Dallas (410,000), Chicago (438,000), Los Angeles (634,000) and New York (938,000), to cite the most important. Meanwhile, in relative terms, Austin, Texas (with 47.7% of rentals to those under 35 years of age), Colorado (45.81%), Madison, Wisconsin (49.8%) and Provo-Orem, Utah

Chart 2.1-t
United States: change in home ownership or rental
(%)



Source: MAPFRE Economics (based on Census data)

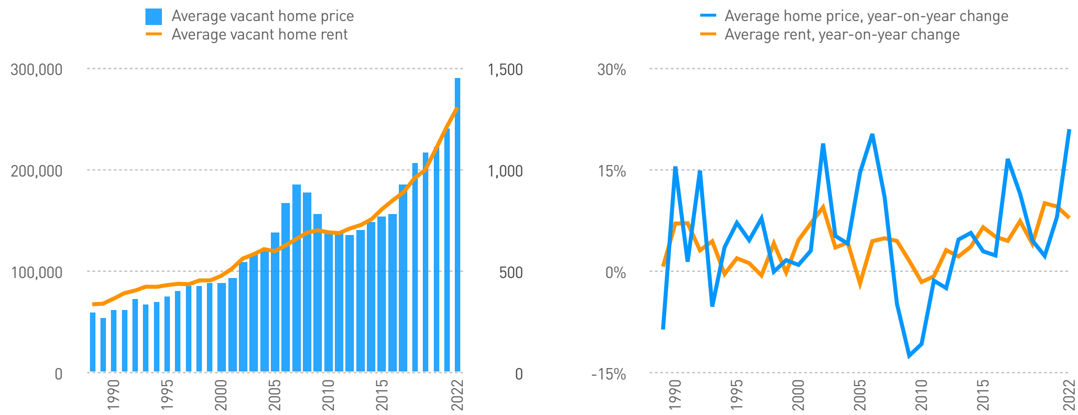
(63.62%) are notable as those in which this cohort represents the largest percentage of all rentals[37].

Rental availability rates in the United States remained at 5.6% in 2021, close to the lowest of the last 25 years, which drove the annual growth of lease prices to two digits. It is important to note that the pressure on lease prices was lower, as rental availability was higher in 2003-2004 and 2008-2009. Chart 2.1-u shows a comparison of the development of home and lease prices (median) since 1989[38]. It is worth noting that the 2008-2009 crisis had a greater impact on home prices than on lease prices, which generally show less volatile behavior, with an annual variation range of 0%-10%.

Affordability and home acquisition assistance programs

Comparing home price growth with the affordability index calculated by the National Association of Realtors (which measures the degree to which a typical family can afford the monthly mortgage payments on a

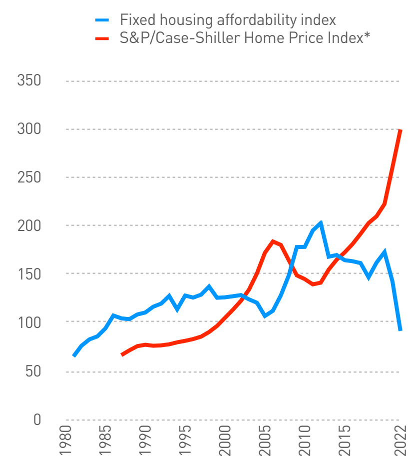
Chart 2.1-u
United States: change in average vacant home price and monthly rent
(dollars; year-on-year change, %)



Source: MAPFRE Economics (based on Census data) typical home) shows that the index was at lows in October 2022, while prices were growing (see Chart 2.1-v). The impact of sharply higher interest rates on affordability has been compounded by the runaway growth in housing prices over the past year. As a result, total monthly payments for the median-priced home (mortgage payments plus estimated property taxes and insurance costs) jumped by 35%, from $2,100 in April 2021 to $2,800 in April 2022.

The ratio of median existing-home price to median household income (reflecting the price-to-income ratio) was close to 3 nationally and in most markets across the country. But at the height of the boom in 2005, the national ratio reached 4.9 and about half of the markets had a ratio of 4 or more. After improving substantially until 2011, both the national proportion and the share of markets with high levels had been on an upward trend in the years prior to the pandemic. But the sharp rise in housing prices since 2020 has pushed these metrics to new record highs. As of 2021, the national price-to-income ratio reached 5.3 with three-quarters of markets above 4 and a surprising two-fifths above 5.

Chart 2.1-v
United States: change in affordability index and home prices



Source: MAPFRE Economics (based on data from the National Association of Realtors, Oxford Economics, Haver Analytics)

* January 2000=100, annual average without seasonal adjustment

Thus, the effort required to purchase a home in the United States in 2021 is estimated to be equivalent to 34.8% of disposable income, while the average mortgage amount is 71% of the value of that home, compared to data from 2006, 2007 or 2018, where the effort required was higher (approximately 38% of disposable income) to purchase homes whose mortgages were on average 78% of the value of the home for these years. Government measures implemented in recent years have consisted of various homeownership support programs, mortgage interest deductions, as well as government-sponsored agencies to promote homeownership among military veterans and low-income families. Thus, since its inception, the Federal Housing Administration (FHA) has focused on homebuyers who, while still creditworthy, have lower equity and present moderately higher risks than those typically served in the conventional market. In addition to its original role in stabilizing the housing and construction markets during the Great Depression, FHA has added market stability on many other occasions during its 80-year history. Since World War II, there have been four instances (in 1948, 1958, 1970 and 2008) when FHA's national market share increased by more than 5 pp in a single year when conventional mortgages were difficult to obtain.

The U.S. real estate market has recovered in recent years following the 2008 financial crisis. Housing prices have increased, and activity in the sector has improved, boosting the country's economic growth. However, there are also challenges in terms of affordability due to rising prices and, more recently, sharp increases in interest rates. In the words of Christopher Herbert, Managing Director of Harvard's Joint Center for Housing Studies and a member of Freddie Mac's Board of Directors: "The nature of these challenges points to two broad categories of solutions. Expanding the supply of modestly priced homes, both for sale and for rent, to alleviate the severe housing shortage, and well-designed programs on the demand side to guarantee access to high-quality rental and home-ownership opportunities."

United States in the IRPII ranking

Finally, as detailed in chapter four of this report, the United States ranks 26th in the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) ranking; the synthetic index calculated by MAPFRE Economics for a universe of 43 countries (see Table 4.2-b). Among the different components weighted to calculate the indicator, *demographic growth* is the largest contributor to improving the United States' position in the sample of countries analyzed (see Table 4.2-a). In this sense, the United States population in 2023 is 340 million, which is estimated to reach 394 million by the end of the century[39].

2.2 Mexico

Introduction

The estimated housing stock value in Mexico in 2023 was 25.1 trillion pesos (about 1.3 trillion dollars)[40], which represents 136% of GDP, while the gross financial wealth of households is estimated at 75.5 trillion pesos[41] (409% of GDP). As shown in Chart 2.2-a, the development of the housing stock over the last two decades in Mexico has grown in real terms, while its relative weight in household wealth has decreased slightly over the same period.

In turn, an analysis of the gross formation of capital in housing construction in relative terms related to the Mexican GDP since 1993 presents a downward trend, except for the period between 2001 and 2008, reaching a maximum of 6.8% of GDP in 2008, with a marked drop since then to the level of about 4.5% in 2022, the lowest in the last three decades (see Chart 2.2-b).

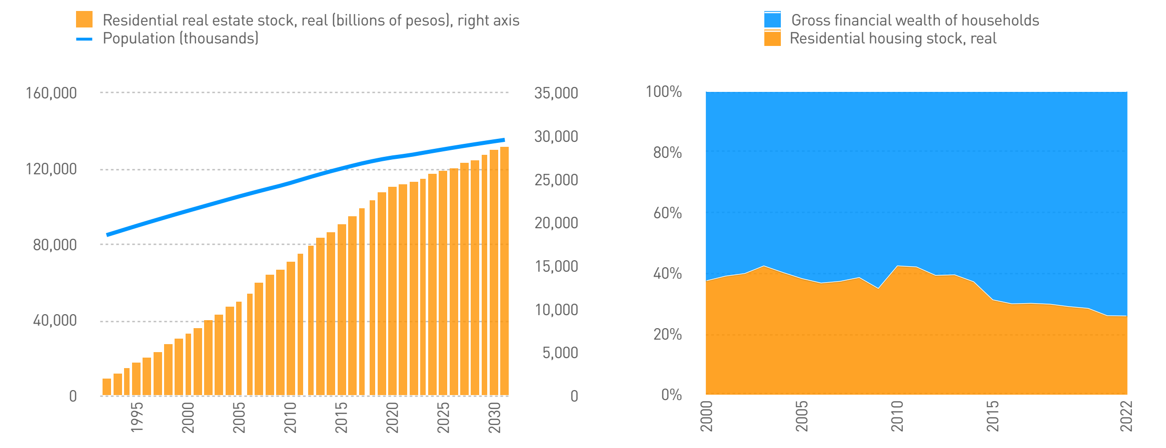
Analysis of relevant indicators for the development of insurance activities

Housing stock and new construction

Housing stock

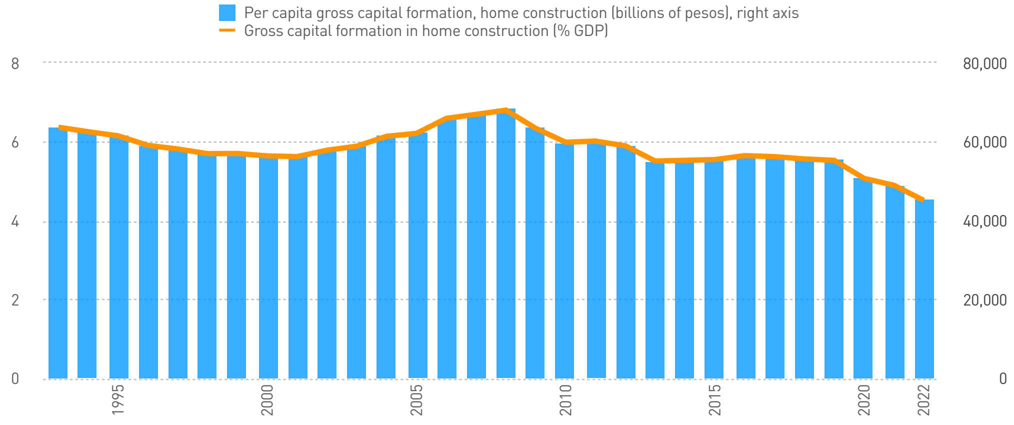
Every five years, the National Institute of Statistics and Geography (INEGI) compiles housing information, such as the structure, size and spatial distribution of the population through the *Public Census of Population and Housing.* In November 2022, the INEGI began an new public census aimed at the entire Mexican population[42]. According to the latest available data for December

Chart 2.2-a
Mexico: real residential housing stock,
gross financial wealth of households and population



Source: MAPFRE Economics (based on data from Oxford Economics, Haver Analytics and the United Nations)

Chart 2.2-b
Mexico: gross capital formation in home construction



Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

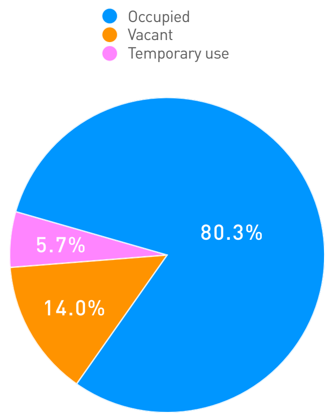
2020, the housing stock in Mexico has a total of 43,889,122 housing units, of which 35,219,141 are privately inhabited homes, 6,155,682 vacant and 2,514,299 in temporary use. Charts 2.2-c and 2.2-d present a percent distribution related to type for 2020, as well as a comparison between 2010 and 2020[43].

In turn, the figures obtained after the 2020 Population and Housing Census show progressive growth in the number of inhabited private homes, increasing by 6,611,573 homes during the 2010-2020 period, which represents an increase of 23.1%[44] (see Chart 2.2-e).

However, focusing on the distribution of this type of housing under the payment system in Mexico, the 2020 *National Housing Survey* (ENVI) shows disaggregated information in which 57.0% are owned and paid homes, 16.4% are rented, 14.2% have been lent by relatives, friends or employers, 10.7% are owned but are still pending payment, while the remaining 1.7% are in another situation (see Chart 2.2-f)[45].

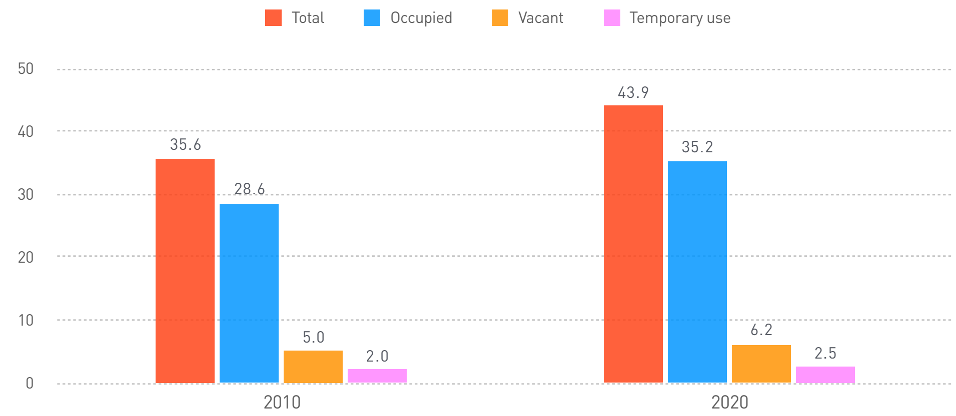
With regard to private rented housing, the aforementioned survey presents various reasons why people rent rather than buy. Among these causes are the ease of moving, the monthly payment which is usually lower than that of a mortgage and, the main reason, the lack of resources and difficulty in accessing credit to buy a home. With data as of 2020, rented housing in Mexico amounts to 5,775,939, of which only 54% has a current lease, according to information from the INEGI, the *Sociedad Hipotecaria Federal* (Federal Mortgage Society - SHF) and the *Instituto del Fondo Nacional para la Vivienda de los Trabajadores* (Institute of the National Workers' Housing Fund - Infonavit). Likewise, of the private homes owned (paid off or in the process of being paid), which total 23,878,578, 72.9%

Chart 2.2-c
Mexico: type of housing stock, 2020



Source: MAPFRE Economics (based on data from the National Information System of Housing Indicators, SNIIV)

Chart 2.2-d
Mexico: housing stock, 2010–2020
(millions)



Source: MAPFRE Economics (based on SNIIV data)

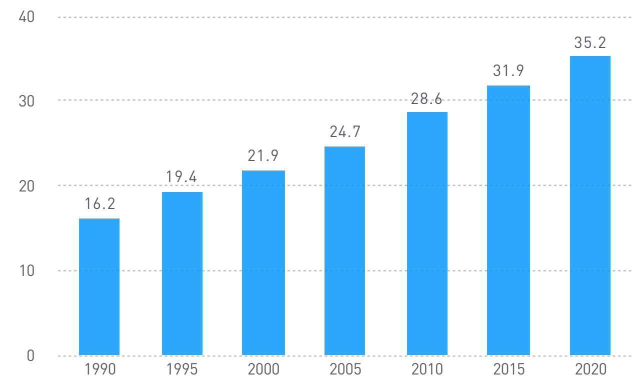
are deeded and, depending on how they were acquired, are distributed as shown in Chart 2.2-g.

New home construction and sales

According to the registry managed by housing developers included in the Unique Housing Registry (RUV), the number of registered housing units fell by -43.8% in 2022, compared to a 40.8% increase in the previous year, standing at 144,937 compared to 257,689 in 2021[46] (see Chart 2.2-h). A similar trend can be observed when analyzing the number of dwellings finally produced, which decreased notably over the years. As shown in Table 2.2-a, housing starts during the 2014-2022 period only showed positive increases in 2014, 2015 and 2021.

Housing production in Mexico has not been able to return to previous levels. The highest production year among the years included in the sample analyzed was 2015, reaching a total of 301,819 homes, compared to 135,581 homes built in 2022 (the lowest production year), with a drop of -55.1% in the period between 2015 and 2022. Chart 2.2-i illustrates that there has

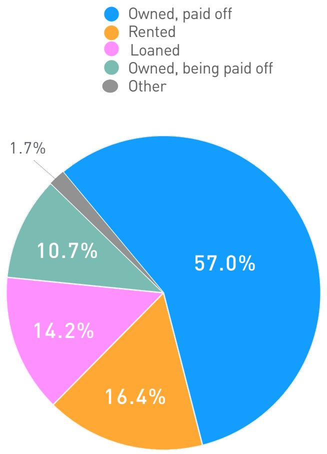
Chart 2.2-e
Mexico: change in occupied private homes
(millions)



Change	Occupied private homes
2020–2010	23.1%

Source: MAPFRE Economics (based on data from the National Institute of Geography and Statistics, INEGI)

Chart 2.2-f
Mexico: structure of occupied private homes, 2020
(%, payment situation)



Source: MAPFRE Economics (based on INEGI, SHF and Infonavit data)

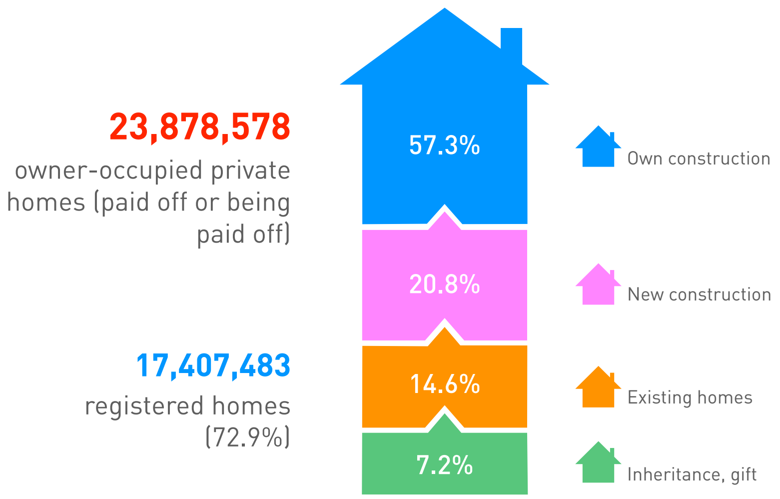
only been a positive variation in monthly production over the last two years in April (+1.1%), while the largest drop in housing took place in January, when housing production fell from 16,018 in 2021 to 8,232 in 2022 (-48.6%).

Home-linked insurance developments

Home-linked insurance includes policies that cover various damages, partial or total, depending on the policy taken out, which does not need to be linked to a mortgage loan, such as *residential or home insurance*[47]. Generally, this type of insurance can offer coverage for fire, earthquake, hydro-meteorological phenomena, third-party liability, theft, broken glass, medical advice and debris removal, among others, and, in particular, some insurance companies also offer extra coverage related to home assistance, such as locksmith, plumbing, electrical repairs, among others.

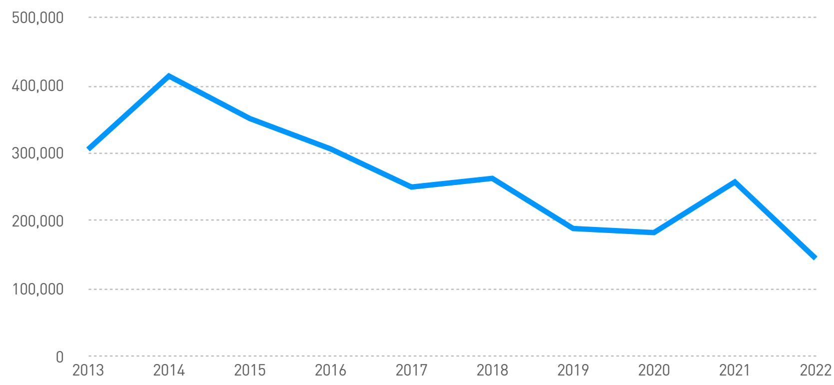
There is also what is called *home loan insurance* (SCV) in Mexico, not directly linked to home protection. This is an insurance protection contract of a financial nature whereby a portion of the credit risk assumed by a financial institution (bank) is transferred to a third party (insurer). In this way, the SCV protects banks and financial institutions that grant mortgage loans against losses arising from mortgage default[48]. Currently, there are two insurance companies in Mexico that sell this type of insurance[49].

Chart 2.2-g
Mexico: housing structure, 2020



Source: MAPFRE Economics (based on INEGI, SHF and Infonavit data)

Chart 2.2-h
Mexico: annual housing register
(thousands)



Source: MAPFRE Economics (based on data from the Unified Housing Register, RUV)

Mortgage balance and new mortgages taken out

Mortgage balance

Mexico's home financing and mortgage loan market differs from that of other countries. According to the National Housing Survey (ENVI), with data as of 2020, households' own resources are the prevailing means of financing home purchases (65.4%), followed by financing through Infonavit, which accounted for 18%. Thus, financing through private financial institutions represented only 9.1% compared to the other options (see Chart 2.2-j)[50]. Likewise, if the analysis is conducted on homes, whether new construction or resale, which together totaled 8,453,016 homes in 2020, Infonavit is the leader in acquisition, exceeding self-financing (see Chart 2.2-k). It is also worth noting that only 44.7% of homes, whether new construction or resale, had an outstanding loan that year.

New mortgages taken out

With information from the latest available annual indicators, Chart 2.2-l presents the relevant information on mortgage lending in Mexico through 2021. After 2014, when the mortgage market reached 609,400 loans, there has been a decline through 2021, when the market began to recover somewhat, although still without reaching the highs of 2014, with a total of 522,800 loans granted[51].

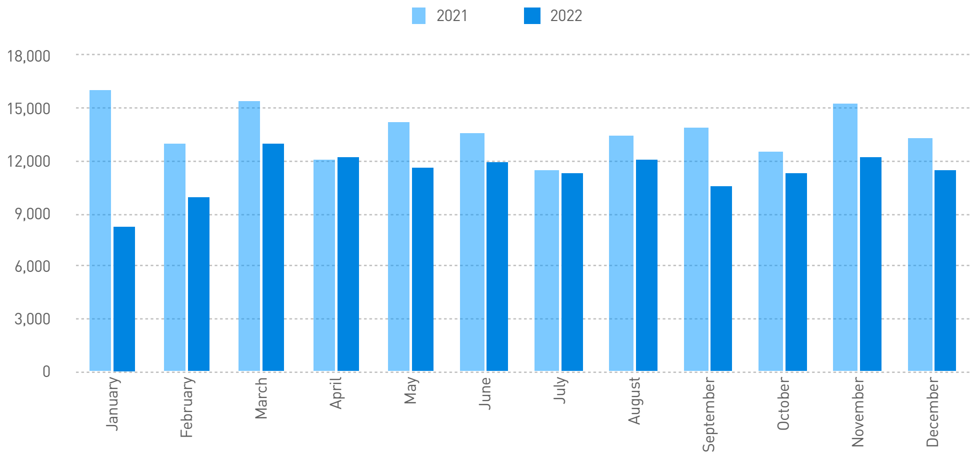
Meanwhile, in terms of mortgage loan placement, as shown in Table 2.2-b, although the number of publicly originated mortgage loans decreased by -0.3% in 2021 versus the previous year, there was a 1.6% increase in their amount of financing. On the other hand, commercial banks have registered growth in financing (29.2%) and in the number of loans granted, which will reach 151,200 loans in 2021, an increase of 25%.

Table 2.2-a
Mexico: housing production

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Housing production	285,271	301,819	264,102	217,196	210,351	181,036	151,366	164,002	135,581
Annual growth	14.7%	5.8%	-12.5%	-17.8%	-3.2%	-13.9%	-16.4%	8.3%	-17.3%

Source: MAPFRE Economics (based on data from the Unified Housing Register, RUV)

Chart 2.2-i
Mexico: monthly housing production

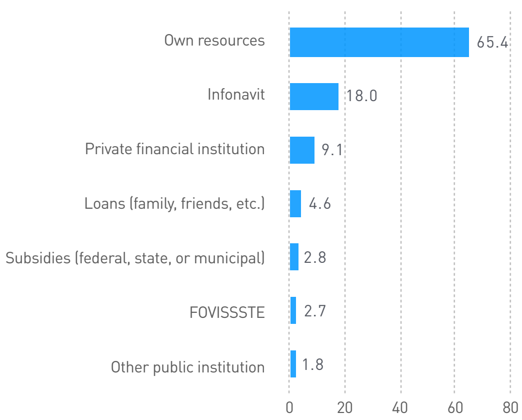


Source: MAPFRE Economics (based on RUV data)

However, in the accumulated period from January to June 2022, mortgage market placement dropped by -38.5% per annum for the number of loans and -7.5% in real terms per annum for the amount granted[52]. Institutions mirror this behavior: in terms of the number of loans, the decreases were -33.3%, 15.7%, and -32.4%, for commercial banks, the Housing Fund of the Institute of Social Security and Services for State Workers (Fovissste) and Infonavit, respectively. It should be noted that the amounts granted by commercial banks and Infonavit did not drop to the same extent as their number of loans.

According to the latest data published by Infonavit through the Credit and Housing Needs Survey, with information as of the third quarter of 2022, the percentage of interest of citizens in obtaining and using credit was 63% for construction on their

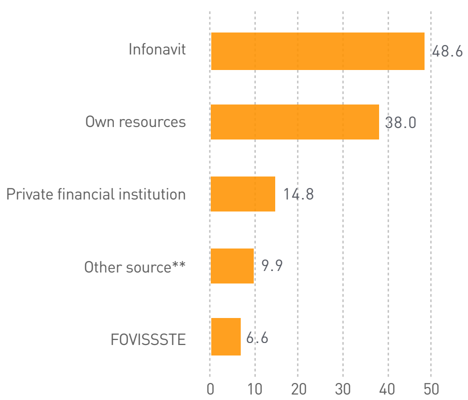
Chart 2.2-j
Mexico: owner-occupied private homes (owned outright/being paid off) by financing source, 2020*
(%)



Source: MAPFRE Economics (based on INEGI, SHF and Infonavit data)

*The total sum may be greater than 100% due to having more than one financing option.

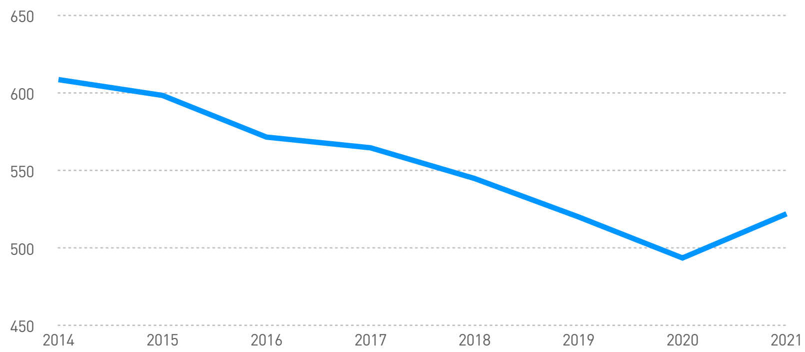
Chart 2.2-k
Mexico: owner-occupied private homes (new/existing) by financing source, 2020*
(%)



Source: MAPFRE Economics (based on INEGI, SHF and Infonavit data)

*The total sum may be greater than 100% due to having more than one financing option
**Includes public institutions, loans from family and friends, as well as federal, state and municipal subsidies

Chart 2.2-l
Mexico: number of mortgage loans
(thousands)



Source: MAPFRE Economics (based on data from BBVA Research, Mexico Real Estate Watch, First Half of 2022 report, Bank of Mexico, CNBV, Infonavit, Fovissste and Sedatu)

*Amount at constant prices in December 2020. Includes financing (loans and subsidies).

own land, 61% for home purchase and 57% for home improvement[53].

Development of Risk life insurance

Three types of insurance usually apply when taking out mortgage loans. The first is *life and total and permanent disability insurance*, which guarantees payment of the outstanding principal in the event of death or total and permanent disability of the policy and mortgage holder, subject to certain restrictions[54]. The second is *damage insurance*, which protects the asset that secures the loan against damages it may suffer from the risks to which it is exposed[55]. The third is *unemployment insurance*, which covers a certain number of loan payments if the borrower becomes involuntarily unemployed.

Reverse mortgage

In July 2013, in the State of Mexico, the reform of the Civil Code, Chapter III bis of the Reverse Mortgage, was enacted, putting

Table 2.2-b
Mexico: mortgage activity by organization
(thousands of loans and billions of pesos at 2021 prices, cumulative figures)

Mortgage origin	No. loans granted (thousands)			Financing amount (billions of pesos)		
	December 2020	December 2021	Annual change	December 2020	December 2021	Real annual change
Public institutions	372.6	371.6	-0.3%	213.1	216.6	1.6%
Infonavit	324.1	321.7	-0.7%	174.5	179.1	2.6%
Fovissste	48.5	50.0	3.0%	38.6	37.5	-2.8%
Private sector[1]	120.9	151.2	25.0%	207.6	268.3	29.2%
Banks[2]	120.9	151.2	25.0%	207.6	268.3	29.2%
Subtotal	493.5	522.8	5.9%	420.7	484.9	15.3%
Co-financing[3]	23.0	21.0	-8.6%			
Total (Subtotal - Co-financing)	470.5	501.8	6.6%	420.7	484.9	15.3%

Source: MAPFRE Economics (based on data from BBVA Research, Mexico Real Estate Watch, First Half of 2022 report, Bank of Mexico, CNBV, Infonavit, Fovissste and Sedatu)

1/ Other private credit institutions (such as non-regulated agents) are not included, as they do not have reliable public information.
2/ Includes loans for self-build housing, restructuring, acquisition, loans for former employees of financial institutions and loans for payment of liabilities and liquidity.
3/ Loans granted jointly with Infonavit and Fovissste.

Note: the update factor is based on the Housing Price Index of the Federal Mortgage Society, 2017 base = 100.

into effect the reverse mortgage also called a pensioner's mortgage or retirement mortgage. Subsequently, this mechanism has been implemented in other states such as Baja California, Mexico City, Sonora and Jalisco, among others. However, this is a product at the early phase within the Mexican financial market.

This financial product allows senior citizens who own a property to have liquidity without losing ownership while increasing their income in retirement. In general, according to information compiled in the civil code: (i) the age of the applicant and beneficiaries must be equal to or greater than 60 years; (ii) the reverse mortgage may be granted by authorized private and social institutions, individuals and public institutions; (iii) the loan may not be less than 70% of the commercial value of the property; (iv) the property must be appraised every two years to comply with the increase of the property's value over time; (v) the loan amount for which the retiree is approved shall be enough to cover their needs; (vi) the retiree will live in the mortgaged property, but may lease all or part of it, provided they are authorized to do so by the lender; and (vii) the loan may not be foreclosed before the death of the loan holder or beneficiary, if any.

Real estate investment instruments for insurance companies' investment portfolios

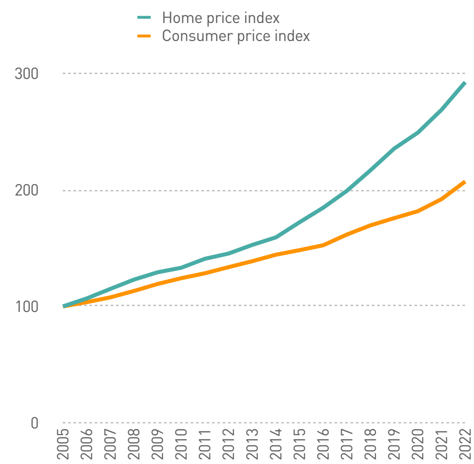
In Mexico, the mortgage market's size and level of development is relatively small compared to other more advanced economies, which affects the mortgage-backed securities market, which lacks an infrastructure and regulatory framework that promotes its development for now. Nonetheless, it is identified as one of the markets with great potential for organizations such as the European Mortgage Federation and the European Covered Bond Council[56].

Home prices and mortgage interest rates

Home prices

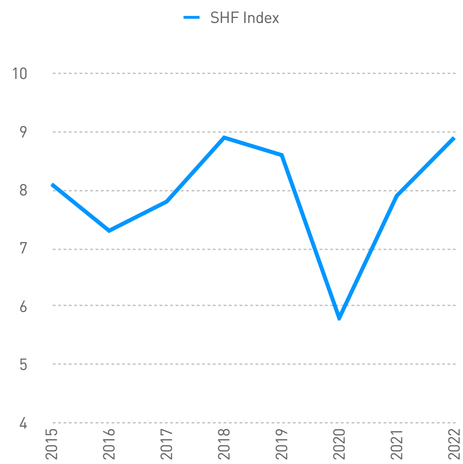
Comparing the development of average housing prices in the Mexican market with the evolution of the general price index in a

Chart 2.2-m
Mexico: home and consumer price indexes
(2005=100)



Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

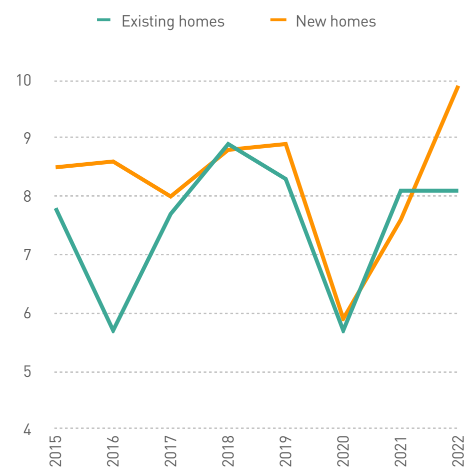
Chart 2.2-n
Mexico: SHF Housing Price Index
(appreciation/depreciation rates 2015–2022, %)



Source: MAPFRE Economics (based on SHF data) series since 2005 shows that both are trending upward, although housing prices increase above inflation throughout the series, with a greater divergence starting in 2014 (see Chart 2.2-m). Meanwhile, the housing price index published by SHF[57] in 2022 showed an 8.9% appreciation at the national level with respect to the previous year, while the average housing price was 1,535,458 pesos at current prices[58] (see Chart 2.2-n). In terms of type, in 2022, new homes increased more than resale homes, by 9.9% and 8.1%, respectively. Similarly, if differentiated by class, affordable-social housing increased slightly less than middle-residential housing during this same period (8.7% and 9%, respectively).

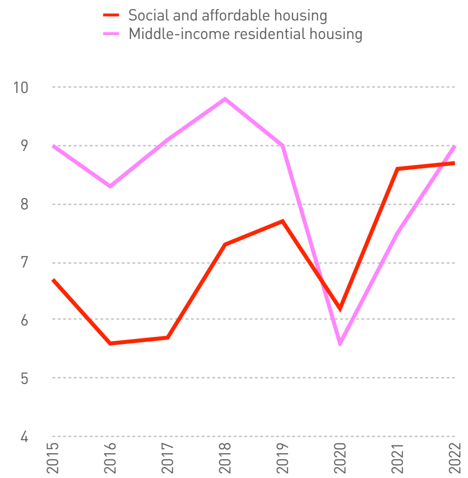
Meanwhile, Charts 2.2-o and 2.2-p show the cumulative annual data during the period from 2015 to 2022 of homes classified by type and class. The comparison of new and resale homes reflects that, with the exception of 2018 and 2021, the rates for new homes have continuously been higher than those for resale homes. In addition, with respect to their classification, the middle-residential homes have outperformed economic-social housing throughout these years, except in 2020 and 2021, where economic-social housing registered 6.2% and 8.6%, versus the 5.6% and 7.5% in those two years.

Chart 2.2-o
Mexico: SHF Housing Price Index
by type of home
(appreciation/depreciation rates 2015–2022, %)



Source: MAPFRE Economics (based on SHF data)

Chart 2.2-p
Mexico: SHF Housing Price Index
by category of home
(appreciation/depreciation rates 2015–2022, %)



Source: MAPFRE Economics (based on SHF data)

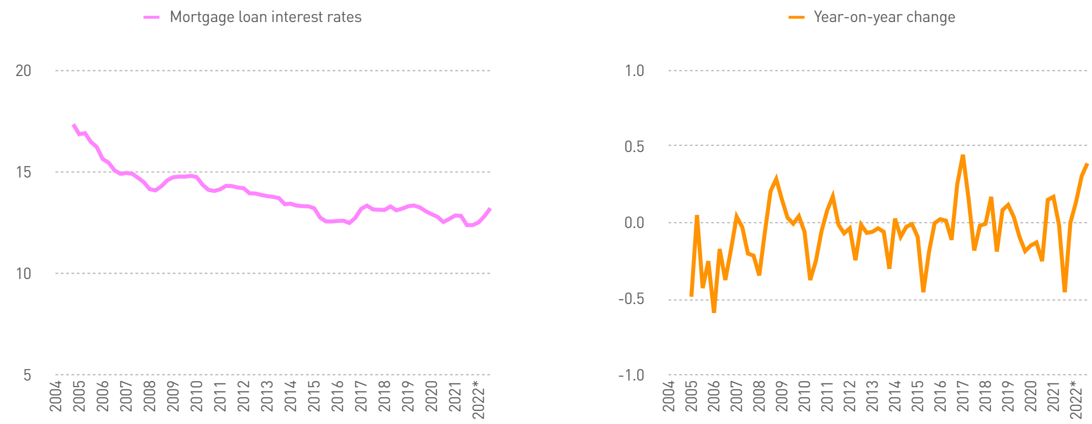
Mortgage interest rates

Chart 2.2-q illustrates the development of the two interest rates for home acquisition since 2004. According to this information, a maximum of 17.4% was observed at the end of 2004, following a downward trend after that point until the floor of 12.4% in Q2 2021. However, in 2022 interest rates have rebounded as a result of the implementation of a tightening monetary policy that seeks to contain inflationary pressures, reaching 13.2% in Q3 of this year.

Household credit gap

Concerning the changes in the household credit gap with respect to its average level (as a percentage of GDP), it is evident that, in Mexico, from 2001 to 2017, there is an extensive period in which the volume of credit to households is above its long-term average, reaching its peak in 2007. From that point on, it began to nar-

Chart 2.2-q
Mexico: mortgage loan interest rates
(interest rates, %; year-on-year change, %)



Source: MAPFRE Economics (based on Bank of Mexico, Oxford Economics and Haver Analytics data)
*Data for the third quarter

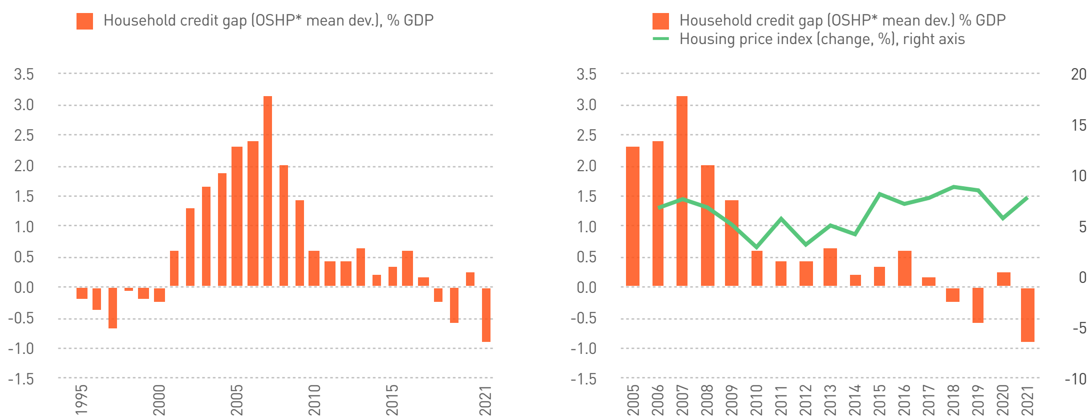
row, as reflected in the level of prices, which slowed down between 2008 and 2010, but without actually reversing (see Chart 2.2-r).

Residential leasing

As mentioned above, according to the *National Housing Survey* (ENVI), of the 35.3 million private homes inhabited in 2020, 16.4% were rented (5.7 million homes). The main reason for renting a home, agreed upon by the majority of the population, is the lack of resources and difficulty accessing credit to purchase a home[59].

Meanwhile, the 2022 annual housing report published by Infonavit also presents relevant information on rental housing in Mexico. Based on the ENVI 2020, *rental housing* is considered the total of homes under a formal lease arrangement and homes loaned by family members,

Chart 2.2-r
Mexico: household credit gap



Source: MAPFRE Economics (based on BIS, Oxford Economics and Haver Analytics data)
*OSHP = One Sided Hodrick-Prescott

friends or through work. In conclusion, and taking into account both modalities, 30.6% of homes in Mexico are rented, where the states with the highest percentage of rental homes are Mexico City, Jalisco, Colima and Baja California Sur, with percentages between 44% and 36%[60].

In addition, Infonavit conducts quarterly surveys on home loan needs, gathering information on the money people spend on rent payments. According to the survey results released as of Q3 2022, the median rent payment grouped by income level only increased over Q3 of the previous year. This increase was in the group of households earning minimum wage, which amounted to 2,000 pesos, that is, 500 pesos more than the same period of the previous year[61] (see Table 2.2-c). Thus, based on the information gathered through these surveys, the data as of Q3 2021 indicated that of the households earning more than six minimum wages, the maximum amount paid by 75% of the population at this income level was 8,000 pesos per month in rent, while on the same date in 2022, this figure increased by 1,000 pesos to 9,000 pesos per month.

Affordability and home acquisition assistance programs

In Mexico, there are numerous national agencies that offer subsidy and assistance programs for housing acquisition, construction, improvement, repair, expansion and access to financing, among which the National Housing Commission (CONAVI), the National Workers' Housing Fund Institute (Infonavit) and the Housing Fund of the Institute of Social Security and Services for State Workers (Fovissste)[62] stand out. Along the same lines, the Federal Mortgage Society (SHF) is the government bank that promotes the development of the primary and secondary housing markets through guarantees or various financial instruments aimed at housing construction, acquisition and improvement[63]. It is a "second floor" bank (that is, it does not deal directly with the customer), offering loans for remodeling, expansion, rehabilitation, home improvement and the use of eco-technologies with various programs aimed at vulnerable groups to facilitate their access to credit.

Table 2.2-c
Mexico: rent payment classified by income level
(pesos)

	Average in third quarter of 2022	Average in third quarter of 2021
Up to 1 minimum wage (mw)	2,000	1,500
Between 1 and 2 mw	2,000	2,500
Between 2 and 3 mw	2,500	2,500
Between 3 and 4 mw	3,000	3,500
Between 4 and 5 mw	2,500	4,100
Between 5 and 6 mw	3,000	3,700
More than 6 mw	5,000	5,300

Source: MAPFRE Economics (based on Infonavit data)

Mexico in the IRPII ranking

Finally, as shown on Table 4.2-b, Mexico places 31 in the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) ranking, calculated by MAPFRE Economics for 43 countries for which this synthetic indicator could be calculated (see chapter 4 of this report). Among the different components weighted to calculate the indicator, *demographic growth* is the largest contributor to improving Mexico's position in the sample of countries analyzed. According to United Nations estimates, the population of Mexico in 2023 is about 128.5 million and is estimated to grow to 143.8 million by mid-century to then start on a downward trend that would bring it to 115.6 million by the end of the century[64]. However, it should be noted that the components of *disposable income growth* and *gross capital formation in housing* cause it to fall behind (see Table 4.2-a).

2.3 Brazil

Introduction

In the case of Brazil, the estimated housing stock in 2021 reached 1.4 trillion reals[65], about 80% of GDP, which contrasts with the total financial asset value estimated at 9 trillion reals[66] (483% of GDP). The evolution of the housing stock over the last two decades in this country has grown in real terms, while its relative weight with respect to total assets has decreased slightly over the same period (see Chart 2.3-a). Meanwhile, the analysis of the gross capital formation in housing construction in relative terms versus the GDP since 1995 shows a period from 1998 to 2017 in which it presents a downward trend from levels around 4% to 3%. Since then, this parameter has been growing to levels close to 5%, with a downturn between 2014 and 2016, which is observed again in 2022 (see Chart 2.3-b).

Analysis of relevant indicators for the development of insurance activities

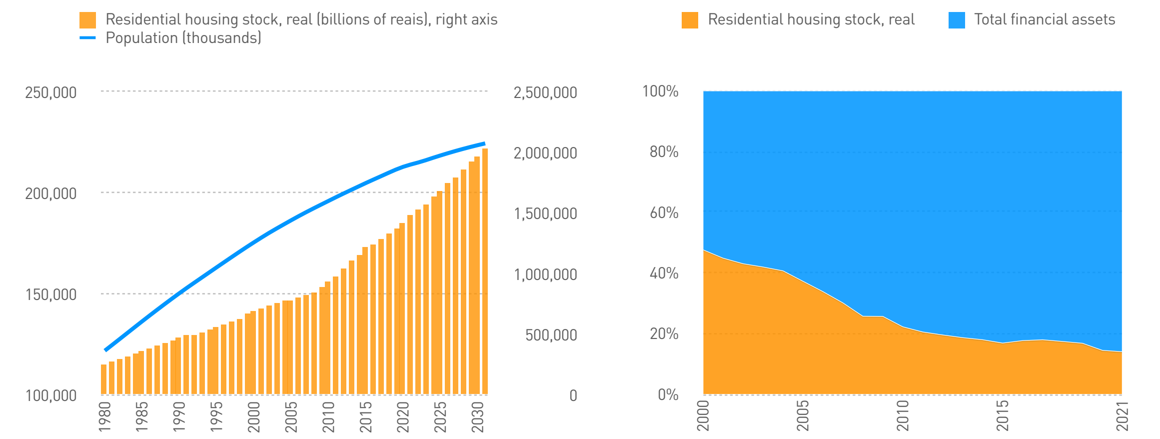
Housing stock and new construction

Housing stock

According to data from the Instituto Brasileiro de Geografía e Estatística (IBGE), the housing stock in Brazil stood at 72,273,000 housing units in 2021, which, compared to 44,795,000 in 2000, represented 61.3% growth (see Chart 2.3-c). In 2021, the housing stock grew by approximately 1% year-on-year, reflecting a slowdown that has been discernible since 2011, with the exception of 2018. It is important to emphasize the base effect in the growth rates, which would indicate that the rate of new housing production has remained practically constant over the last few years.

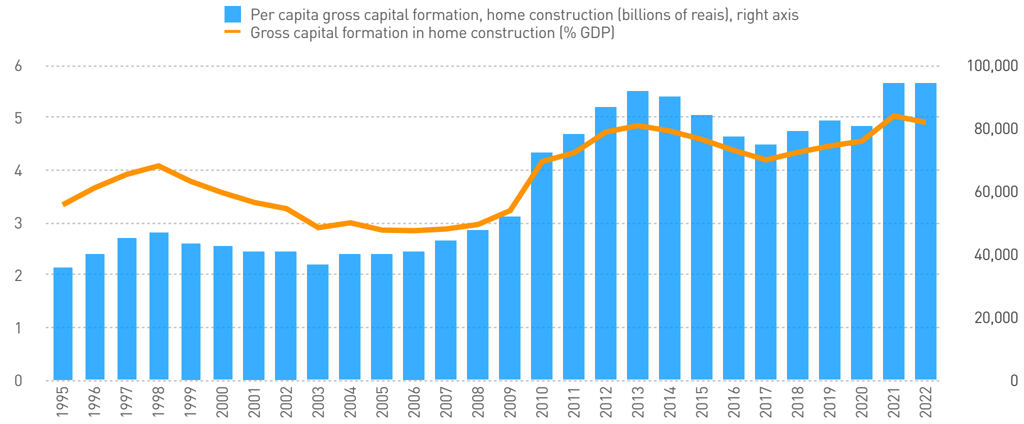
With regard to occupancy characteristics, in 2019, homeownership in Brazil reached, on average, 71.2% of the housing stock, while rentals represented 19.4%, the remaining 9.4% being mainly homes on loan (see Chart 2.3-d). It should be noted that, since 2016, the IBGE has subclassified the property characteristic into *paid* and *paying* (in the process of payment); the percentage of paid in 2019 is a considerably high 91% (only data from 2016-2019 is available due to the pandemic). This data makes sense considering the relative instability of a significant percentage of existing housing in Brazil, where ownership is often based solely on the land and construction is progressive according to the family's investment capacity, coinciding with the use of materials of varying quality, which are infe-

Chart 2.3-a
Brazil: real residential housing stock, gross financial wealth of households and population



Source: MAPFRE Economics (based on data from Oxford Economics, Haver Analytics and the United Nations)

Chart 2.3-b
Brazil: gross capital formation in home construction



Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

rior in times of economic hardship and vice versa.

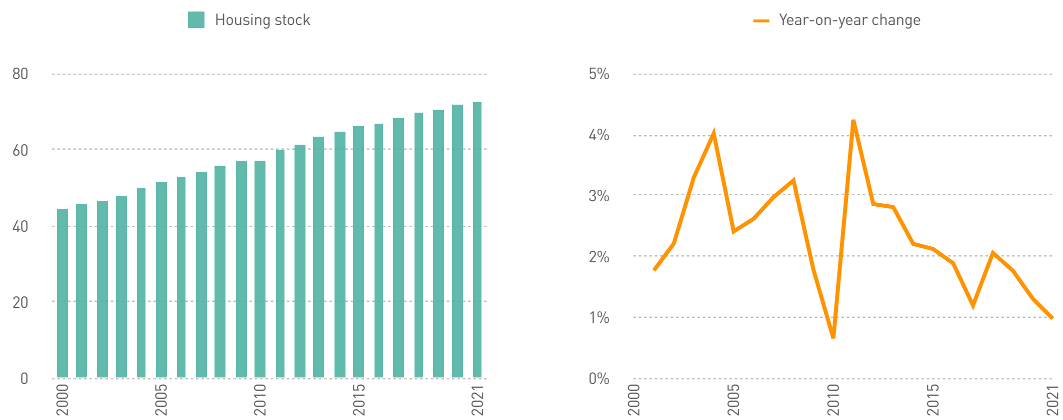
New home construction and sales

The Câmara Brasileira da Indústria da Construção (CBIC), in its *Indicadores Imobiliários Nacionais* report for Q3 2022, analyzed 199 cities in Brazil. In the absence of aggregate data for the country as a whole, an analysis of the development of this sample shows that supply grew in Q4 2021, versus the previous quarter, but has since declined, mainly due to the limited new housing launches that have taken place throughout 2022 (see Chart 2.3-e)[67]. In Q3 2022 the total available supply in the sample of cities was 257,913 units (see Chart 2.3-f) and 71,250 units were sold (see Chart 2.3-g). However, it is evident that the available supply has remained very close to the 250,000 units registered in the cities sampled since 2017 (see Chart 2.3-h).

Home-linked insurance developments

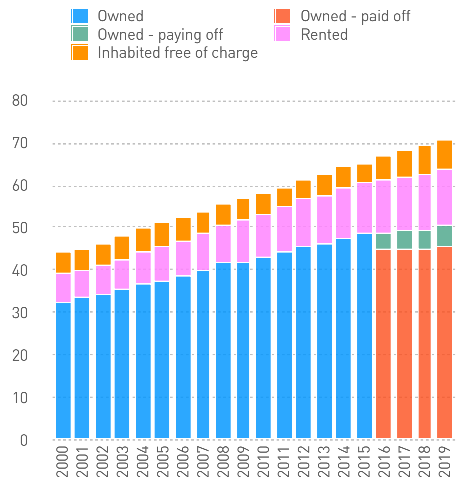
Brazil has a variety of insurance coverages that protect the various agents participating in the real estate market. These include

Chart 2.3-c
Brazil: housing stock
(number of homes, millions; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Instituto Brasileiro de Geografía e Estatística, IBGE)

Chart 2.3-d
Brazil: breakdown by type of housing occupancy
(%)

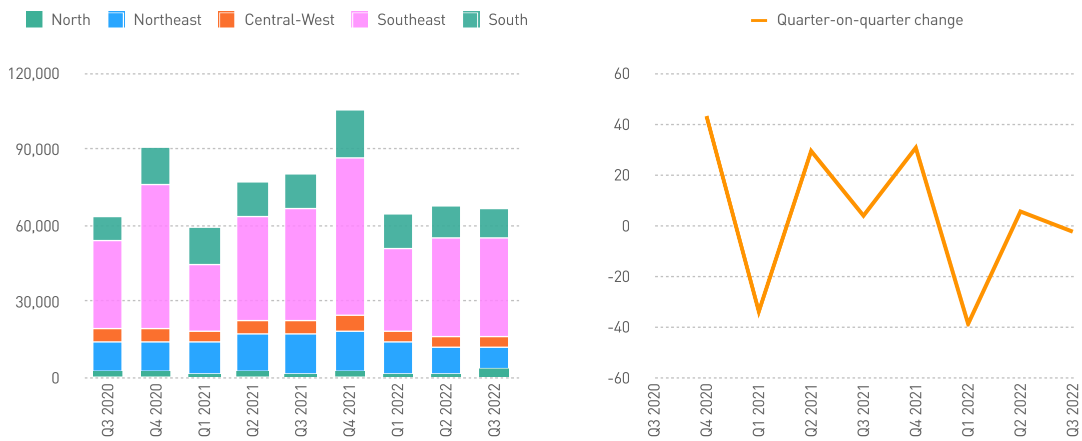


Source: MAPFRE Economics (based on IBGE data)

home insurance (housing insurance), multi-risk residential and condominium insurance (*compreensivo residencial* and *compreensivo condomínio*), theft insurance, engineering insurance and rent guarantee insurance (*seguro fiança locatícia*). The first of these (home insurance) is mandatory insurance linked to real estate financing, therefore, this product will be described in the section dedicated to life insurance, also taking into account that this product includes coverage for physical damage to the property. In addition to this mandatory insurance for real estate loan applicants, there are other types of insurance in the Brazilian market that protect against damages to the property, such as the products called *seguro compreensivo residencial* and *seguro compreensivo condomínio*, which combine several lines of insurance or modalities in the same policy.

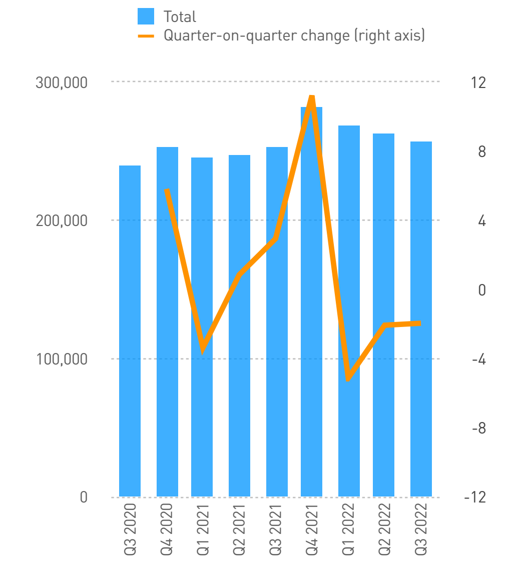
On the other hand, residential multi-risk insurance guarantees the property's coverage and may offer protection of the contents. The most common type of coverage is against fire, lightning and explosion. In addition, insurance is provided for damages caused by floods, fires in rural areas, windstorms, vehicle collisions, aircraft collisions, electrical damage and family liability, among others. The multi-risk condominium insurance, in addition to providing coverage for the building, which covers the autonomous units, also covers the common areas of the condominium. As with residential insurance, the most common coverage is against fire, lightning and explosion, although other coverage may be offered. In Brazil, it is mandatory to take out fire or destruction insurance, total or partial, for buildings divided into au-

Chart 2.3-e
Brazil: completed residential units
(units, quarter-on-quarter change, %)



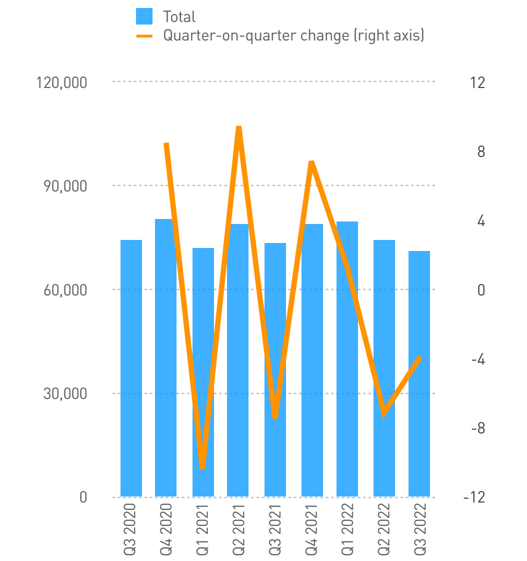
Source: MAPFRE Economics (based on data from the Câmara Brasileira da Indústria da Construção, CBIC)

Chart 2.3-f
Brazil: final offer available



Source: MAPFRE Economics (based on CBIC data)

Chart 2.3-g
Brazil: residential units sold

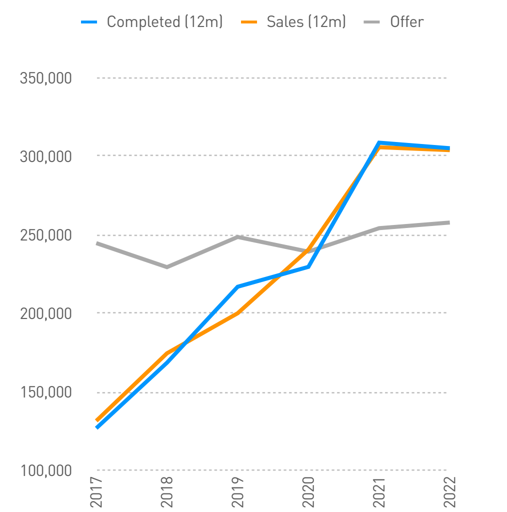


Source: MAPFRE Economics (based on CBIC data)

tonomous units and for personal and real property belonging to legal entities. This coverage is included in both insurance modalities.

The abundance of credit existing at the beginning of the second decade of this century generated an increase in real estate demand, which also translated into an increase in the number of residential multirisk insurance policies taken out, peaking in Q3 2013, with 23.9% growth, ending the year with a slightly lower but no less significant rate of 23.4%. In subsequent years, growth slowed, with increases in some quarters of less than 10%. In 2018, which saw a significant increase in real estate sales, written premiums again increased by over 10%, ending the year with a 13% increase and a premium volume of R$2.997 billion (US$580 million). In 2019, growth slowed again to a -3.1% drop in the first half of 2020, after which sales in this line of business recovered, ending 2022 with a premium volume of R$4.484 billion (US$868 million) and year-on-year growth of 15.4%. This indicates that, despite rising interest rates, real estate sales continue to climb in that country (see Chart 2.3-i).

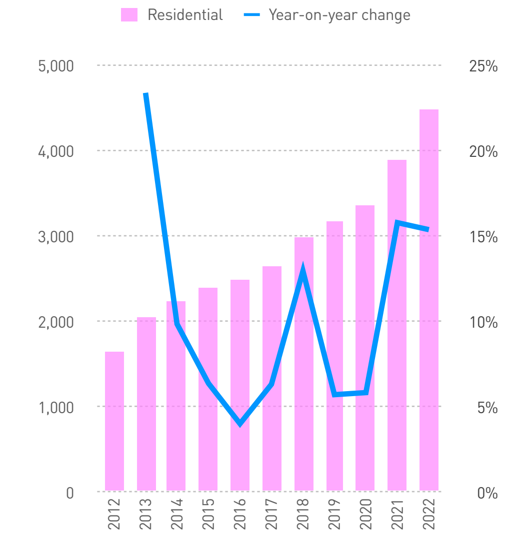
Chart 2.3-h
Brazil: completed units (12m) and cumulative sales vs. final offer available



Source: MAPFRE Economics (based on CBIC data)

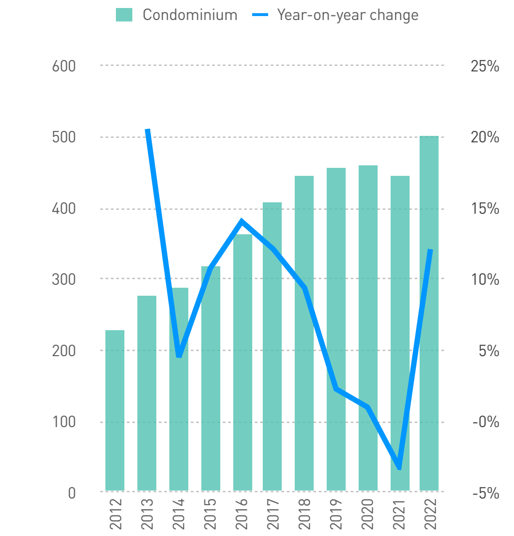
With respect to multirisk condominium insurance, fiscal years 2012 and 2013 experienced double-digit increases in written premiums, up to 20.6% in December 2013, beginning Q1 2014 with a -3.6% decline, before returning to significant growth in

Chart 2.3-i
Brazil: residential multirisk insurance premiums
(premiums, millions of reais, year-on-year change, %)



Source: MAPFRE Economics (based on SUSEP data)

Chart 2.3-j
Brazil: condominium multirisk insurance premiums
(premiums, millions of reais, year-on-year change, %)



Source: MAPFRE Economics (based on SUSEP data)

sales from early 2015, with a period of lower growth in 2019 and 2020 and declines throughout 2021 and early 2022 (see Chart 2.3-j). Figures for the end of 2022 indicate that condominium insurance has recovered, with premium volume up 12.1% to R$501 million (US$97 million).

Furthermore, real estate construction is protected by engineering insurance; this insurance line covers risks to the insured property arising from accidents that may damage constructions, assemblies and machines in operation. The basic mandatory coverage is civil works in construction and/or installation and assembly, but the policyholder may choose to obtain additional coverages. Premium income trends in this line of business over the last decade have reflected annual declines through 2018, with significant increases occurring throughout 2019, when premiums grew by 78.4%, in line with the recovery of the civil construction sector and the resumption of infrastructure projects in the country. Although 2020 began with significant declines, sales recovered in the last quarter of the year ending the year with a significant increase of 20%, positive performance that has continued in subsequent quarters, accumulating premium volume of R$885 million (US$171 million) at the end of 2022, a 27.8% increase over the previous year.

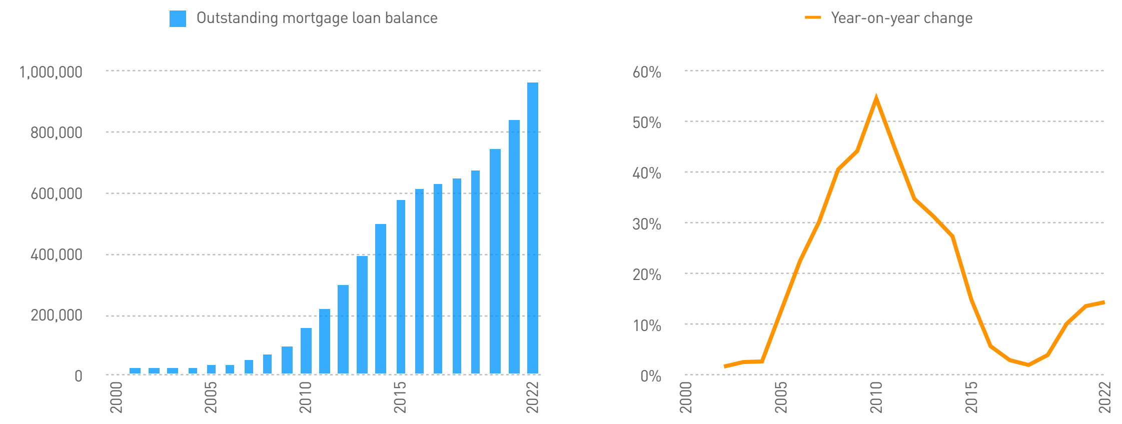
Mortgage balance and new mortgages taken out

The outstanding mortgage loan balance in Brazil at the end of 2022 reached R$966.576 billion (around 50% of Brazilian real GDP), with 14.6% year-on-year growth (see Chart 2.3.k). It should be noted that this balance has experienced significant double-digit growth since 2005, except in the period between 2016 and 2019 when growth was lower but positive.

Development of Risk life insurance

Real estate financing in Brazil is protected by insurance that is intended to pay the installments on the policyholder's debt, corresponding to the outstanding balance, due on the loss date and related to financing for the acquisition, renovation or construction of the property, or the replacement of the financed property in the event of a covered loss, according to the policy taken out. There are two modalities for this insurance.

Chart 2.3-k
Brazil: mortgage balance
(outstanding mortgage balance, millions of reais; year-on-year change, %)



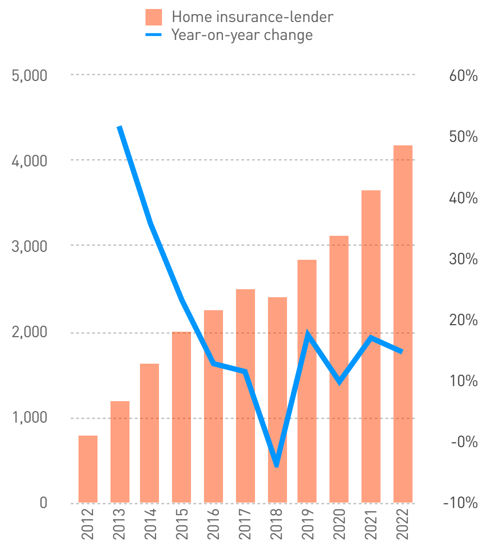
Source: MAPFRE Economics (based on Banco Central do Brasil and Haver Analytics data)

The first is the *home insurance* of the Housing Financial System (*Seguro Habitacional do Sistema Financeiro da Habitação*, SH/SFH), a unique policy that was in force until December 31, 2009 and was replaced thereafter by equivalent coverage granted by the *Fondo de Compensacion de Variacion Salarial* (Salary Variation Compensation Fund, a public fund linked to the National Treasury).

The second of these modalities is *home insurance in market policies* (*seguro habitacional em apólices de mercado*, SH/AM), managed by private insurers in the collective and individual modalities. This is mandatory insurance that must have two coverages: (i) death or permanent disability (MIP), which pays the debt in case of death due to natural or accidental causes, or total permanent disability due to accident or personal illness, and (ii) physical property damage (DFI), which covers the repair or reconstruction of the insured property in case of fire, lightning or explosion, windstorm, total collapse, partial collapse, the threat of collapse, roof collapse, and flooding or saturation, even if caused by rainfall. Insurance companies may offer other coverages in SH/AM policies on an optional basis. The effective period of the insurance must be the same as the property financing, and the start and end dates of the coverage must be specified in the policy. To calculate the premium rates for insurance corresponding to MIP risks, rates established based on age, age bracket or average age of the policyholder group must be applied to the maximum coverage limit. Each month, the maximum coverage limit will be determined by the value of the outstanding financing balance on the property, taking into account all past due payments and any amortization already paid.

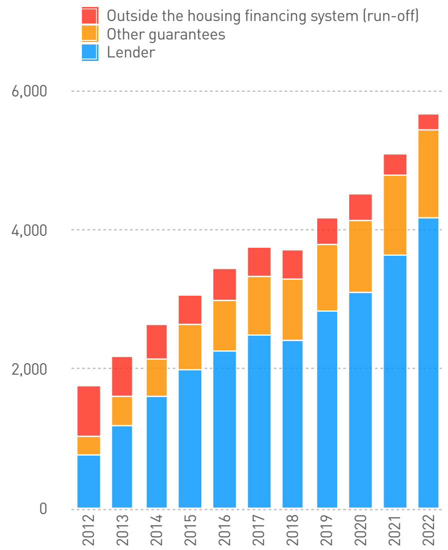
The development of coverages for death and disability risks, which are posted under the homeowner-lender insurance line, has been very positive over the last decade, maintaining double-digit increases over almost the entire period, with the exception of a -3.7% decline at the end of 2018. This is a product whose performance is closely linked to the loan portfolio. As indicated above, early in the second decade of the century, there was a significant credit expansion for real estate construction and acquisition in Brazil, with a 22.3% increase in the volume of loans dedicated to purchasing real estate in 2012 and 40.7% in 2013. This performance is reflected in the growth of this type of insurance (see Chart 2.3-l), which expanded by 84.6% in 2012 and 51.7% in 2013. Growth began to slow

Chart 2.3-l
Brazil: home insurance premiums - lender
(premiums, millions of reais; year-on-year change, %)



Source: MAPFRE Economics (based on SUSEP data)

Chart 2.3-m
Brazil: breakdown of home insurance premiums
(premiums, millions of reais)



Source: MAPFRE Economics (based on SUSEP data)

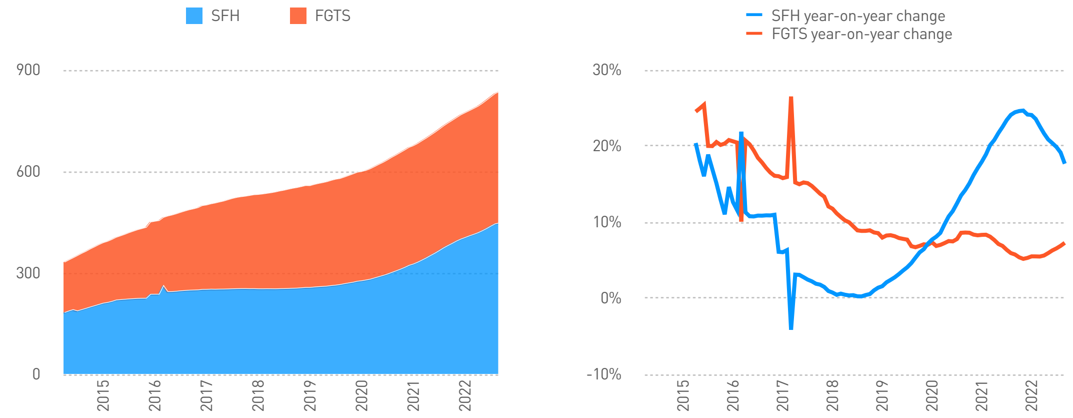
after 2015, until the drop in December 2018, subsequently recovering the growth trend, which has been maintained, with some peaks, through the end of 2022, when the premium volume reached R$4.187 billion (US$811 million). On the other hand, physical property damage statistics, presented in the home insurance-other coverage line (see Chart 2.3-m), indicate that this coverage has followed a very similar trend to the lender mode, since both are written in the same policy, although the amounts of this coverage are lower, reaching R$1.25 billion (US$241.8 million) at the end of 2022.

Reverse mortgage

The reverse mortgage is not yet regulated by a federal law in Brazil. However, there are two bills in progress on the matter in the National Congress: bill PLS 52/2018 (which amends Law 9,514 on fiduciary alienation of real property to institute the reverse mortgage on properties for adults of 60 years) presented in the Senate in 2018, and PL 3096/19 of 2019 (which amends the Elderly Statute, Law 10,741/03, and creates the reverse mortgage system for people 60 years of age and older) in the Chamber of Deputies. These bills differ in that the Senate bill addresses such regulation within the fiduciary alienation law, which generates a certain legal and terminological gap, since mortgage and transfer are different concepts. The Senate Plenary currently has stored the first since December 22, 2022, while the second has been awaiting the designation of a speaker in the Urban Development Commission since June 2, 2021.

At the same time, the Ministry of Economy of Brazil continues to study the mechanisms for its development from a regulatory and financial perspective. In fact, this agency estimates that this credit model could reach R$3.5 billion for the Brazilian economy. This proposal is mentioned in the informative note on the objectives and challenges for 2021, as part of the initiatives to curb the effects of the pandemic; however, it has not been considered again since then[68].

Chart 2.3-n
Brazil: SFH and FGTS mortgage loan stock
(loan stock, billions of reais; year-on-year change, %)



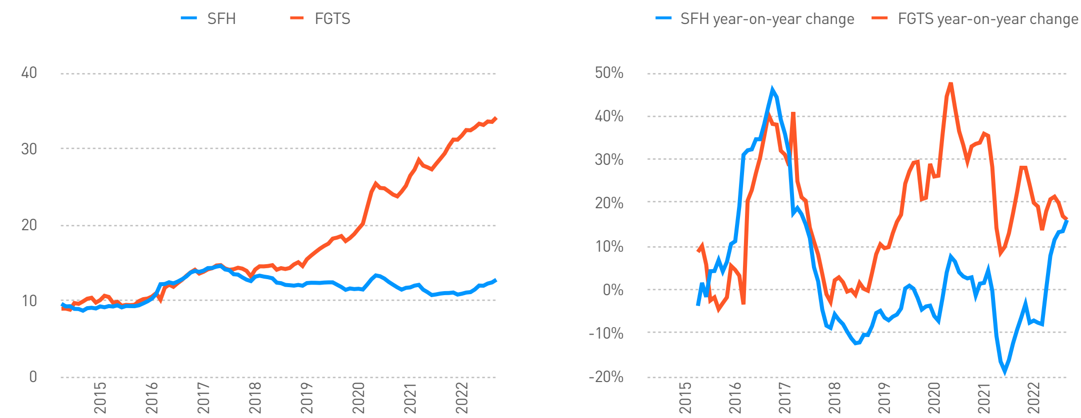
Source: MAPFRE Economics (based on Banco Central do Brasil data)

Real estate investment instruments for insurance companies' investment portfolios

The resources used to back housing credit in Brazil basically comprise the deposit sources of the *Sistema Financeiro da Habitaçao* (SFH, created in 1964), the *Sistema Brasileiro de Poupança e Empréstimo* (SBPE, which requires financial institutions to allocate a minimum of 65% to real estate financing) and the *Fundo do Garantia por Tempo de Serviço* (FGTS, 8% of the minimum monthly salary for an employee in the formal sector which is deposited into an account in their name in the only public bank, Caixa Econômica Federal).

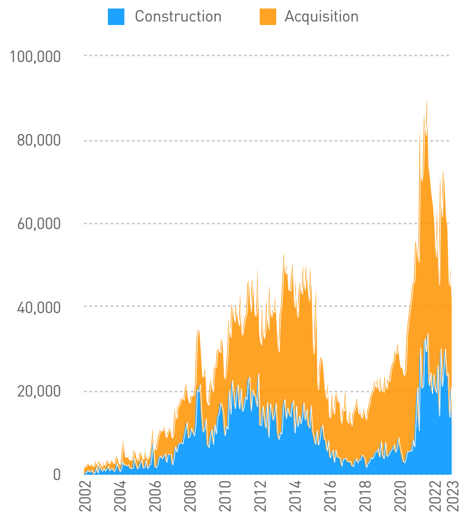
Meanwhile, since 1997, the *Real Estate Financial System* (SFI) has regulated the instruments that connect real estate credit to the capital market, which are the *Fundo de Investimento Imobiliário* (FII), the *Fundo de Investimento em Direito Creditório* (FIDC), *Letras de Crédito Imobiliário*

Chart 2.3-o
Brazil: SFH and FGTS troubled assets
(troubled assets, billions of reais; year-on-year change, %)



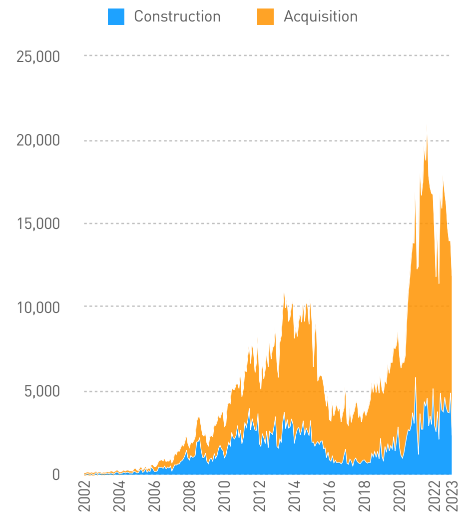
Source: MAPFRE Economics (based on Banco Central do Brasil data)

Chart 2.3-p
Brazil: units financed monthly with SBPE resources
(units financed)



Source: MAPFRE Economics (based on ABECIP data)

Chart 2.3-q
Brazil: amount financed monthly with SBPE resources
(millions of reais)



Source: MAPFRE Economics (based on ABECIP data)

(LCI, unsecured mortgage bonds), *Certificados de Recebíveis Imobiliários* (CRI, equivalent to Mortgage Backed Securities, MBS), and *Letras Imobiliárias Garantidas* (LIG, equivalent to Covered Bonds). With the exception of LCIs, the other SFI instruments continue to be used predominantly in the non-residential real estate market[69].

The Central Bank of Brazil publishes data on the credit stock (sum of amounts due, past due and in default) of the financing lines via SFH and FGTS for individuals and legal entities, so that, when aggregated, the stock for SFH, in September 2022, was R$ 446.913 billion, while the FGTS line maintained a stock of R$388.1 billion (see Chart 2.3-n). Thus, from April 2014 through August 2022, the stock of SFH and FGTS loans has grown by 145% and 160%, respectively. Similarly, it can be noted that year-on-year the mortgage loan stock for both lines has always grown, and it is relevant that the FGTS trend is constant in recent years, remaining above 7-8%, while the SFH since the end of 2017 has followed a positive growth trend, slowing down in November 2021 then following a downward line, although it is still higher, in the vicinity of 17-18%.

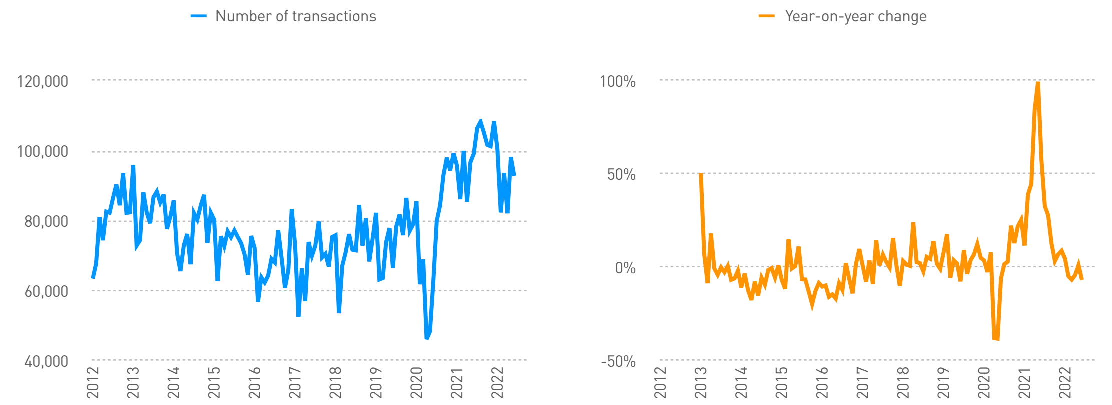
Bad debts and delinquency rate

Meanwhile, problem assets (which include credit operations more than 90 days past due, those restructured that are within the twelve-month period for remediation, and those classified by financial institutions between risk levels "E" and "H") have grown significantly, especially in the FGTS credit line, which, in September 2022, stood at R$34.09 billion, representing a 282% growth compared to April 2014. Despite this high growth level, it is worth mentioning that it represents 8.78% of the FGTS portfolio; the same ratio for the SFH is 2.85% (see Chart 2.3-o).

Units financed with Brazilian financial system (SBPE) savings accounts

The *Associação Brasileira das Entidades de Crédito Imobiliário e Poupança* (ABECIP) and the Central Bank of Brazil have a database of units financed with Brazilian financial system (SBPE) savings accounts. According to that information, by January 2023, the number of SBPE fi-

Chart 2.3-r
Brazil: real estate transactions in the state of São Paulo
(number of transactions; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Registro de Imóveis do Brasil, RIB)

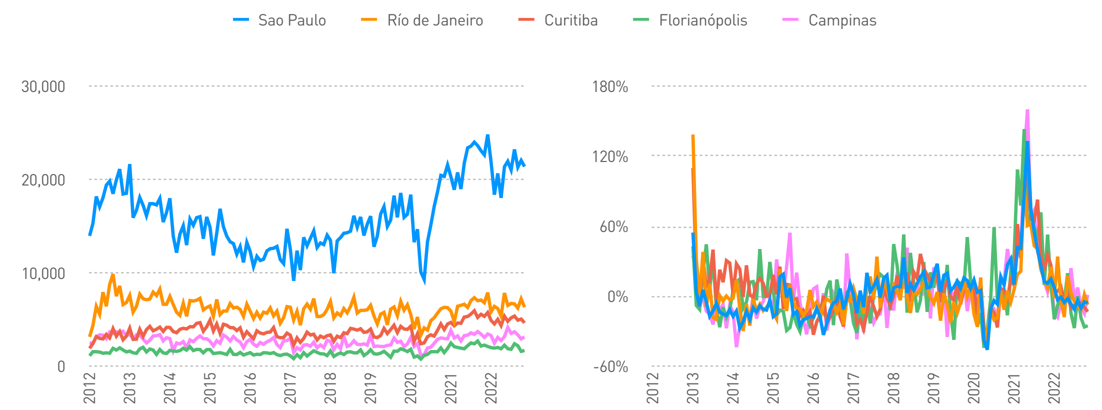
nanced units was 41,315 (11,881 for construction and 29,434 for acquisition), valued at R$ 11.88 billion reals (2.346 and 9.53, respectively). It must be noted that the SBPE-financed units for construction have begun to drop since the start of 2015, at levels very similar to those that would be found later in Q1 2020, fundamentally due to the economic effects of the pandemic. However, this type of financing has recovered since 2021, maintaining on average 20,000 units per month (see Charts 2.3-p and 2.3-q).

Real estate transactions, home prices and mortgage interest rates

Real estate transactions

The *Registro de Imóveis do Brasil* (RIB) publishes monthly series about real estate transactions for the State of São Paulo and at the municipal level for the main cities in Brazil. In this sense, the RIB has revealed a notable increase in real estate transactions (purchase-sale, adjudication, assignment, inheritance, amicable or contentious divi-

Chart 2.3-s
Brazil: municipal real estate transactions
(number of transactions; year-on-year change, %)



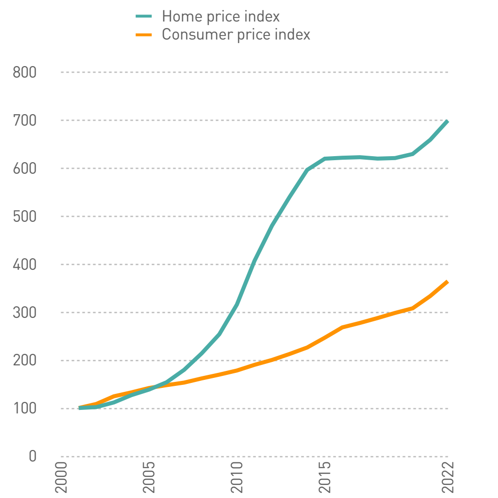
Source: MAPFRE Economics (based on RIB data) sion, etc.) throughout 2021, after the collapse caused by the pandemic during Q1 2020, which can be verified both in the State of São Paulo and in the information from the cities of São Paulo (city within the State of the same name), Rio de Janeiro, Curitiba, Florianópolis and Campinas (see Charts 2.3-r and 2.3-s).

The effect on growth rates also follows the same trend, and the base effect should be taken into account, which partly explains why the rates in Q2 2021 have reached peaks of 100% increase for the State of São Paulo and 150% for the city of Campinas. However, despite the base effect, it is pertinent to state the increase in the number of transactions in 2021, where maximum levels have been reached within the 2012-2022 period. On the other hand, a downward readjustment is also observed in 2022 for state and municipal cases as a result of the political-social situation due to the presidential results and protests, the economic environment due to the more unfavorable external situation and the base effect of 2021 (see Chart 2.3-s).

Home prices

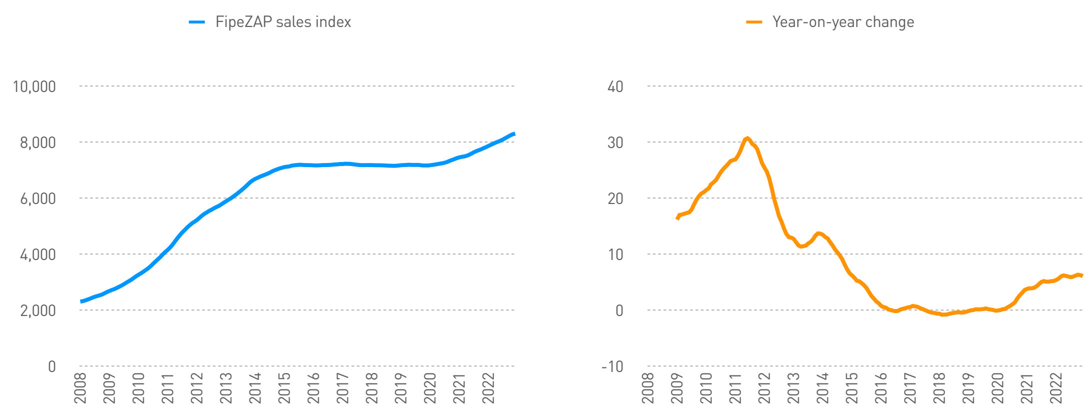
A comparison of the development of median home prices in Brazil with the development of the general price index in a series since 2001, shows that both indexes follow a similar path through 2007. From that point on, both trends diverged, and the home price index rose substantially above consumer prices, although between 2014 and 2020 there was a period in which they had stabilized, rebounding again in the last two years (see Chart 2.3-t). Meanwhile, as

Chart 2.3-t
Brazil: home and consumer price indexes
(2001=100)



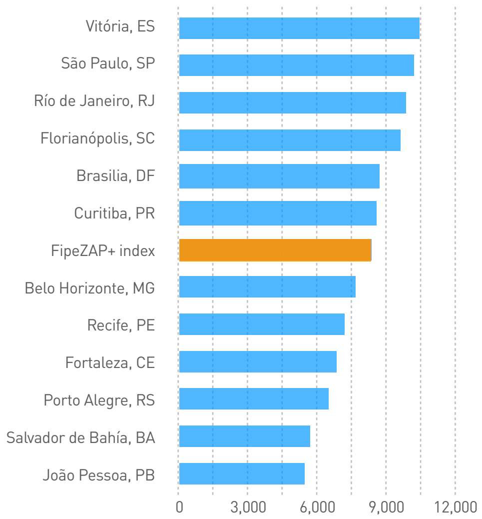
Source: MAPFRE Economics (based on data from the Fundação Instituto de Pesquisas Econômicas, Bank for International Settlements, Banco Central do Brasil and Haver Analytics)

Chart 2.3-u
Brazil: FipeZAP sales index
(index, reais/m²; year-on-year change, %)



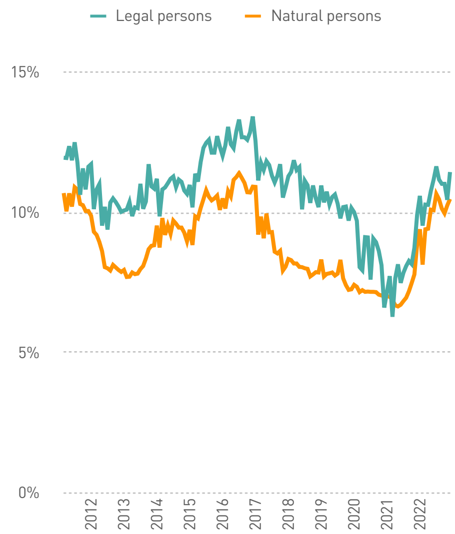
Source: MAPFRE Economics (based on FIPE data)

Chart 2.3-v
Brazil: home sales prices
(reais/m², Dec. 2022)



Source: MAPFRE Economics (based on FIPE data)

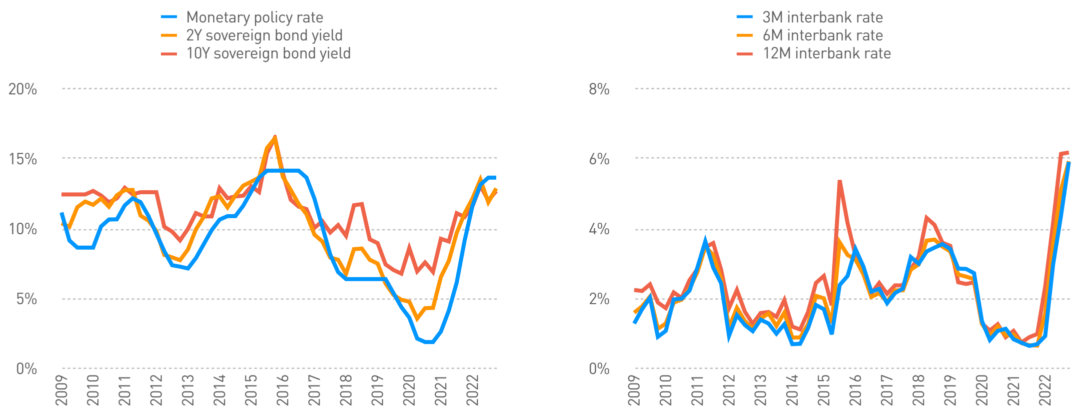
Chart 2.3-w
Brazil: average home loan interest rate
(%)



Source: MAPFRE Economics (based on Banco Central do Brasil data)

shown by the prices calculated by the Fundação Instituto de Pesquisas Econômicas (FIPE)[70], housing prices have risen significantly compared to 2008. However, since 2011 the pace of growth has slowed and, with the exception of the 2013-2014 period, has trended downward in the year-on-year rate, reaching levels close to 0 between 2016 and 2020 (see Chart 2.3-u). As of 2021, there is a slight change in the trend, mainly due to the internal and external situation that has led to high inflation, standing at 6.15% in December 2022 (in values, the price per square meter stood at R$8,321). Currently, the price per square meter of the sample collected by FIPE is at the ceiling in Vitória (above São Paulo and Rio de Janeiro), at R$10,481 per square

Chart 2.3-x
Brazil: monetary policy, government bond and interbank rates
(%)



Source: MAPFRE Economics (based on Banco Central do Brasil data) meter, and João Pessoa closes the ranking with R$5,429 (see Chart 2.3-v).

Mortgage interest rates

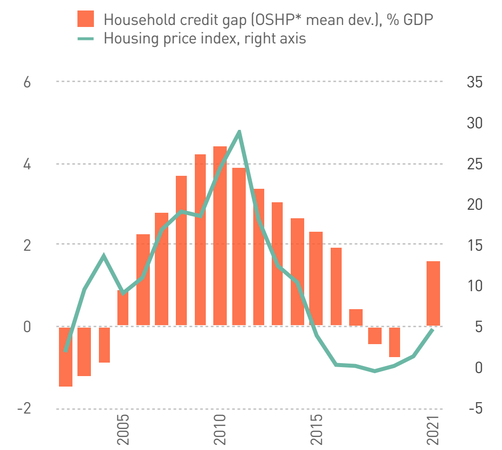
The Central Bank of Brazil publishes the average interest rates for real estate loans to individuals and legal entities monthly, taking into account financing at both market and regulated rates (see Chart 2.3-w). The overall trend of interest rates since mid-2016, for both individuals and companies, had been decreasing until mid-2021, at which point the trend shifted, as, due to the effects of inflation, the central bank raised the SELIC (monetary policy rate) progressively (the lowest record is placed in the last two quarters of 2020 with a rate of 1.90%), closing 2022 at 13.65%. Thus, at the end of 2022, the average interest rate on real estate loans for individuals stood at 10.47% and for legal entities at 11.43%.

It is also relevant to note that, among the Latin American economies, Brazil was the first after the pandemic to start raising interest rates at an accelerated pace to combat inflation, which had an impact on interest rates in the interbank market (see Chart 2.3-x). In this sense, interest rates are expected to remain high for some time and may begin to drop in late 2023 if inflation is kept under control within the range set by the monetary authority.

Household credit gap

In terms of the evolution of the household credit gap with respect to its historical average level, in Brazil, we can distinguish a period between 2005 and 2010, in which the volume of lending to households as a percentage of GDP increases progressively until it is significantly above its long-term average in 2010. This situation was reflected in the level of prices, which experienced a strong rebound (unlike what happened in other advanced economies due to the real estate crisis of 2008-2009). However, starting in 2011, the still positive credit gap changed course and began to narrow, and it was only in 2019 that it began to grow again, which was reflected in a slowdown in housing prices (see Chart 2.3-y).

Chart 2.3-y
Brazil: household credit gap



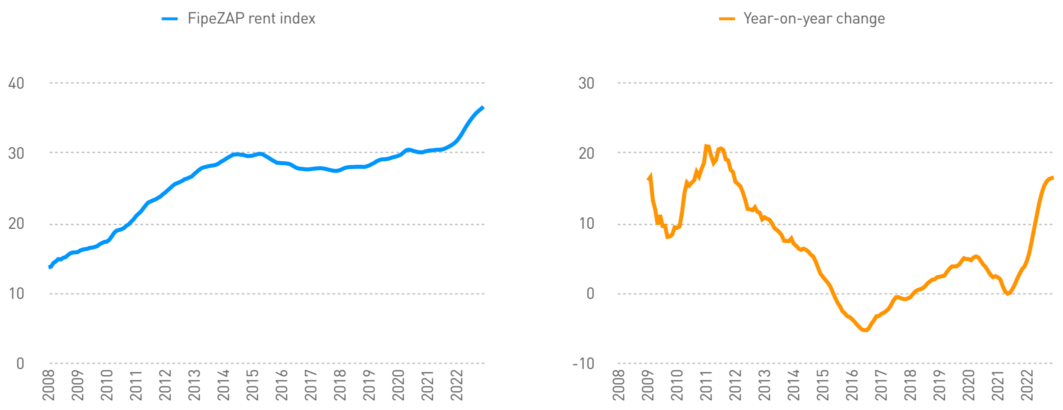
Source: MAPFRE Economics (based on data from BIS, Oxford Economics and Haver Analytics)
*OSHP = One Sided Hodrick-Prescott

Residential leasing

As with the average price per square meter of sales, the FipeZAP Index also produces this type of data for rental housing, which is shown in Chart 2.3-z. This indicator shows how the price of home rental has grown significantly compared to 2008. However, since 2011 the pace of growth has slowed, reaching negative territory between mid-2015 and 2017. Since then, there has been an upward trend and, except for the valley created by the pandemic, where the growth rate reached 0 (without lowering prices), has followed an upward trend that has led to a 16.55% increase in the index by the end of 2022 compared to December 2021.

It should be noted that there is also insurance coverage for rental: the lease coverage (*fiança locatícia*). The purpose of this insurance is to guarantee the payment of an indemnity to the policyholder for damages suffered as a result of the tenant's failure to comply with contractual obligations. Rent default is the basic coverage in this line. Premiums for this insurance have performed very positively

Chart 2.3-z
Brazil: FipeZAP rent index
(index, reais/m²; year-on-year change, %)



Source: MAPFRE Economics (based on FIPE data)

in the period under analysis, except for 2016, when premiums fell, ending the year with a drop of -8.7%. Subsequently, premiums have grown to a peak of 76.8% in December 2020, with growth moderating in subsequent quarters to end 2022 with a premium volume of R$1,197 billion (US$231.8 million), up 15% from the previous year.

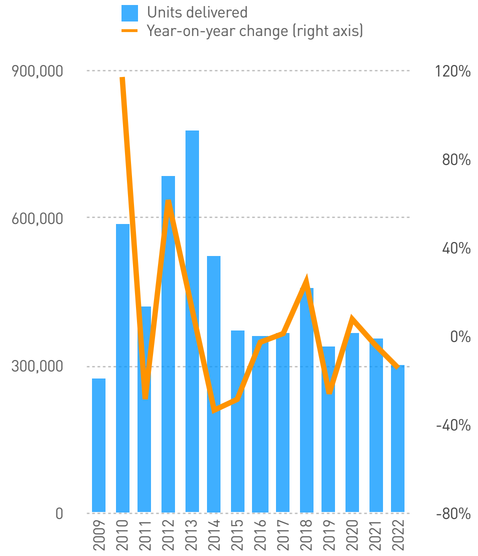
Affordability and home acquisition assistance programs

Regarding social housing programs, it is worth noting that in 2008 the Brazilian federal government created the *Minha Casa Minha Vida Program* to promote access to housing for low-income families with better interest rate conditions, the possibility of financing 100% of the value of the property and the possibility of using FGTS resources, among other measures. Starting in 2020, the program was reformed called *Casa Verde e Amarela* with even lower rates and a new classification of groups and associated conditions with regional and income specifications. The program is funded by the *Fundo Nacional de Habitação de Interesse Social*, the *Fundo de Arrendamento Residencial* and the *Fundo de Desenvolvimento Social*, in addition to the FGTS.

Access to housing and real estate loans for low-income families in Brazil had not been remedied by the SFH and SFI financing systems. In view of this, in 2009 the federal government created the *Minha Casa Minha Vida Program* (MCMV) to subsidize the purchase of a home or apartment for families with incomes of up to R$1.8 thousand and to facilitate the conditions for families with incomes of up to R$9 thousand to have access to property. Subsequently, in 2020, the program was replaced by *Casa Verde e Amarela* (CVA), which changed the selection bands and made particular conditions according to the region of the application. In 2023, the MCMV program was reinstated to the detriment of the CVA, and the maximum income for receiving subsidies was increased to R$2,640 (originally R$1,800).

The Brazilian federal government's open data system provides information on the number of housing units delivered under the MCMV and CVA since 2009; this information is presented in Chart 2.3-aa. From their analysis, it is apparent that, in 2013, a peak was reached at 781,108 units delivered and since then the trend has been downward and, with the exception of 2018, the total moves in the range of 350,000 units per year. Overall, since 2009, 6.2 mil-

Chart 2.3-aa
Brazil: homes delivered under PMCMV and PCVA programs



Source: MAPFRE Economics (based on Governo Federal do Brasil data)

lion units have been delivered in both programs combined.

Brazil in the IRPII ranking

Finally, it must be noted that Brazil ranks 19 in the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) ranking; the synthetic index calculated by MAPFRE Economics for a universe of 43 countries (see Table 4.2-b), whose characteristics are detailed in chapter four of this report.

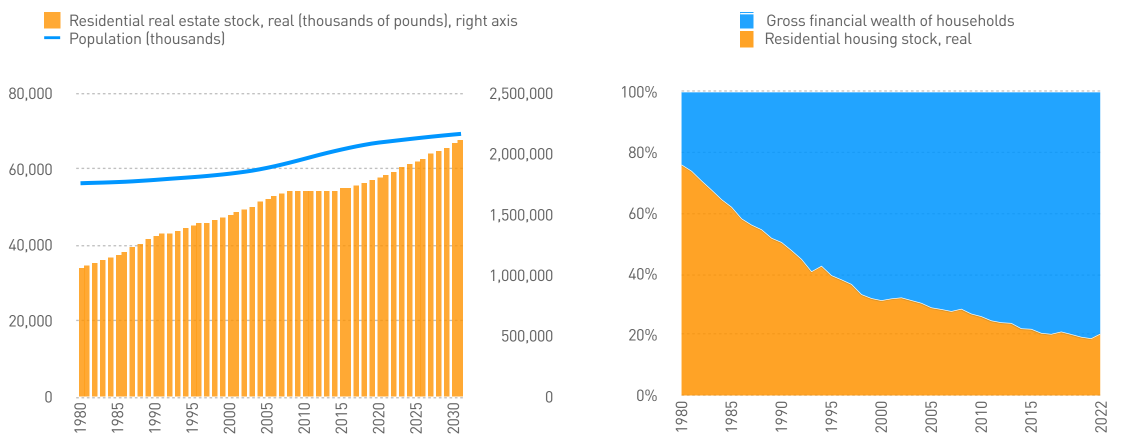
Among the various components that are weighted in the indicator estimate, those that contribute most to improving Brazil's position are the *population growth* rates, the *evolution of mortgage lending* and the greater sensitivity of its insurance business to increases in disposable income (see Table 4.2-a). It should be noted that Brazil's population in 2023 is 223 million inhabitants, and it is estimated to reach 231 million by 2050 and then enter a path of decline that could lead to a population of 184 million by the end of the century[71].

2.4 United Kingdom

Introduction

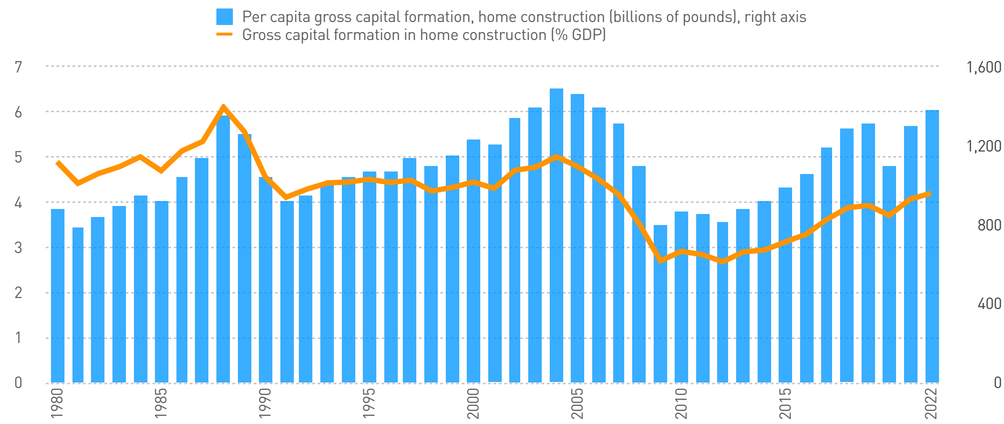
The estimated housing stock value in the United Kingdom in 2023 was 1.9 trillion pounds[72], which represents 85.3% of GDP, while the gross financial wealth of households is estimated at 7.6 trillion pounds[73] (344% of GDP). The development of the housing stock over the last four decades has grown in real terms, while its relative weight in household wealth has decreased slightly over the same period (see Chart 2.4-a).

Chart 2.4-a
United Kingdom: real residential housing stock, gross financial wealth of households and population



Source: MAPFRE Economics (based on data from Oxford Economics, Haver Analytics and the United Nations)

Chart 2.4-b
United Kingdom: gross capital formation in home construction



Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

The analysis of gross capital formation in housing construction in relation to GDP in the United Kingdom shows notable fluctuations, rising significantly in the years prior to the 2008-2009 crisis, representing 5% of GDP in 2004, with a significant decline during the crisis, falling to 2.7% of GDP in 2009, the lowest in the entire series, and then recovering progressively to 4.2% in 2022 (see Chart 2.4-b). It is notable that the United Kingdom has a highly developed capital market, which greatly facilitates the financing of the real estate market, with a high volume of financial instrument issues that supplement and provide liquidity to bank financing, especially through mortgage securitizations.

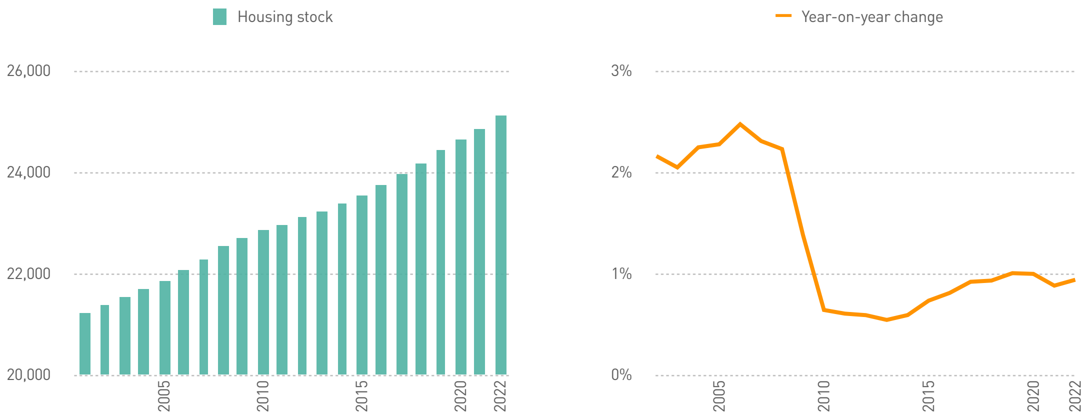
Analysis of relevant indicators for the development of insurance activities

Housing stock and new construction

Housing stock

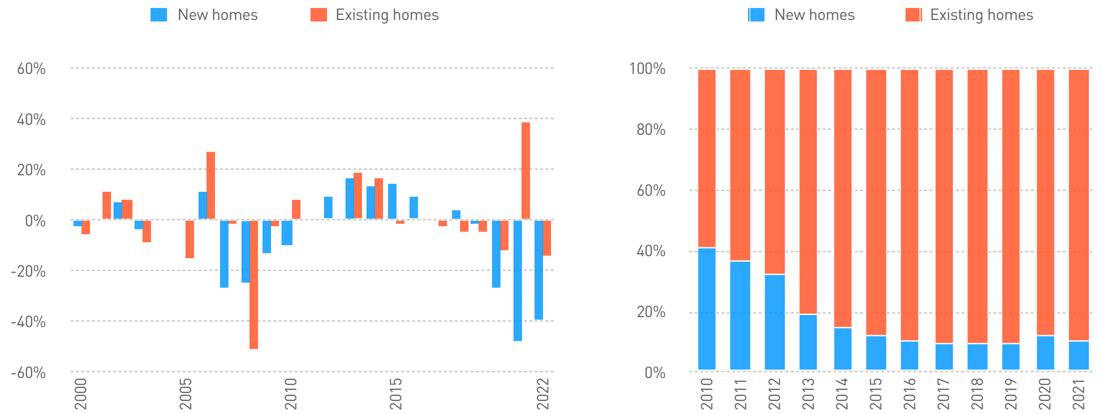
According to data published by the UK government, the housing stock stands at 25,106,140 units in 2022. Over the last two

Chart 2.4-c
United Kingdom: housing stock
(number of homes, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on GOV.UK data)

Chart 2.4-d
United Kingdom: sales of new homes vs. sales of existing homes
(year-on-year change, %; breakdown, %)



Source: MAPFRE Economics (based on Office for National Statistics data)

decades, there has been an annual increase of 18.4% since 2001 (21,207,000 units). The year-on-year growth of the housing stock in 2022 is 0.94% (compared to 0.9% in 2021), which is lower than the previous four years, and significantly lower than the data prior to the economic crisis of 2008-2009, where the growth rate for the 2002-2008 period was over 2% (see Chart 2.4-c).

New home construction and sales

According to data from the National Statistics Office, during 2021, new home transactions in England and Wales experienced growth in line with registered pre-pandemic values. In 2021, the number of new home transactions was 94,123, -4.2% lower than in 2021 and 2020. As of September 2022, there was a sharp drop (-74.3%), with a volume of 24,146 transactions. In September 2021, housing resale transactions experienced significant growth of 43.7% compared to the same quarter of 2021, the largest increase registered in the last two decades. In September 2022, the total number of resale transactions fell to 672,098, so it is likely that, by the end of the year, the value will have fallen below that of 2021 (see Chart 2.4-d).

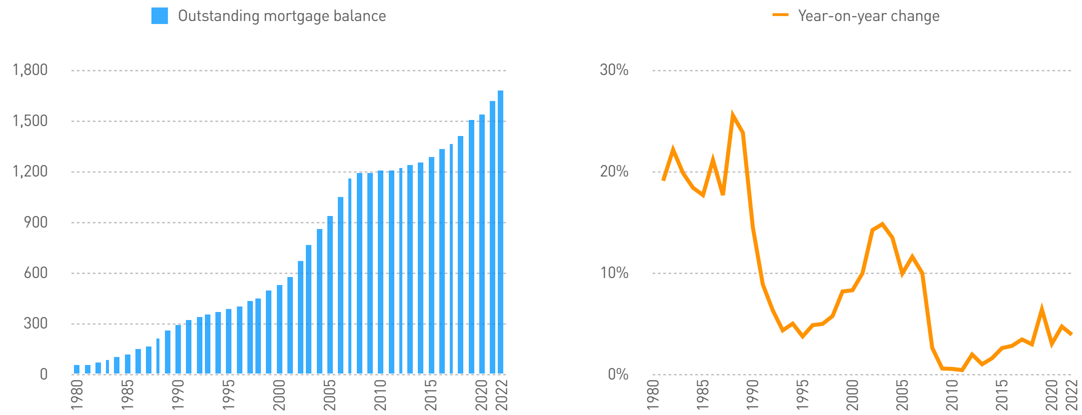
It should be noted that, over the years, there has been a greater predisposition towards the purchase and sale of existing homes at the expense of new homes, as residential investment has been affected by the drop in housing construction starts and the subsequent delay in the volume of construction work carried out.

Home-linked insurance developments

The United Kingdom has a significantly higher percentage of homeowners compared to other European countries. Houses and apartments are normally purchased with mortgages with up to 25-year terms. The requirement that mortgaged properties be insured gives mortgage lenders a strong foothold in this market. Customers cannot be forced to take out insurance with a specific company, but due to inertia, many choose to take out a policy with an insurance company recommended by their mortgage provider.

The British market has a high level of competition, and all the major insurance companies offer "online" home products, which is believed to reduce customer loyalty. Price comparison websites are very relevant in the home market. Price is a key factor in the buying process for most cus-

Chart 2.4-e
United Kingdom: mortgage balance
(outstanding balance, billions of pounds; year-on-year change, %)



Source: MAPFRE Economics (based on Bank of England data)

tomers, although products for higher net worth individuals are also sold on the breadth of coverage and customer service.

Home insurance coverage is very broad in the United Kingdom. The normal range of risks for both buildings and contents includes coverages for fire, lightning, explosion, earthquake, storm, flood, falling trees or antennas, water or gas leaks, theft or attempted theft, third-party liability, civil disturbance and malicious damage, collapses, sinkholes or landslide, aircraft, vehicle or animal collision, accidental window breakage, payment of professional fees and alternative lodging expenses. Home insurance rates fluctuated slightly between 2019 and 2021, with an average increase in prices for combined buildings and contents coverage of 1.4%[74].

Since 2022, the UK's Financial Conduct Authority (FCA) has banned price walking by insurers in the motor and home insurance lines. This practice consisted of not offering existing customers the best renewal conditions compared to those offered to new customers. It also includes measures to make it easier for customers to avoid the automatic renewal of a policy. Early reports suggest that this has led to an overall average increase in premiums as insurers adjust their pricing models (market research firm, Consumer Intelligence), in contrast to research conducted by the FCA which found that insurance companies increase prices for loyal policyholders more than for new policyholders[75].

Mortgage balance and new mortgages taken out

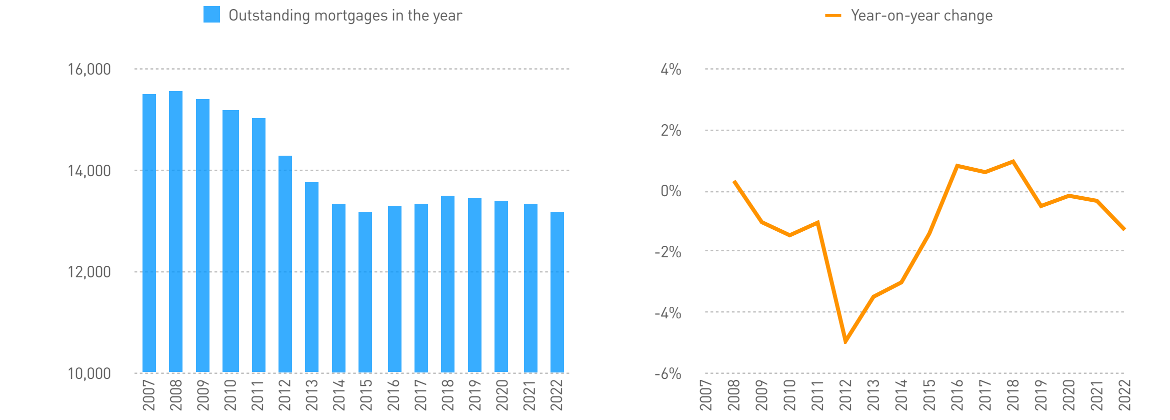
Mortgage balance

The Bank of England reported a figure of £1.675 trillion outstanding on domestic mortgages in 2022, with a year-on-year change from the previous year of 3.9%, one of the largest increases since 2007, prior to the financial crisis (see Chart 2.4.-e). The sharp slowdown in mortgage lending in the major economic crises is evident, although the outstanding mortgage balance has not decreased in any period, not even in the financial crisis of 2008-2009, unlike in other European countries, with a minimum variation of almost 0% in 2011.

New mortgages taken out

During 2021, according to data presented by the Bank of England and the FCA, household lending for home purchases resumed the downward trend of previous

Chart 2.4-f
United Kingdom: outstanding mortgages over total properties
(number of mortgages, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on FCA data)

years, falling 1.3% in 2022; a trend that began after the 2008 crisis, when it reached an all-time high (see Chart 2.4-f).

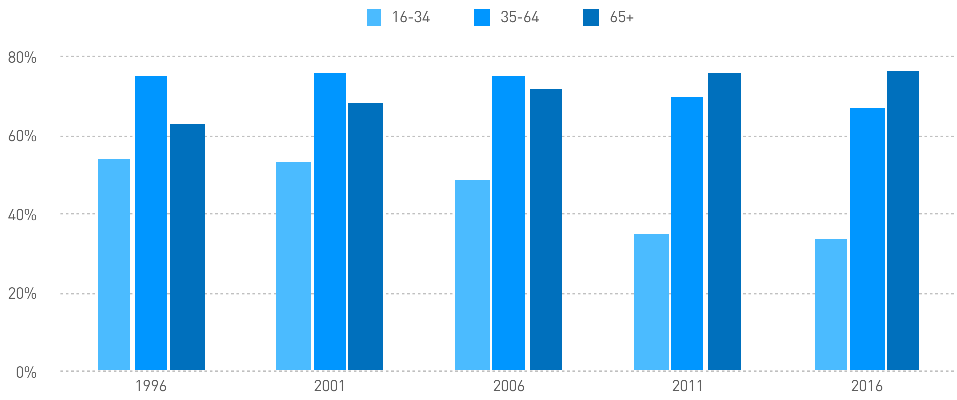
Using data from the UK Home Ownership and Mortgage Market Report (Tony Blair Institute for Global Change), a series of regulations were developed starting in 2008 to tighten mortgage lending criteria prior to the economic crisis. Thus, in the mortgage market, lenders assumed most of the credit risk associated with their loans. With this in mind, the FCA introduced a stress test in 2014 to ensure that borrowers would be able to afford their mortgage payments if interest rates increased by 3 percentage points above the lender's standard variable lender rate during the first five years of the loan.

Tighter mortgage lending conditions have been responsible for the decline in homeownership rates since 2008. Because of these pressures, the government and the Bank of England took a series of measures to limit any disruption in mortgage availability. One of these was the 2012 *Funding for Lending* program, which provided funds to lend to households and businesses at lower interest rates than those available in the market. Another was the Help to Buy program, which offered a mortgage guarantee aimed at reviving 95% mortgage availability for first-time buyers. Starting in 2016, then Chancellor, George Osborne, introduced an additional 3% Stamp Duty on second home purchases, intended to discourage home buying activity, and, as of 2017, mortgage interest relief for homeowners began tapering off.

Development of Risk life insurance

In the UK insurance protection market, term life insurance is one of the main products related to mortgages, although the selection is diverse and there are also renewable term life insurance policies linked or not directly linked to the mortgage loan, whole life insurance, disability insurance, critical illness or income protection insurance, among others. As a result of the 2021 housing boom, premiums and term insurance contracts related to mortgages increased, thus they represent the largest share of the protection market. Often, multi-benefit plans are taken out that combine different types of protection. One of the latest trends on the market even offers added value through services such as mental health support, for example, helping people whose mental health has been affected by problems in obtaining mortgage coverage.

Chart 2.4-g
United Kingdom: home ownership by age group



Source: MAPFRE Economics (based on data from Commons Library Parliament UK)

Reverse mortgage

Reverse mortgages were first introduced in the United Kingdom in 1965. At the end of the 1980s, some high-risk products (now banned) began to appear, causing major problems for a large number of senior citizens. This caused consumers to reject this type of product. However, the companies' own efforts to improve their reputation and regulations have caused the market to change drastically and grow year after year.

It is important to note that the change in regulation is not the only reason reverse mortgages are growing in the UK. The increase in the elderly population, the majority of whom own real estate (77% of people over 65, the age group that owns the most homes) but do not have sufficient retirement savings (on average £30,000), creates great potential for the reverse mortgage market (see Chart 2.4-g). Similarly, Table 2.4, prepared with information from the Equity Release Council (ERC) [76], shows the growth of this market, with a 39% increase in the indicator measuring activity in this business between 2017 and 2022.

Traditionally, the companies that offered equity release programs were SME companies and those specialized in the sector. However, since the entry of Nationwide in the market in 2017, other large institutions, such as L&G, have started to offer reverse mortgages. Currently, there are 12 member companies of Equity Release Council: Hodge Lifetime, Retirement Bridge Group, Canada Life, Nationwide Building Society, Responsible Lending, Aviva, Just, Legal & General, LV, OneFamily–Just, Retirement Plus, and More 2 Life. It is worth noting that, in order to ensure that seniors have access to the best option available, the figure of the independent advisor is extremely important in a market where there are so many alternatives.

Table 2.4
United Kingdom: reverse mortgages

	2017	2022
All activity	**35,540**	**49,285**
New schemes	20,232	20,597
Return of drawdowns	13,209	46,933
Other	2,099	2,352
Average age		
New retirement plans	69.8	68.0
New single premium plans	68.6	68.7
Lifetime equity release		
Number of agreements	90	665
Overall average rate (fixed and variable)	5.37%	4.16%
Minimum fixed rate	2.99%	3.19%
% of offers with product price	95.00%	N/A
LTV (loan-to-value)	31.50%	28.00%

Source: MAPFRE Economics (based on data from the Equity Release Council)

There are two types of products on the market: lifetime mortgages and home reversion plans. Lifetime mortgages are the more popular option. Through these mortgages, the consumer retains ownership of their home and takes out a loan guaranteed by this home. The loan can be received as a single payment, regular income, line of credit or a combination of all three. Borrowers can pay loan interest regularly, or the interest can accrue until the loan is paid in full. In home reversion plans, in turn, the consumer wholly or partially sells their property to the provider, but retains the right to live in it (at zero or very low cost) until their death or they are moved into a nursing home.

From a regulatory perspective, the first step in regulating the reverse mortgage in the United Kingdom was in 1991, after the collapse of home prices in 1989 and the bad reputation this type of product had acquired. The main suppliers decided that, in order to restore consumer confidence in this type of product and improve their reputation, they had to guarantee some type of consumer protection. Thus, a large number of companies operating in the market opted for self-regulation and created Safe Home Income Plans (SHIP), and adopted a binding code of conduct for the members of the organization. Although it is not mandatory to be part of this organization, most suppliers of this type of product are and, therefore, it can be argued that this code of conduct was quite successful. As of 2012, SHIP is now ERC (Equity Release Council) and also includes advisors, suppliers, and procurators on this type of product.

Subsequently, in 2000, the Financial Services and Markets Act was passed, which classifies all types of activities related to these products (advising, selling or entering the market) as regulated activities, which means that advisors, brokers and providers must be authorized to do so. In addition, authorization for one type of product does not entail authorization for the other; two different permits are required.

In 2004, the FCA started regulating *lifetime mortgages* and finally in 2007, *home reversion plans*. The FCA publishes an FCA Handbook and other documents which are binding under the Financial Services and Markets Act. Section three of the manual (MCOB) contains detailed rules that apply to all companies that engage in housing finance activities or related financial promotions (lifetime mortgages and home reversion plans are included in this category). Within this section there are two special sections for reverse mortgages: MCOB 8 and MCOB 9. The purpose of MCOB 8 is, firstly, to ensure that the customer is well informed about the service they will receive and, secondly, that the recommendations they will receive are appropriate to their situation and needs. The purpose of MCOB 9 is to ensure that the information provided on product characteristics and price is clear and understandable to the customer.

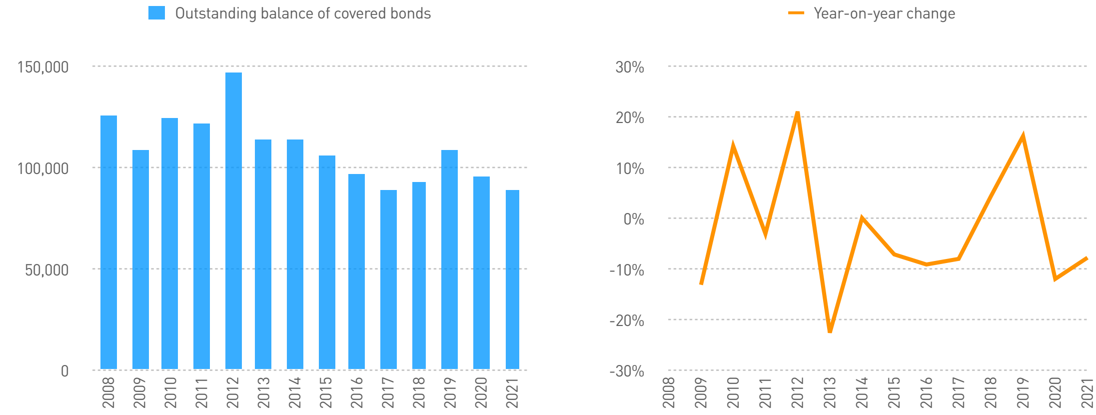
Finally, it should be noted that income earned as part of reverse mortgage contracts in the United Kingdom is tax-exempt; income generated by the investment of this money is not. The age at which you can apply for a reverse mortgage in the United Kingdom is 55 years.

Real estate investment instruments for insurance companies' investment portfolios

Covered bonds

According to the European Covered Bond Council (ECBC), the UK covered bond market has been stable since 2003 and was initially based on the general principles of English law, before the Treasury introduced a specific regulatory framework for covered bonds in March 2008. The volume of regulated covered bonds at the end of 2021 amounted to €88.71 billion, representing an increase of 7.6% compared the previous year (see Chart 2.4-h). The outstanding balance decreased again after the increase in

Chart 2.4-h
United Kingdom: outstanding balance of covered bonds
(outstanding balance, millions of euros; year-on-year change, %)



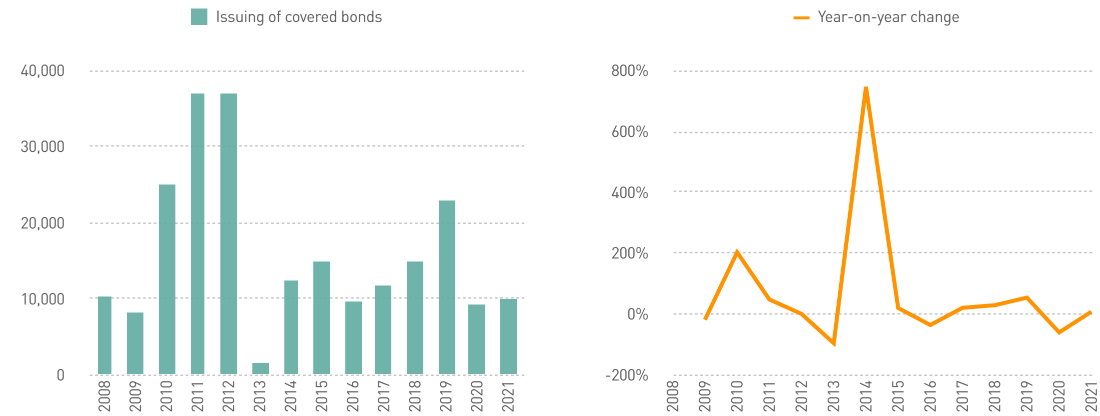
Source: MAPFRE Economics (based on ECBC data)

2019, when it reached €108.857 billion, an amount that is still below figures registered between 2008 and 2014.

Meanwhile, new issues of regulated bonds in 2021 amounted to €9.8 billion (see Chart 2.4-i), of which €6.2 billion were private placements and €3.6 billion were public placements. This figure is a slight increase following the drop in 2020, when issues fell by 60% from €22.959 billion to €9.089 billion, reflecting the impact of the Coronavirus pandemic and the availability of funds from the Bank of England under the Term Funding Scheme.

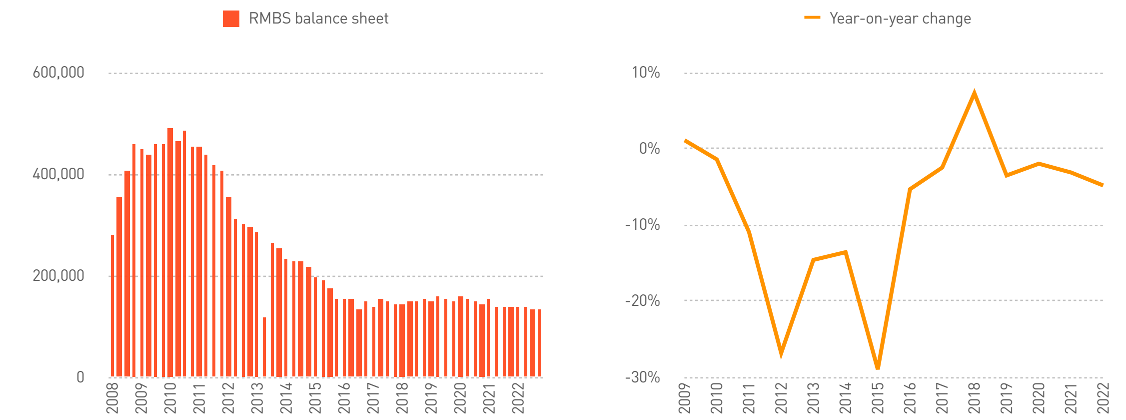
By the end of 2021, 41% of all UK-covered bonds were denominated in euros, with sterling accounting for the largest share of the balance at 55% and other currencies accounting for only 4% of the market share. Issues in euros tend to be at fixed interest rates, the majority being 5-10 years, while sterling transactions issued since 2014 are almost exclusively 3-5 year floating rate bonds (as of 2018,

Chart 2.4-i
United Kingdom: issuing of covered bonds
(issuing, millions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on ECBC data)

Chart 2.4-j
United Kingdom: RMBS
(outstanding balance, millions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on AFME data)

this has been based on a daily compounded SONIA rate). For several years now, all new issues have had soft bullet maturities, and less than 3% of outstanding bonds had hard bullet maturities at the end of 2021.

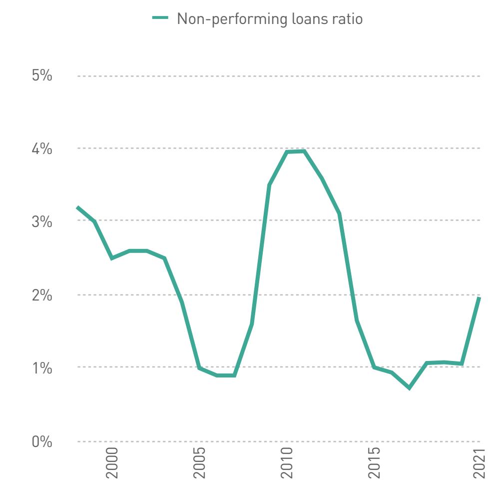
Mortgage Backed Securities

Another mortgage securitization instrument is Residential Mortgage Backed Securities (RMBS); a derivative whose value is obtained through residential mortgage loans. Data published by the Association for Financial Markets in Europe (AFME) reflect how the outstanding balance of RMBS in the UK was €138.616 billion in 2021, a value that does not represent large fluctuations compared to recent years. In December 2022, the outstanding balance of the RMBS was €132.962 billion (see Chart 2.4-j). Following the slump in June 2013, when it reached a low of €118.5 billion, the outstanding balance of UK RMBS has not recovered to levels between 2007 and 2013 which ranged between €280 billion and €480 billion.

Non-performing loans ratio

As illustrated in Chart 2.4-k, the UK's non-performing loans ratio was 1.97% in 2021, the highest registered since 2014. As shown in the aforementioned chart, the non-performing loans ratio followed a decreasing trend from 1998 until the economic crisis of 2008-2009, when it increased significantly, reaching its peak in 2011 (3.96%). It declined thereafter, starting to increase again in 2017.

Chart 2.4-k
United Kingdom: non-performing loans ratio
(%)



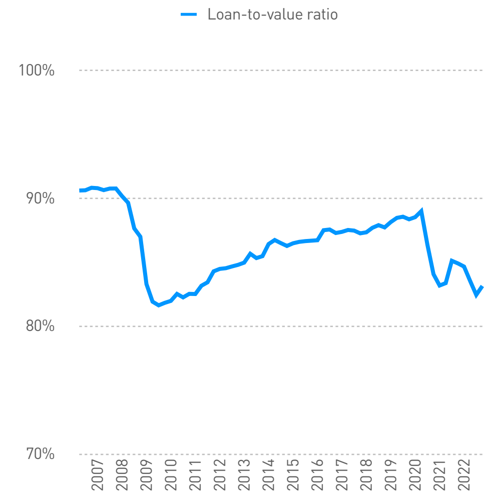
Source: MAPFRE Economics (based on CEIC and FRED data)

Loan-to-value ratio

The loan-to-value (LTV) ratio expresses the percentage of the loan granted with respect to the value of the subject property. Households' willingness and ability to borrow against the value of their home is a function of the home's value and how home price developments have influenced the loan-to-value ratio. A good loan-to-value ratio is generally considered to be below 80%. In this sense, the average trend in the United Kingdom is for the LTV to be above 80%, reaching over 90% during 2006 and 2007, although when the 2008-2009 crisis hit, this percentage fell notably to 81.6% and from the end of 2009 it followed an upward trend that fell again in the last two quarters of 2020 as a result of the pandemic. In Q1 2022, the LTV had reached 84.63% (see Chart 2.4-l).

For those with an LTV above 80%, there are many mortgages available, but they will involve paying higher interest rates. In fact, higher LTVs have accounted for much of the overall growth in home purchase lending in recent years. This is related to the good performance of *First-time Buyers Mortgages*. Comparing the profile of new loans from 2018 to a decade ago, most of the overall loan growth can be attributed to LTVs above 75%, thanks to improved credit availability.

Chart 2.4-l
United Kingdom: loan-to-value ratio
(%)



Source: MAPFRE Economics (based on data from the Bank of England, FCA Product Sales Data, UK Finance and Bank calculations)

Loan-to-income ratio

The loan-to-income ratio (LTI) represents the percentage of the amount of credit requested divided by the applicant's gross income, so it determines the risk of indebtedness and is used to calculate the amount the bank is willing to lend. The maximum that can be borrowed is usually four and a half times the annual income. In this regard, there has been an upward trend since 2007 in the proportion of loans with a high LTI (30.1% in 2007). Specifically, the proportion of loans to borrowers with an LTI ratio of 4 times or more (3 or more on a combined basis) declined 2.2 percentage points to 49.3 percent of the total in Q4 2022; that is, -0.8 percentage points lower than a year earlier and the lowest observed since Q3 2021 (see Chart 2.4-m). It should be noted that this percentage is much higher than before the implementation of the macroprudential housing measures introduced by the Bank of England's Financial Policy Committee (FPC).

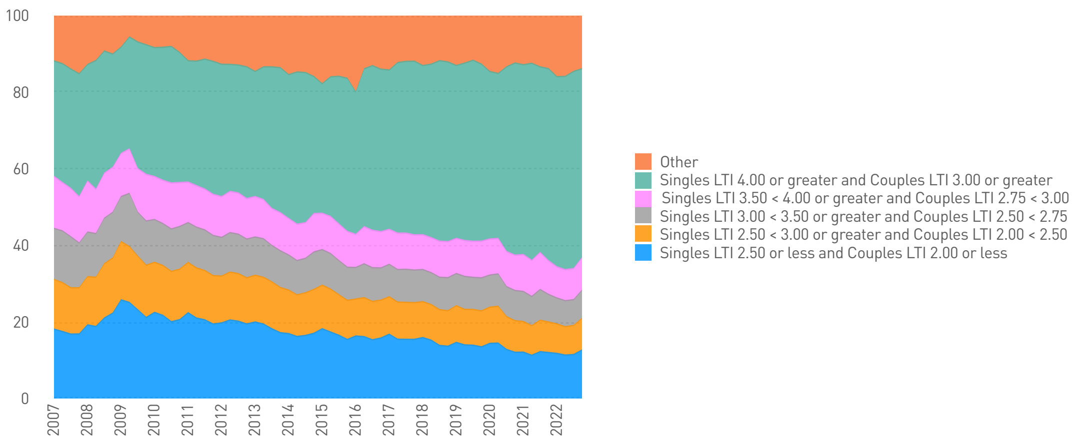
With the exception of Northern Ireland (which experienced a significant housing market boom between 2007 and 2010), *First-Time Buyers* across the UK are facing a higher home price-to-income ratio than a decade ago. There has been a significant clustering of transactions below 4.5x, which accounts for almost all of the increase in loans with higher LTIs. Operations with LTIs at or above 4.5 times have remained, for the most part, below the macroprudential "LTI flow limit" of 15%.

Real estate transactions, home prices and mortgage interest rates

Real estate transactions

In 2021, after a difficult start, the UK housing market rebounded progressively (see

Chart 2.4-m
United Kingdom: loan-to-income ratio
(%)

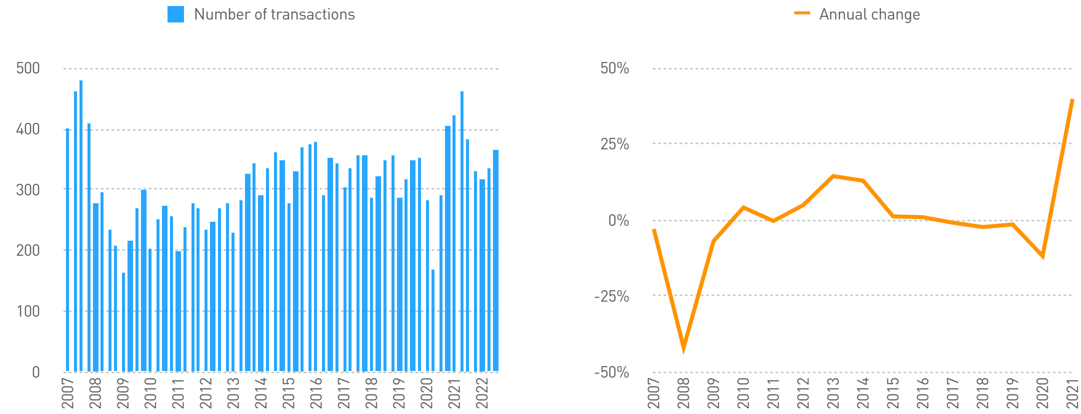


Source: MAPFRE Economics (based on Bank of England and FCA data)

Chart 2.4-n). Data released by that country's National Bureau of Statistics reflect that the total cumulative volume of real estate transactions completed during 2020 (1,144,110 units) was exceeded by almost 40% in 2021 (1,600,200 units). However, over the course of 2022, real estate activity has slowed, with an estimated total cumulative volume of real estate transactions as of Q4 2022 (1,379,170 units) 13.8% lower than the figure for the same period the previous year.

According to data from the British Tax Office (HMRC), in a medium-term analysis, the British real estate sector has experienced several swings. Transaction volumes had been growing steadily until 2007, reaching a peak in mid-2006 (1,805,870 units). However, the financial crisis and the collapse of the real estate market caused the number of transactions to begin to fall at the end of 2007. The floor was reached in 2009 (946,560 units) when the Stamp Duty Reduction (SLDT) period ended, during

Chart 2.4-n
United Kingdom: housing sales
(number of transactions, thousands; year-on-year change, %)



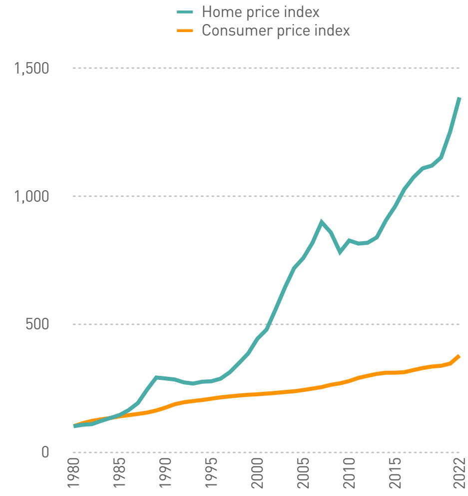
Source: MAPFRE Economics (based on data from the UK Office for National Statistics) which the lowest tax threshold was raised to £175,000. Since then, the recovery has been slow but steady, peaking in March 2016, until the introduction in April of higher interest rates for the acquisition of additional properties.

A further drop in the total number of transactions occurred in 2020 as a result of the population's confinement due to the COVID-19 pandemic and the successive epidemic waves of the virus that negatively affected overall economic activity. During Q2 and Q3 2020, the variation was -46.5% and -16.3%, respectively, recovering slightly starting in Q4 (+15.6%).

Home prices

Comparing the development of average home prices in the United Kingdom with the development of the general price index in a series since 1980, it is clear that since the mid-1980s the two trends have diverged and the home price index has increased substantially above consumer prices, despite a slight decline following the financial crisis of 2008-2009 (see Chart 2.4-o). As we know, home prices fundamentally depend on the housing supply and demand. Thus, the impact of greater demand on home and rental prices will depend on the increase in demand in relation to the development of interest rates.

Chart 2.4-o
United Kingdom: home and consumer price indexes
(1980=100)

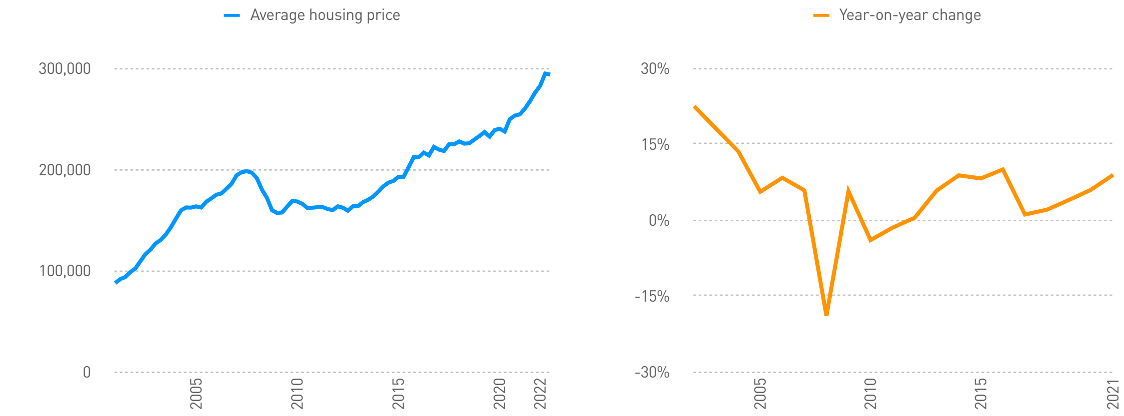


Source: MAPFRE Economics (based on data from HM Land Registry, Office for National Statistics and Haver Analytics)

Focusing the analytics on the last two decades, we see that the average price of homes has grown progressively since the start of this century, except for the setback suffered during the financial crisis of 2008-2009. In March 2001, the average home price was £88,000 sterling, while the latest data registered in December 2022 indicated an average price of £294,000 sterling (see Chart 2.4-p). The annual variation slowed down in the last month, as home prices rose sharply in September 2021, coinciding with the changes in the Stamp Duty Tax.

Historically, home prices have increased, with the exception of 2008, when they dropped by almost 19% versus the previous year as a result of the economic crisis. This increase is influenced by several factors. According to the University of Reading, British population growth through 2016 has driven up average prices by 32%, while the increase in the non-British population has gone up by 21%. Furthermore, according to the National Housing and Planning Advisory Unit (NHPAU) report, a 1% increase in real incomes leads to a 2% increase in home prices, and this figure has increased 75% between 1991 and 2016, which would imply an increase in home prices of 150% during that period. Another factor affecting the rise in average home prices has been the progressive decline in interest rates, down 11% between 1991 and 2016. However, this data cannot necessarily be extrapolated to mortgage rates, since they do not move in parallel with each other. According to the NHPAU, for every 1% increase in the housing stock, home prices are reduced by 2%, which would imply that, between 1991 and 2016, this decrease would be 40%. This confirms that many more factors have influenced the increase in the average home price than those that would have reduced it.

Chart 2.4-p
United Kingdom: average housing price
(average price, pounds; year-on-year change, %)



Source: MAPFRE Economics (based on Halifax and GOV.UK data)

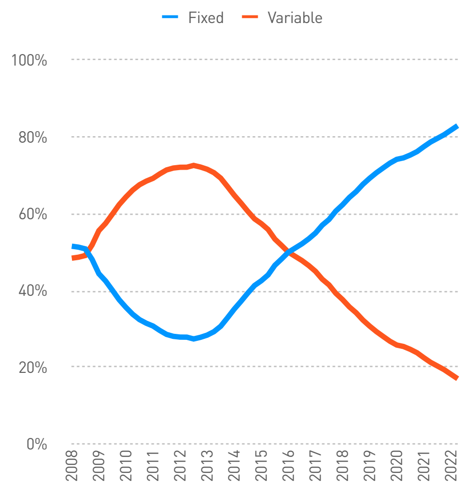
Mortgage interest rates

Mortgage loans in the United Kingdom are most commonly taken out with fixed initial interest rates at an average term of 25 years. However, the trend has changed in recent years, with a greater predisposition towards fixed-rate mortgages than variable-rate mortgages. Prior to 2016, a higher percentage of mortgages were taken out at variable rates, but the percentage has progressively increased in favor of fixed-rate mortgages, this type constituting 83% of the mortgages taken out in June 2022 (see Chart 2.4-q).

According to the European Mortgage Federation (EMF), mortgage rates initially increased, especially on higher LTVs (above 75%), as many lenders took into account the increased risk or withdrew these products from the market. However, in 2021, as conditions normalized, interest rates began to drop.

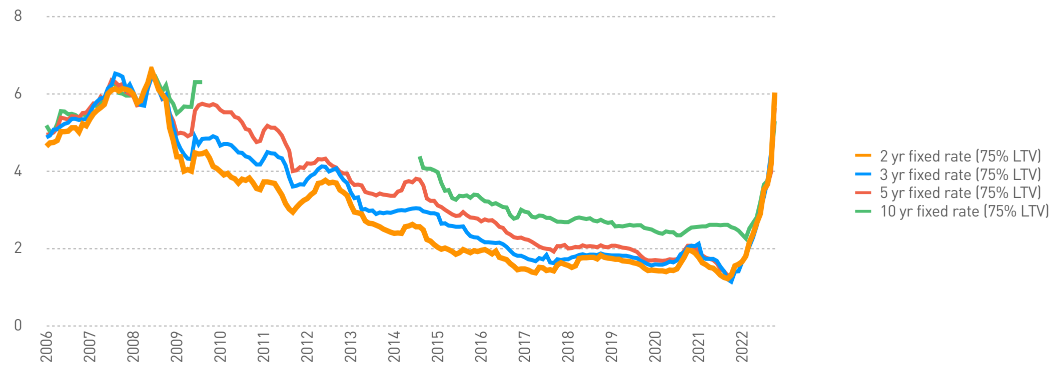
In terms of the development of fixed-rate mortgage interest rates (see Chart 2.4-r), we observe a downward trend in all of them since the 2008-2009 crisis, converging in recent years, as well as the sharp upturn since 2022, following the tightening of monetary policy by the Bank of England in its fight against the upturn in inflation. On the other hand, as shown in Chart 2.4-s, in a medium-term analysis, the hike in the monetary interest rate as of 2004, coinciding with the rise in interbank rates, is noteworthy. This conservative policy made a decisive contribution to containing an out-of-control real estate bubble in the rest of the world, thus avoiding the conse-

Chart 2.4-q
United Kingdom: mortgages taken out by interest rate
(%)



Source: MAPFRE Economics (based on GOV.UK data)

Chart 2.4-r
United Kingdom: fixed mortgage rates
(%)



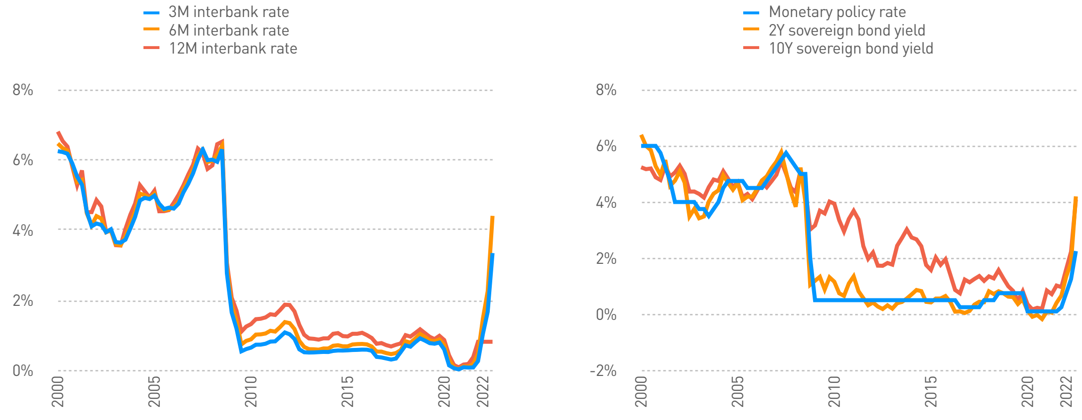
Source: MAPFRE Economics (based on Bank of England data)

quences of the financial crisis that broke out in 2008. Since then, interbank interest rates and monetary policy rates have fallen sharply as a result of the implementation of a monetary expansion policy that would last throughout the decade. More recently, interbank interest rates, monetary policy rates and sovereign bonds are experiencing a steep increase in 2022. This is all part of a restrictive monetary policy established in order to curb inflation, a consequence of the post-pandemic bottlenecks and the war in Ukraine. In the short term, this limited financing scenario will constrain the growth of the real estate market, restricting demand and slowing its expansion.

Household credit gap

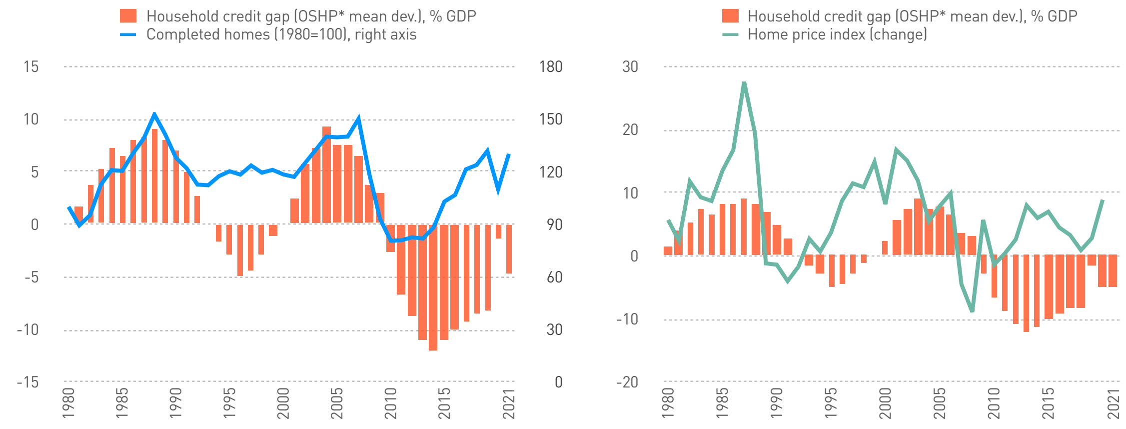
In terms of the evolution of the household credit gap relative to its historical average level, the pattern in the United Kingdom follows a path similar to that in the United States. Thus, we can distinguish two notable periods in which the volume of household debt as a percentage of GDP was significantly higher than its long-term average. The first is the period from 1984

Chart 2.4-s
United Kingdom: interbank and monetary policy rates
(%)



Source: MAPFRE Economics (based on Bloomberg and EMF data)

Chart 2.4-t
United Kingdom: household credit gap



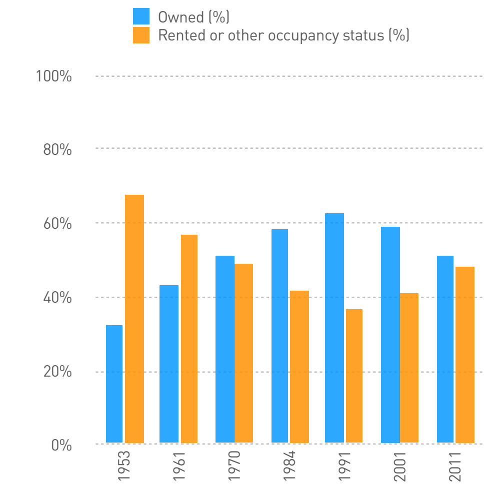
Source: MAPFRE Economics (based on data from BIS, Oxford Economics and Haver Analytics)
*OSHP = One Sided Hodrick-Prescott

to 1990, and the second from 2002 to 2006, reflected both in the number of new housing starts and in the level of prices, which rose sharply. In contrast, throughout 2007-2021, the indicator is below the average, as reflected in a decline in the number of new homes and prices, especially between 2007 and 2008 (when there was a decline), after which they began to improve, despite the wide household credit gap (see Chart 2.4-t).

Residential leasing

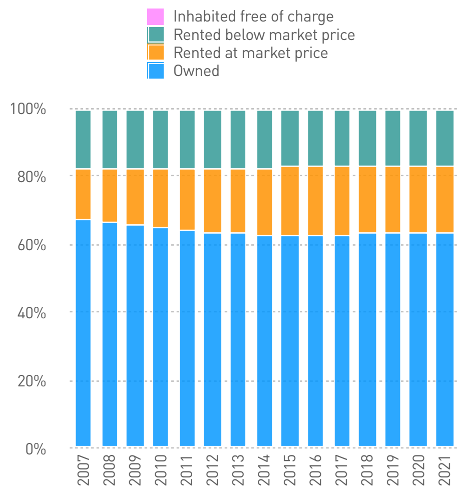
Data provided by the government of the United Kingdom reflect the evolution of residential leasing, which, between 2001 and 2011, presented a decrease in homeownership in favor of renting. However, thereafter, we can see a change in trend and since 2016, the share of rental or leasehold housing has decreased slightly in favor of ownership (63.8% owned in 2021 compared to 62.4% owned in 2016) (see Charts 2.4-u and 2.4-v).

Chart 2.4-u
United Kingdom: trends in home ownership, rental and occupancy free of charge
(%)



Source: MAPFRE Economics (based on GOV.UK data)

Chart 2.4-v
United Kingdom: breakdown of homes by type of occupancy
(%)



Source: MAPFRE Economics (based on GOV.UK data)

United Kingdom in the IRPII ranking

Finally, it is worth noting that the United Kingdom places 25 in the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) ranking, calculated by MAPFRE Economics for 43 countries for which this synthetic indicator could be calculated (see Table 4.2-b). Among the different components weighted to calculate the indicator *demographic growth* is the largest contributor to improving the United Kingdom's position in the sample of countries analyzed. In this sense, the United Kingdom's population in 2023 is 67.1 million, which is estimated to reach 70.5 million by the end of the century[77]. The *growth of disposable income* and its anticipated development in the coming years has caused a delay in positions, although the effect is partly offset by the greater *positive sensitivity of its insurance business to income variations* (see Table 4.2-a).

2.5 Spain

Introduction

The estimated housing stock value in Spain in 2023 was €2.2 trillion[78], which represents 149% of GDP, while the gross financial wealth of households is estimated at 2.5 trillion[79] (216% of GDP). It should be noted that the development of the housing stock over the last four decades has grown in real terms, while its relative weight in household wealth has decreased slightly over the same period (see Chart 2.5-a).

Meanwhile, an analysis of gross capital formation in housing construction in relation to GDP shows that, between 1994 and 2006, this indicator grew significantly in Spain, reaching a maximum of 7.7% in 2006. Since then, however, there has been a sharp decline to approximately 4.7% in 2022, lower than four decades ago (see Chart 2.5-b).

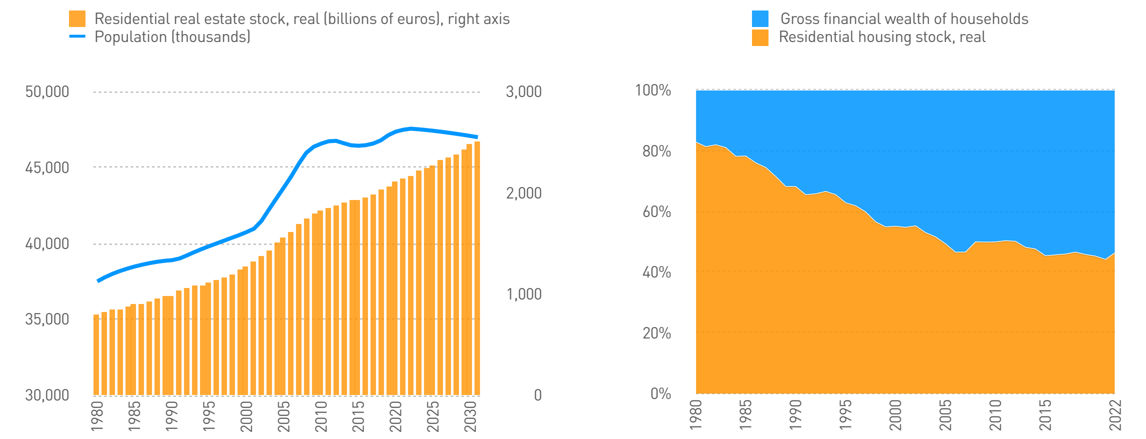
Analysis of relevant indicators for the development of insurance activities

Housing stock and new construction

Housing stock

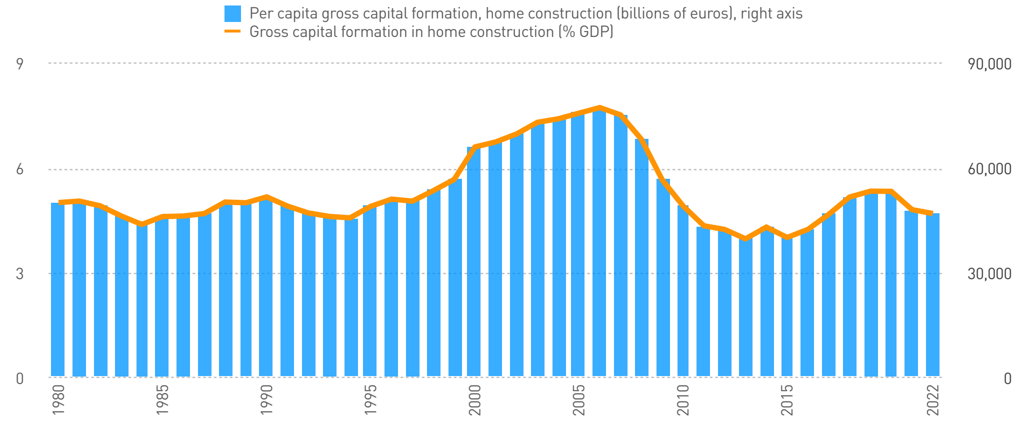
The Spanish housing stock estimated by the Ministry of Transport, Mobility, and Urban Agenda with provisional data for 2021 stands at 25,976,305 units. Comparing the development of the indicator since 2001, over the last 20 years, it has increased by 23.5%. Although the year-on-year growth of the housing stock in 2021 is 0.36%,

Chart 2.5-a
Spain: real residential housing stock, gross financial wealth of households and population



Source: MAPFRE Economics (based on data from Oxford Economics, Haver Analytics and the United Nations)

Chart 2.5-b
Spain: gross capital formation in home construction



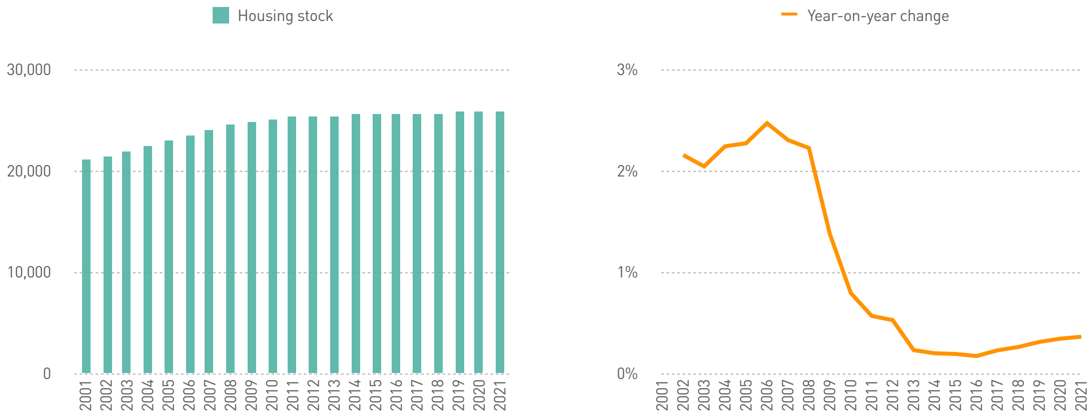
Source: MAPFRE Economics (based on Oxford Economic and Haver Analytics data)

(compared to 0.35% in 2020), which is higher than the previous seven years, it is significantly lower than the data prior to the economic crisis of 2008-2009, where the growth rate for the period was over 2% (see Chart 2.5-c).

New home construction and sales

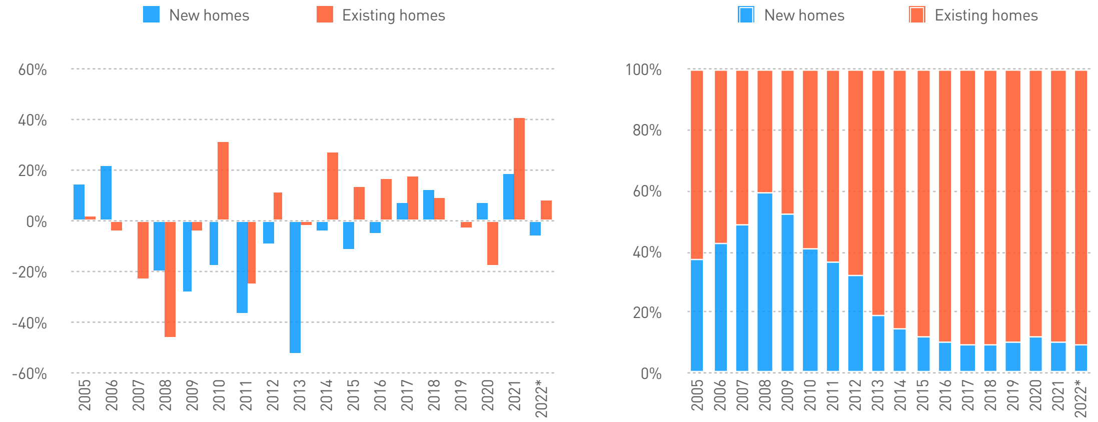
The second indicator of particular relevance for the insurance sector related to the housing stock is its growth (new home construction) to the extent that it determines the potential market for new insurance policies with coverage for homes and homeowners' associations, in addition to specific insurance policies related to the construction period. Thus, with respect to new homes, in these last two years, residential investment was affected first, in 2020, with a decrease in housing starts, and then, in 2021, mainly with the delay in the volume of construction work executed. However, at the end of 2021, the elements that had been negatively impacting construction, such as a labor shortage, construction material supply problems, and, and, consequently, an increase in final

Chart 2.5-c
Spain: housing stock
(number of homes, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Ministry of Transportation, Mobility and Urban Agenda)

Chart 2.5-d
Spain: sales of new homes vs. sales of existing homes
(year-on-year change, %; breakdown, %)



Source: MAPFRE Economics (based on data from the Ministry of Transportation, Mobility and Urban Agenda)
*Provisional figures.

costs, began to turn around, as a result of the economic effects of the pandemic (see Chart 2.5-d).

While in 2020 new home transactions experienced significant growth of 7.3% and home resale transactions significantly dropped by 16.9%, in 2021 both categories experienced significant growth Growth in the new construction segment was 18.9%, although the highest volume was in home resale transactions, where the variation was 41.1%, the highest in the last 16 years. There are several explanations for the excellent housing demand performance in 2021. These include an improved economic situation, a financing context that is still very favorable for households with more savings than in previous periods, which allowed them to make home purchases put on hold during the pandemic, and the interest in moving to a home with more living space and outdoor space.

In contrast, in 2022, new housing transactions decreased by -5.7%, and although resale transactions grew, they did so at a rate of only 7.9%, which is undoubtedly influenced by the tightening of financing conditions due to the interest rate hikes being implemented by the European Central Bank as of July 2022 and in 2023, in its fight against inflation.

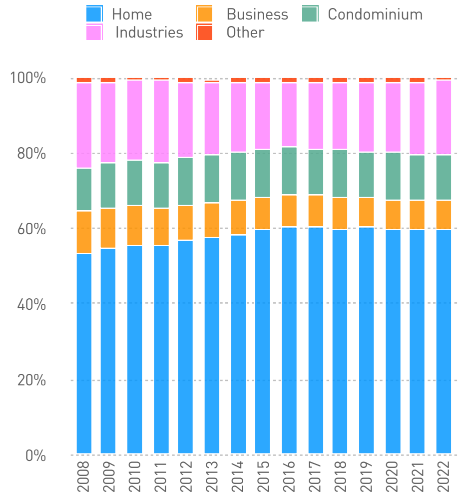
Home-linked insurance developments

Multi-risk insurance covers a wide range of damages or activities in areas as diverse as personnel, property and business (home, condominium, commerce, industry). With data through 2022, within multirisk insurance, *home* multirisk insurance appears as the most widely taken out, at 60%, followed by *industrial* insurance, at 19.6%, *condominiums*, at 12%, and *commerce*, at 7.3%. As shown in Chart 2.5-e, the development of these lines over the last fifteen years shows that multirisk home insurance has been gaining in value compared to commercial and industrial insurance. In the real estate sector, and specifically for homes, In the real estate sector, and specifically for housing, multirisk home and condominium insurance would be a reference.

Homeowners Multirisk

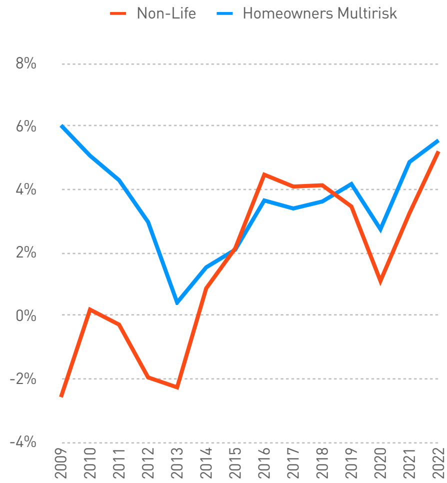
In 2022, the home insurance line was one of the leaders in insurance growth in Spain, with a volume of €5.149 billion in written premiums, representing a year-on-year increase of 5.5%, higher than in 2021, which was 4.9%. According to the latest data published by the National Statistics Institute (INE) for 2021 in the Household

Chart 2.5-e
Spain: breakdown of multirisk insurance
(%)



Source: MAPFRE Economics (based on ICEA data)

Chart 2.5-f
Spain: trends in written premiums in the Non-Life segment vs. Homeowners Multirisk
(year-on-year change, %)



Source: MAPFRE Economics (based on ICEA data)

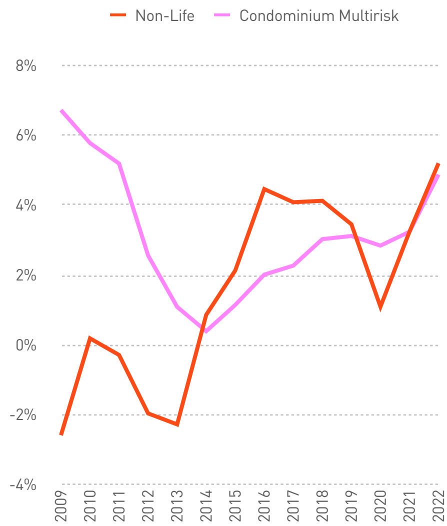
Budget Survey (EPF), the average expenditure per household on home-related insurance in 2021 was €300.07 and represented a 1.57% increase over the previous year.

In a comparative analysis between multirisk home insurance and Non-Life insurance as a whole (see Chart 2.5-f), it is evident that the former has performed better in the last four years, and in the Eurozone crisis of 2009-2012 and the COVID-19 pandemic of 2020-2021, multirisk home insurance has always maintained positive rates, unlike Non-Life insurance as a whole which, until 2014, showed decreases. In terms of the basic indicators for the 2021-2022 period, the decrease in the gross loss ratio from 63.6% to 61.1% and the net loss ratio from 62.4% to 61.9% are noteworthy. Gross expenses remained unchanged at 33.8% in both years, improving the combined ratio from 96.8% to 96.4%.

Condominium Multirisk

Condominium multirisk insurance premiums, meanwhile, increased 4.9% in 2022, exceeding €1.032 billion in direct written premiums, compared with the 3.2% obtained in 2021. If we look at the evolution of multirisk condominium insurance and Non-Life insurance as a whole (see Chart 2.5-g), although specific differences can be seen in some periods (2010, 2014 and 2019), the trend in both series has been very similar and, as in the case of multirisk home in-

Chart 2.5-g
Spain: trends in written premiums in the Non-Life segment vs. Condominium Multirisk
(year-on-year change, %)

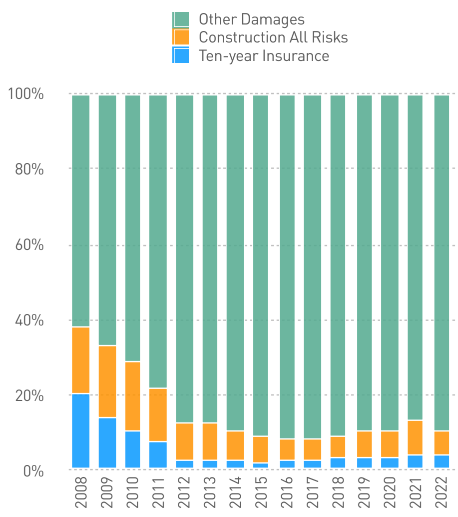


Source: MAPFRE Economics (based on ICEA data) surance, condominium insurance does not reflect negative year-on-year rates in the selected period. Furthermore, when analyzing the business performance indicators in 2022, the combined ratio improves, shifting from 96.9% in 2021 to 95.4% by 2022. This was due to a decrease in the gross loss ratio, from 67.5% to 63.2%, and also to a decrease in gross expenses, which dropped from 30.2% to 30%. Finally, the net loss ratio dropped from 65.6% to 64.2% in this period.

Engineering

The insurance lines related to the real estate sector in the engineering branch include *ten-year* insurance and *construction all-risk* insurance. In 2022, the former registered year-on-year growth of 3%, with a volume of €46.7 million, while the latter showed a decrease of -25.1%, with €75.8 million in premiums. Analyzing the performance of both lines of insurance since 2008 (see Chart 2.5-h), it is evident that in the years following the economic crisis of 2008-2009, construction activity fell drastically, which led to a significant decline in real estate insurance, until it dropped to very significant year-on-year levels in ten-year insurance (-47.7% in 2009 and -60.9% in 2012), and it was not until 2016, with the economic recovery, that positive growth rates returned (although at levels that are still far from those reached prior to the crisis).

Chart 2.5-h
Spain: breakdown of engineering insurance (%)



Source: MAPFRE Economics (based on ICEA data)

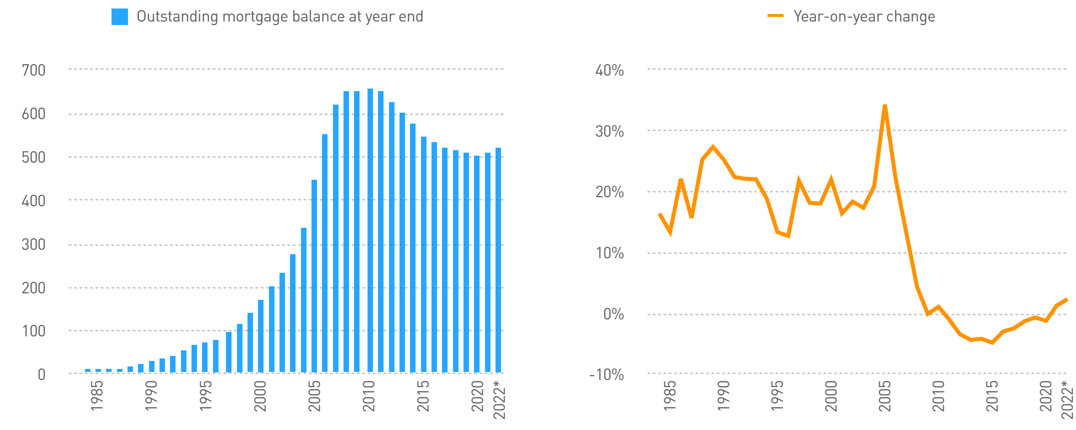
Meanwhile, the economic effects of the COVID-19 pandemic in 2020 were also reflected in declines in the insurance sector for these branches: ten-year insurance declined by -12.0%, and all risk construction insurance slowed with 6.5% growth when it had been growing at double-digit rates in the previous two years. Subsequently, in 2021, both insurance modalities continued to grow, with rates of 34.6% for the former and 28.9% for the latter. According to the most recent data, a slowdown is again observed in 2022 in ten-year insurance (3.0%) and a decline in all-risk construction insurance (-25.1%).

Mortgage balance and new mortgages taken out

Mortgage balance

As emphasized in this report, the balance of outstanding mortgage loans and the creation of new mortgages are two important indicators for the insurance business, as they are directly related to the capital insured in life insurance policies covering the risk of death of the mortgage holders. In this sense, the current trend in the Spanish market is positive, reporting growth in both outstanding balances and mortgages, which seem to have overcome the consequences of the real estate crisis of 2008-2009. However, the interest rate hikes and the restrictive monetary policy being implemented by the European Central Bank in response to the upturn in inflation since mid-2022 are affecting credit (which will begin to tighten in the first months of 2023) and could reverse this trend if the situation continues over time. In 2022, the Bank of Spain reported a mortgage balance of €524 billion and a year-on-year variation of 2.39%. This assumes a continuation of the growth trend

Chart 2.5-i
Spain: outstanding mortgage loan balance
(amount, billions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on Bank of Spain data)
*Provisional figures.

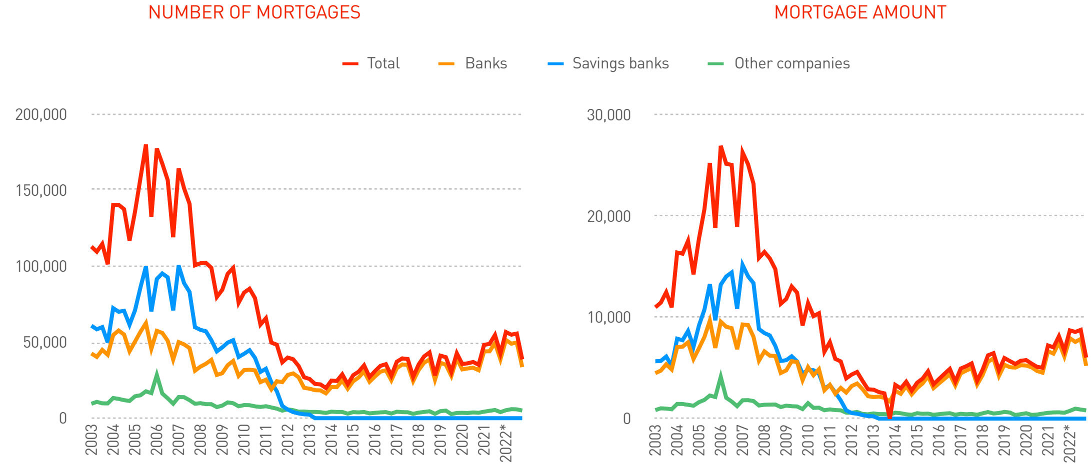
that began in 2021, which, in turn, constituted the first growth in the outstanding mortgage balance since 2010 (see Chart 2.5-i).

New mortgages taken out

Meanwhile, the total number of mortgages taken out suffered a sharp drop after the 2008-2009 economic crisis, reaching its lowest figure at the end of 2013, with only 19,855 mortgages taken out in Q4 for a value of €2.0997 billion. Since then, we have observed constant growth, reaching 55,700 units in Q3 2022. However, in Q4 of that fiscal year (provisional data), the value dropped sharply to 38,679 mortgages, down -30.6% compared to Q3 2022, with a total volume of €6.0254 billion as of December 2022, following the start of the interest rate hike path implemented by the European Central Bank after a long period in which the real estate market had benefited from a low-interest rate environment (see Chart 2.5-j).

Under the classification criterion based on mortgage loan origination companies, savings banks were the main companies granting them. However, since the 2008-2009 crisis, banks have been gaining prominence and now provide approximately 88% of the total mortgage loans granted. During 2022, new home loan transactions for home purchases remained high, despite higher interest rates for bank loans than in 2021, and a tightening of the criteria for approval of new borrowing conditions. In this sense, from the analysis of the mortgages taken out during 2018- 2022, we see that, during 2022 versus 2021, those taken out for both rural properties, as well as the two categories of urban properties (homes and lots), have increased, although in the latter case they are situated much higher than the last four years. According to provisional data published by the (INE), mortgages issued in 2022 for home purchases accounted for 76.18% of all mortgage loans, a percentage increase over the last seven years, whose average sits at 71.61%. Likewise, while the year-on-year variation of total mortgages on all types of properties in 2021 was high at 19.6% (the highest in the last 18 years), growth slowed in 2022 to 9% year-on-year (see Chart 2.5-k). Thus, the number of mortgage loans for home purchases climbed in Q4 2022 to a total of 110,401, a year-on-year increase of 5.04%, much lower than that obtained in 2021 (25.1%). The foregoing is evidence of a slowdown in the pace of home purchase-sales among Spanish households.

Chart 2.5-j
Spain: mortgages take out on urban properties by lender
(number of mortgages; millions of euros)

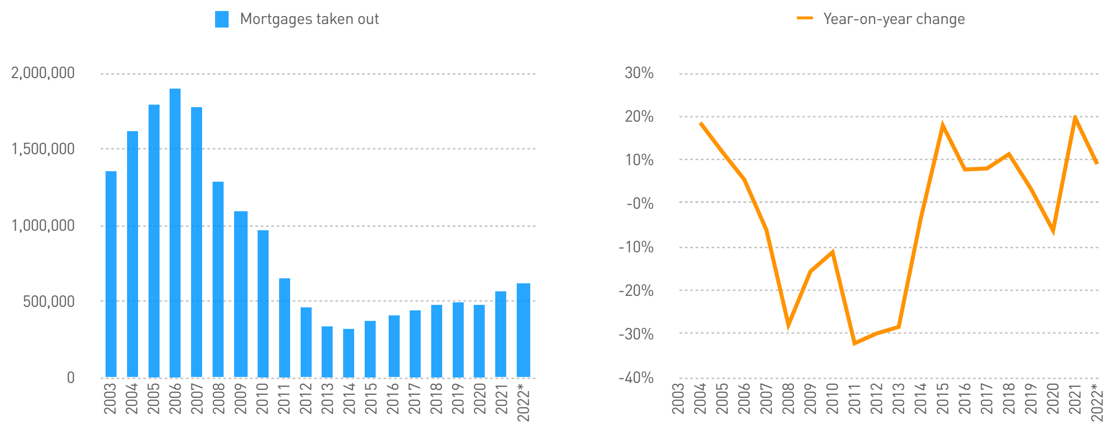


Source: MAPFRE Economics (based on data from the National Institute of Statistics, INE)
*Provisional figures.

Development of Risk life insurance

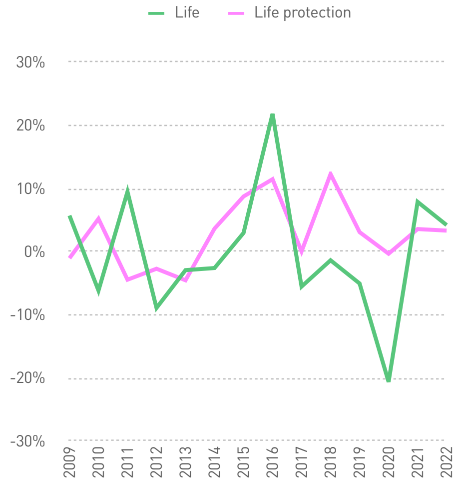
In 2022, Life insurance in Spain reached a premium volume of €24.535 billion, a 4.2% increase over the previous year. In particular, life insurance is largely associated with the performance of mortgage loans, so the development of the financial conditions at any given time determines how many of these types of policies are taken out. This product covers the buyer's potential non-payment of the mortgage in the case of death or disability. It can be written insuring the amount of the mortgage and designating the beneficiary bank for the outstanding amount and the policyholder for the difference. It can also be written establishing the outstanding capital, the total mortgage or a part thereof, as the insured value for the entire life of the loan, where the bank is the irrevocable beneficiary, or it can simply be taken out as personal or

Chart 2.5-k
Spain: mortgages vs. total properties
(number of mortgages, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on INE data)
*Provisional figures.

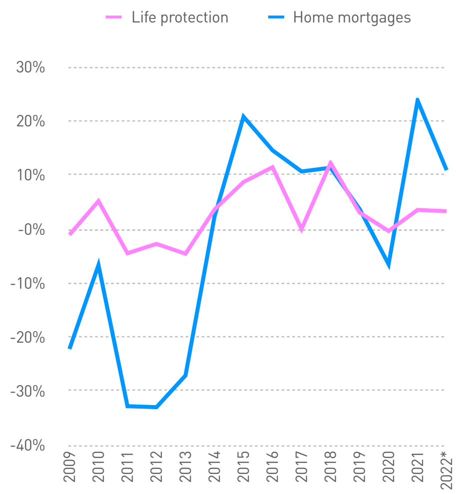
Chart 2.5-l
Spain: trends in written premiums in the Life segment vs. Life protection
(year-on-year change, %)



Source: MAPFRE Economics (based on ICEA data)

family protection, without a specific designation of the financial entity as a beneficiary. As a coverage or as separate insurance, there is also the possibility of incorporating default coverage, which covers the loan installments in the event of unemployment or temporary disability of the policyholder for the duration of this situation.

Chart 2.5-m
Spain: trends in written premiums in the Life protection line vs. home mortgages
(year-on-year change, %)



Source: MAPFRE Economics (based on ICEA data)
*Provisional figures on home mortgages

A comparison of the development between Life insurance premiums and Risk Life premiums shows that in some periods (e.g., 2009-2013) they have not performed uniformly, although, in general, the trend has been in the same direction in both cases, despite the substantial differences in growth, with Risk Life premiums withstanding economic crises better (see Chart 2.5-l). It should be noted that, in 2022, the loss ratio in the life-risk branch decreased due to the positive development of the COVID-19 pandemic, which had generated a significant upturn in the two previous years.

Meanwhile, if we analyze the trend in the number of home mortgages with respect to the number of life insurance policies taken out over the last fourteen years (see Chart 2.5-m), although it shows that both follow similar trends over time, the fluctuations in the case of the variation rates of home mortgages taken out are considerably higher, and are accentuated in those years in which there are crises or growth in the country's economic activity.

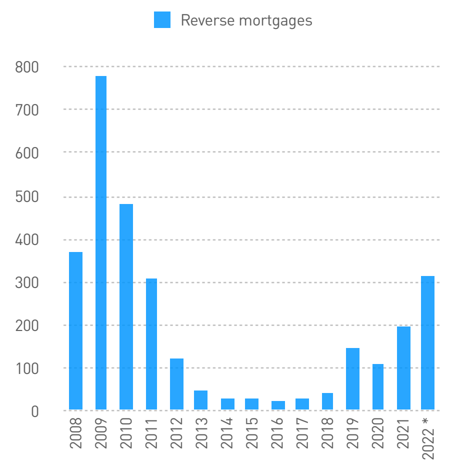
Reverse mortgage

In Spain, the reverse mortgage is regulated by Law 41/2007 (amending the Mortgage Market Regulation Act of 1981), updated by Law 1/2013 art. 5 and final provision 8 of Law 5/2015, and more recently, by RDL 24/2021 art. 18.2 edit. RDL 11/2022 and RDL 24/2021 temp. prov. 5th edit. RDL 11/2022 This product is focused on people with financing needs who are over 65 years of age (although certain companies raise the limit to 70 years of age), or who are affected by some type of dependency or degree of disability equal to or greater than 33%. Likewise, the law establishes that the companies that provide this product must provide independent advice to the customer. The customer, in exchange for mortgaging their property, will receive a monthly income that may be a life annuity, a temporary/single payment, a lump sum or a combination of the last two. In a lifetime reverse mortgage, the customer receives a monthly income throughout their lifetime, in the temporary reverse mortgage, they will receive income only for an agreed period, and in the case of a single drawdown mortgage, the customer will receive a single sum, usually at the beginning of the contract.

The differences among these modalities are not only temporal. In the case of the lifetime mortgage, a lower income is received than in the temporary modality, as its duration is unlimited unless annuity insurance is taken out, in which case the payments would be computed backed by the value of the home subject to the loan when the customer's survival will exceed the maximum loan term. In the tax field, income derived from annuity insurance is not tax exempt, although only the part corresponding to the profitability included in that income would be taxable, while income paid in the temporary reverse mortgage is not taxable.

The property subject to the reverse mortgage will be the main residence, and the customer must have free and clear ownership of the property. Likewise, the resulting income (except that obtained through annuity insurance) would be IRPF-exempt. In addition, with the enactment of RD-law 17/2018, the borrower no longer has to pay the Stamp Duty Tax. In the reverse mortgage, the borrower always maintains ownership and use of the property, may rent it, or may cancel it early, repaying the principal borrowed plus interest and expenses inherent to the loan. In the event of the death of the mortgage holder, or of the last of the beneficiaries, the heirs will settle the outstanding debt, deciding whether to sell the property to pay off the debt incurred or to keep the property and pay off the existing debt (with their own funds or with a new mortgage).

Chart 2.5-n
Spain: reverse mortgages taken out
(number of reverse mortgages)



Source: MAPFRE Economics (based on data from the General Council of Notaries of Spain)

*The 2022 results are based on extrapolations from partial data to the third quarter.

As shown in the data published by the General Council of Notaries illustrated in Chart 2.5-n, the time interval where most reverse mortgages were signed was from 2008 to 2011, coinciding with the onset of the crisis. In subsequent years, the signing of reverse mortgages is drastically reduced, and as of 2019, they begin to be taken out in greater numbers. It should be noted that, in Spain, despite being a country with a very high percentage of home ownership, this financial instrument has not taken root for various reasons, including the usually significant difference between the value of the mortgaged property and the amount of the periodic income the customer receives, which is only a supplement to the public pension in the majority of operations. In addition, it is a complex product that requires independent advice to understand it properly. Also, depending on the applicant's age and the agreed period, in most cases an annuity insurance policy must be taken out, which reduces the final amount of the mortgage, making it less attractive. Finally, harmony and understanding between the heirs are essential, either upon the death of the mortgagor or last beneficiary or at the end of the contract term, otherwise, the final decision on the property and the debt incurred by the customer will be difficult[80].

Real estate investment instruments for insurance companies' investment portfolios

Spanish insurance companies are regular investors in financial assets issued on the mortgage market. In addition to central bank liquidity auctions and bank deposits, the most common methods used by Spanish banks to finance mortgage lending are covered bonds and mortgage-backed securities securitizations (RMBS) in which insurance companies invest part of their portfolios.

The securitization model developed by Spanish financial companies has been determined, to a large extent, by the different regulatory developments introduced in recent decades. Thus, mortgage loan portfolios were the first to be securitized in 1992, following in the footsteps of other countries, as these were homogeneous and high-credit-quality assets. Law 2/81, on the Mortgage Market and the Royal Decree that subsequently developed it (RD 685/1982), created and defined the concept of *mortgage bonds, mortgage bonds* and *interests in associated undertakings*. These three mortgage securities opened the door for the companies to obtain financing based on their mortgage portfolio[81].

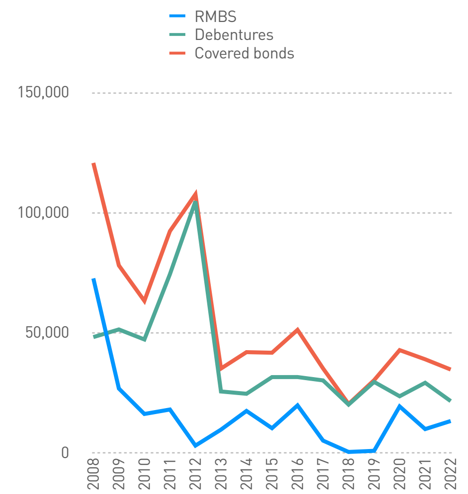
Since then, the regulations governing this type of issue have developed significantly and are currently under review within the framework of European Union regulations with the aim of reducing regulatory fragmentation as much as possible and promoting a single capital market in the Union. In the insurance field, the reform of the Solvency II framework has introduced specific treatment appropriate to their lower level of risk in the standard formula of the solvency capital requirement for both covered bonds and securitizations that meet certain eligibility criteria[82].

Covered bonds

According to the Spanish Mortgage Association (AHE), in the first half of 2022, new issues of mortgage securities admitted to trading totaled €34.522 billion (11% less than in 2021). During the first half of 2022, covered bonds, which in Spain are the main source of bank refinancing for the mortgage portfolio, registered an issue volume of €21.4 billion. In turn, the mortgage bond balance had risen to €13.122 billion by June 2022, up 34% from the previous year's total of €9.759 billion[83] (see Chart 2.5-o).

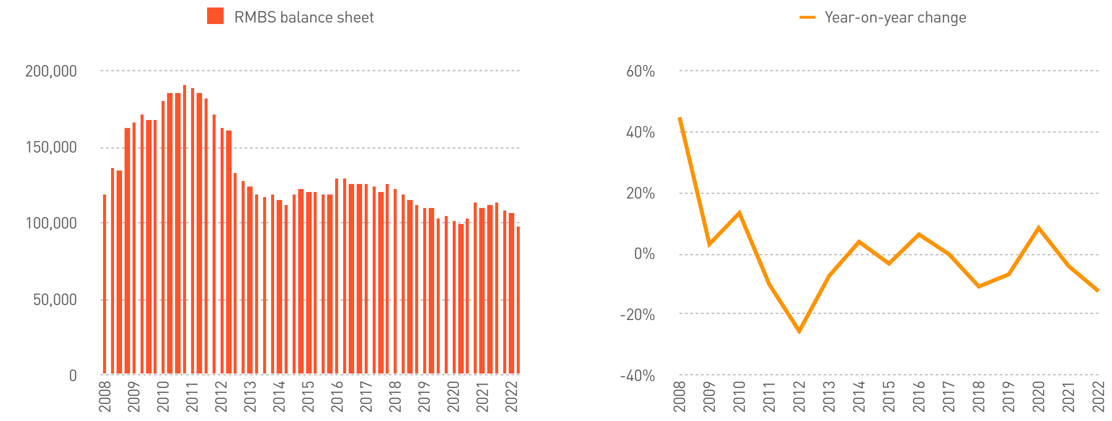
In Spain, the first recourse for refinancing mortgage banking assets has changed as of July 8, 2022, due to the implementation of the European Directive 2019/2162 (Mortgage Bond Directive) and to the regulations following the enactment of Royal Decree-Law 24/2021. According to the European Mortgage Federation (EMF), the changes have strengthened the market to make it more competitive and efficient, and include the establishment of a series of guarantees (such as the obligation to maintain a liquidity cushion covering the payment of principal and interest for at least 180 days to mitigate the risk of default), regulates the segregation of separate assets (cover pool), and requires the

Chart 2.5-o
Spain: issuing of mortgage-backed securities per year of admission to trading
(millions of euros)



Source: MAPFRE Economics (based on data from the Spanish Mortgage Association, AHE)

Chart 2.5-p
Spain: residential mortgage-backed security (RMBS) balance sheet
(outstanding balance, millions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Association for Financial Markets in Europe, AFME)

appointment of a monitoring body (cover pool monitor), as well as the appointment of an independent insolvency administrator. It also establishes the requirement that all assets comprising the hedging set must have an updated appraisal on incorporation, with the particularity of exceptionally admitting the reference value the company is using for first issues (in accordance with Circular 4/2017), which may not exceed the appraisal value at origin in any case. The foregoing should allow the covered bond market to function better, precisely at a time when obtaining funds through LTRO (*longer-term refinancing operations*) lines will be less guaranteed according to the latest moves announced by the European Central Bank, which opens up investment possibilities for insurance companies in high credit quality financial assets, in accordance with their business model.

Mortgage-backed securitizations

According to data from the Association for Financial Markets in Europe (AFME), the outstanding balance of mortgage-backed securitizations (RMBS) in Spain maintains a downward trend, with the sharpest drop occurring in September 2012, down 17% from the previous quarter. In 2022, this balance decreased compared to the previous year (€97.433 billion in June 2022 compared to €111.155 billion in June 2021), with the outstanding balance in 2022 the lowest registered in the series analyzed (see Chart 2.5-p).

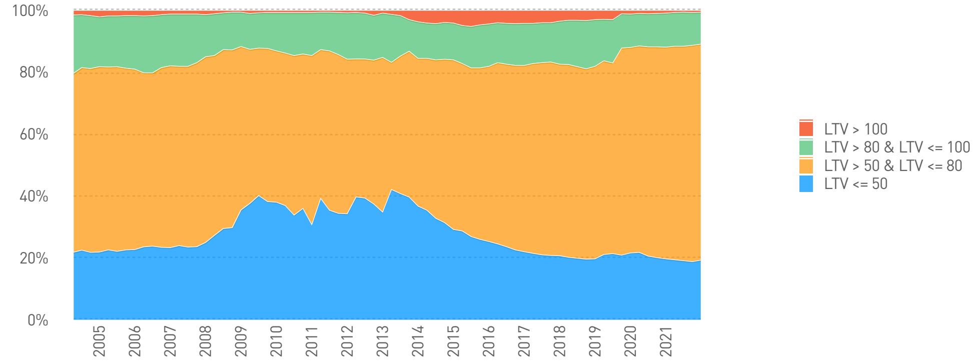
Loan-to-value ratio

The loan-to-value (LTV) ratio expresses the percentage of the loan granted with respect to the value of the subject property. In general, a good LTV ratio is considered to be below 80%, as is the norm for most mortgage loans in the Spanish market. Chart 2.5-q illustrates a historical series of loan distribution according to different LTV tranches, highlighting the period between 2007 and 2014, which shows a tightening in the conditions of loans granted, with the proportion of loans with an LTV equal to or below 50% increasing significantly, following the 2008-2009 and 2011-2012 crises in the Eurozone.

Non-performing loans ratio and bad debts

Chart 2.5-r shows information regarding the development of the credit non-performing loans ratio over the last decade. In June 2022, the ratio of bad debts represented 2.7% of the outstanding loan portfolio, down from 2.9% observed in the

Chart 2.5-q
Spain: loan-to-value ratio
(LTV, %)



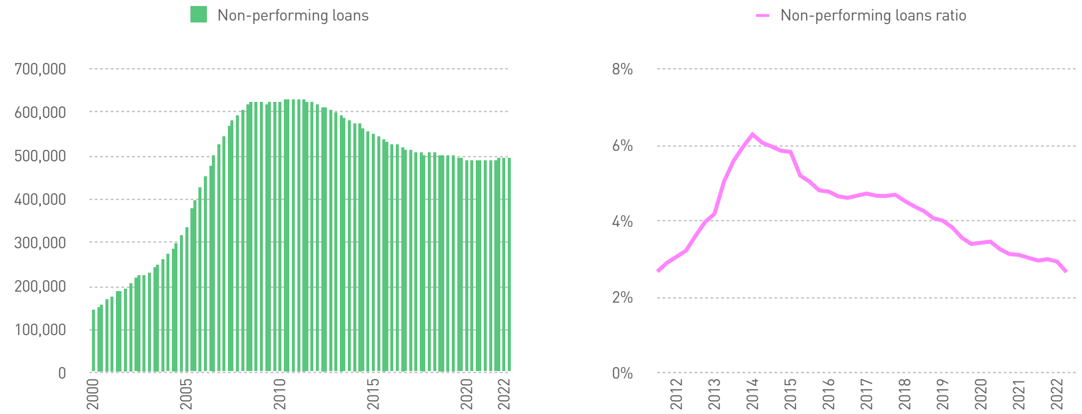
Source: MAPFRE Economics (based on Bank of Spain data)

previous quarter and down from 3% in June 2021. It is also evident that the non-performing loans ratio to date shows a decreasing trend that began in 2014 when it reached a ratio of 6.3% during the first quarter. Along the same lines, the data published by the Bank of Spain reflect the large growth in the total amount of bad debts at the beginning of this century, reaching a total of €632.449 billion at the end of 2010. Thereafter, a slight decrease was observed, which has tended to stabilize in recent years, with total bad debts reaching €496.515 billion in June 2022, 1% higher than the amount in June 2021.

Mortgage foreclosures

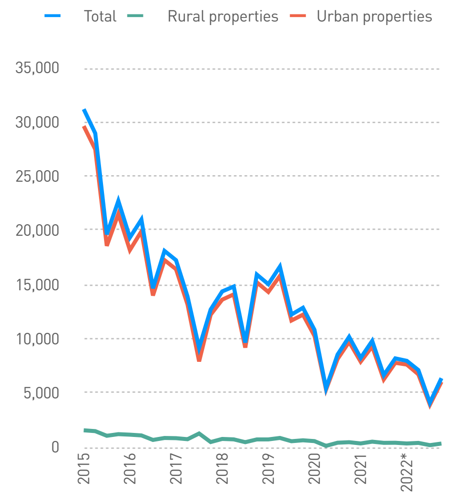
According to INE data, foreclosures initiated and registered in the rural and urban property registries during 2022 amounted to 25,551 units, 22.3% lower than those registered in the previous year. Home foreclosures accounted for 66.0% of total foreclosures (see Chart 2.5-s). It is worth noting that the figure for total foreclosures has undergone a progressive downward

Chart 2.5-r
Spain: amount of non-performing loans and real estate non-performing loans ratio
(non-performing loans, millions of euros, non-performing loans ratio, %)



Source: MAPFRE Economics (based on AHE and Bank of Spain data)

Chart 2.5-s
Spain: foreclosures on rural and urban properties initiated and recorded in the land registers
(number of properties)



Source: MAPFRE Economics (based on INE data)
*Provisional figures on home mortgages

trend over the last seven years, reaching 28,954 foreclosures in June 2015, a total of 15,926 in December 2018, and finally, in Q2 2020, registered a low of 5,440 foreclosures. Although foreclosures have been progressively declining throughout 2022, reaching a low of 4,105 units in September, in December, they rose again to 6,366 foreclosures.

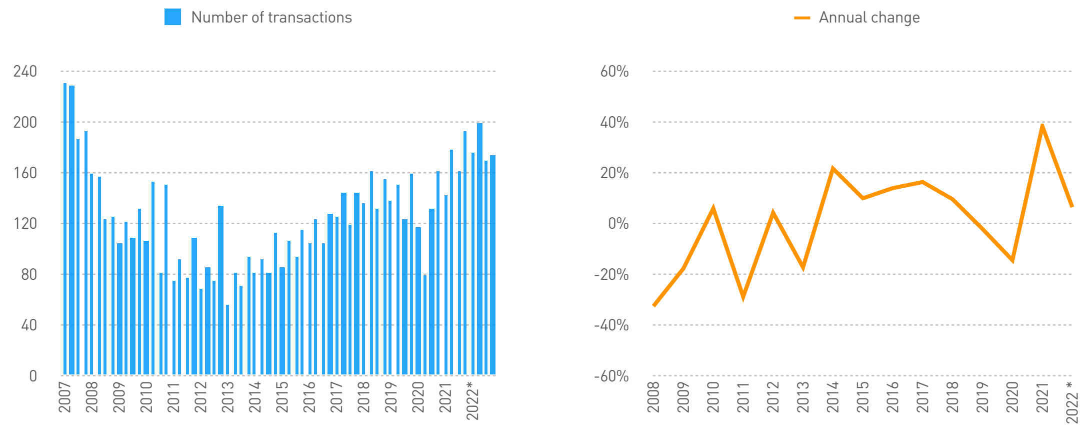
Real estate transactions, home prices and mortgage interest rates

Real estate transactions

The recovery in the number of real estate transactions that began in 2021 after the sharp decline suffered in 2020 confirms that activity in the real estate sector in Spain has been maintained and increased during 2022. Data published by the Ministry of Transportation, Mobility and Urban Agenda, through the Housing and Land Observatory, show that the total cumulative volume of housing real estate transactions conducted during 2022 (717,558 units), exceeds that registered in 2021 (674,249 units). Despite these data, the year-on-year variation in 2022 (6.42%) shows a significant drop with respect to the growth registered in 2021 (38.35%), where the volume of transactions is decreasing, largely due to the current economic situation, with high inflation and the continuous rise in interest rates that began in July 2022, factors that make it difficult to buy and sell homes and that have influenced the number of transactions in the second half of the year (see Chart 2.5-t).

A medium-term analysis confirms that the Spanish real estate sector has experienced

Chart 2.5-t
Spain: home sales
(number of transactions, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Ministry of Transportation, Mobility and Urban Agenda)
*Provisional figures.

numerous changes. The years following the economic crisis of 2008-2009 stand out in particular in this regard, as the mortgage market was severely affected and the number of real estate transactions fell sharply. The 2011-2012 interval is also notable, in the midst of the sovereign debt crisis, when the number of transactions fell more than -25% for several consecutive quarters.

However, it is not only factors outside of the Spanish economy that have affected the real estate market; domestic regulatory changes to the tax system have also influenced the decisions of economic operators in real estate transactions. In this regard, the VAT hike in 2010, the elimination of the primary residence tax deduction 2012, and the elimination of the inflation correction and abatement coefficients in the calculation of capital gains for personal income tax in 2014, are all worth noting; all of these measures involved a change in the volume of activity in the corresponding quarter.

Other more recent factors that have impacted this economic activity include the lockdown prohibiting citizens from leaving their homes in 2020 due to the COVID-19 pandemic, with -16.1% and -47.2% year-over-year drops in Q1 and Q2 respectively, and the successive epidemic waves of the virus; all of this reduced economic activity and the number of real estate transactions, which, nevertheless, began to recover slightly in Q3 (+6.8%) and Q4 (+1.2%) 2020. In 2021, as a base effect, year-over-year growth rates in all quarters soared with values above 20%, reaching 125.5% in the second quarter, coinciding with the strict lockdown that was in place during the same period of 2020.

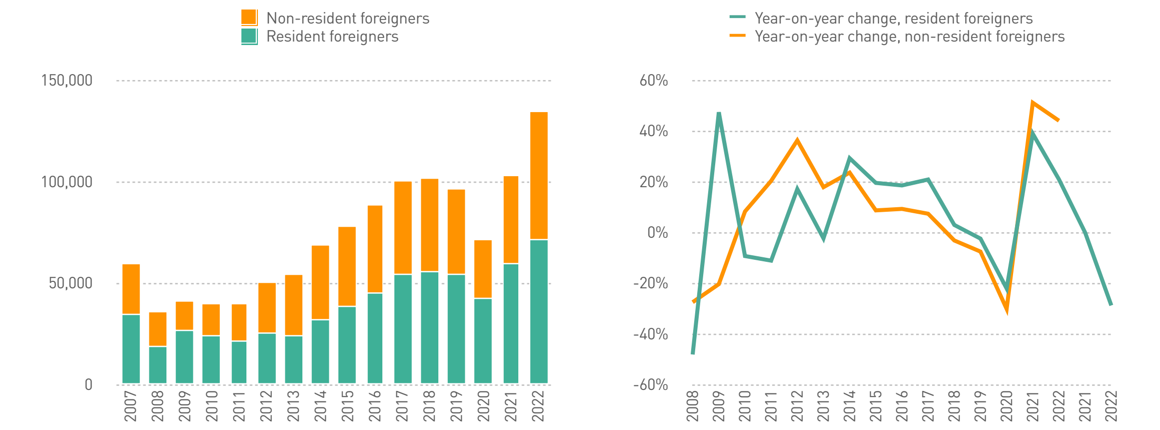
Meanwhile, analyzing real estate transactions by Autonomous Community in 2022, we see that, unlike in 2021, where all condominiums had positive year-on-year rates, in 2022, there are some with negative rates (Cantabria with -2.78%, Ceuta and Melilla with -6.85%, and Madrid with -0.74%). The rest of the communities with improved values versus the previous year include the Canary Islands, with 26.9%, Valencia, with 14.4%, the Balearic Islands, with 7.6%, and Andalusia with 5.8%. Las Palmas of Grand Canary has the highest percentage of transactions by province over the national total with 28%, followed by Santa Cruz de Tenerife with 26%. These are followed by Alicante, with 25.8%, and Caceres with 15%. Finally, the growth in the provinces like Soria, with 13.8%, Orense with 13.5% and Avila with 11.9%, are notable.

Meanwhile, real estate transactions carried out by foreigners (residents and non-residents), which accounted for 15.3% in 2021 as a definitive figure of the national total, increased to 18.8% in 2022. As in 2021, when there was a significant rise in the year-on-year changes in transactions carried out by foreigners, in 2022, although both categories soared, they also showed very positive performance, with 20.9% going to transactions by resident foreigners and 44% for non-resident foreigners (see Chart 2.5-u). With provisional data in the Q4 2022, the total number of real estate transactions carried out by foreigners (residents and non-residents) was 134,592 (18.76% of the national total), slightly higher than what was registered in 2021. At the provincial level, coastal areas (with the exception of Madrid, with 6.2%) remained those preferred by foreigners over the total of their transactions in 2022 (Alicante, 22.1%; Malaga, 12.5%; Barcelona, 7.6%; Canary Islands, 8.5%; and Balearic Islands, 5.8%). Finally, according to the latest data published by the Housing and Land Observatory for Q2 2022, foreigners account for 19% of total home purchases in Spain; the nationalities of the most prominent foreign buyers would be: United Kingdom, with 9.8%; Germany, 9.0%; France, 6.6%.

Home prices

If we compare the evolution of average home prices in Spain with the development of the general price index in a series since 1985[84], we can see that both indexes track

Chart 2.5-u
Spain: real estate transactions involving foreigners
(number of transactions, thousands; year-on-year change, %)



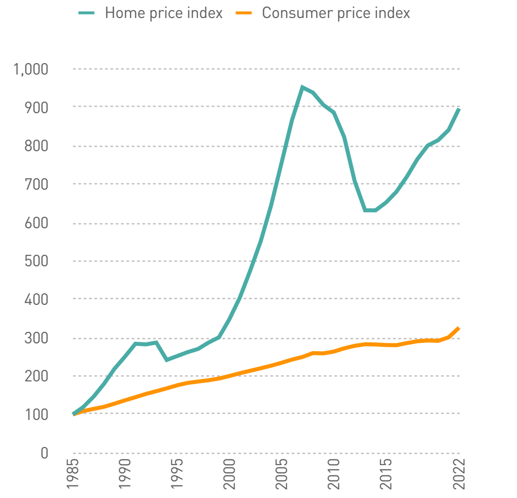
Source: MAPFRE Economics (based on data from the Ministry of Transportation, Mobility and Urban Agenda)

upward, more unevenly in the case of home prices which experienced a significantly more pronounced increase between 2000 and 2007, interrupted by the real estate crisis of 2008-2009 and its replica in the Eurozone (and particularly in Spain) in 2011-2012, not recovering its upward path again until 2014 (see Chart 2.1-v). In any case, we can see that the home price index has had a substantially higher growth trend throughout the period analyzed than that of the general consumer index. The INE has indicated that the General Housing Price Index (HPI) registered year-on-year variation of 5.58% for Q4 2022, a significantly higher level than the same figure published for the same period of 2021, 1.2%. The new housing HPI for 2022 ended the year at a 6.2% increase compared to 6.4% in 2021, while the home resale HPI in 2022 was 5.3%, versus 6.4% in 2021.

Mortgage interest rates

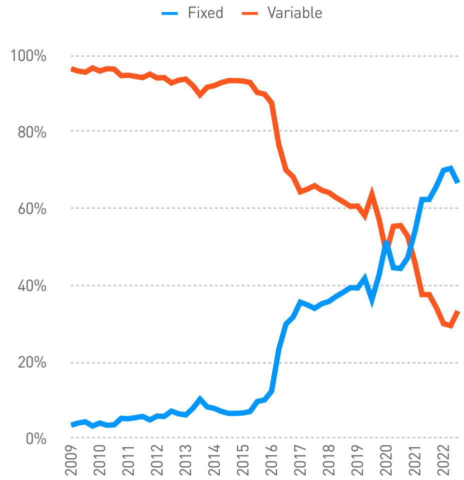
In terms of the usual mortgage interest rate on mortgage loans granted in Spain, according to data published by the INE, as of December 2022, 36.3% of home mortgages were taken out at a variable interest rate and 63.7% at a fixed rate. Prior to the pandemic, the volume of mortgages taken out at variable rates was considerably higher than those at fixed rates, such that, between 2009 and 2016, an average of 90% of the total were taken out at variable interest rates. However, after 2015, the trend was reversed and accelerated by the pandemic, at which point the fixed interest rate became the majority option. The trend continued on this path until the fixed rate reached 70% in March 2022. However, the path seems to have started a new reversal

Chart 2.5-v
Spain: home and consumer price indexes
(1985=100)



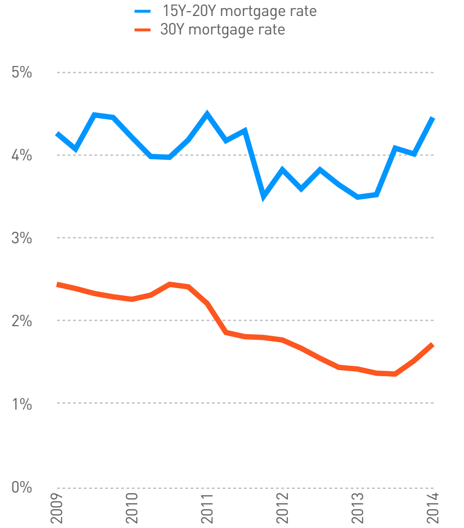
Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

Chart 2.5-w
Spain: mortgages taken out by interest rate
(%)



Source: MAPFRE Economics (based on INE data)

Chart 2.5-x
Spain: mortgage rates
(%)

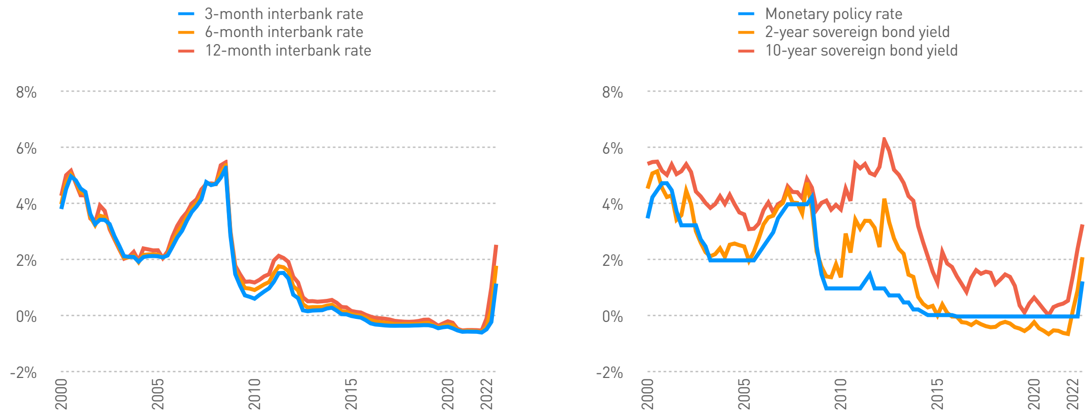


Source: MAPFRE Economics (based on European Mortgage Federation data)

following a rise in the fixed interest rate, hand in hand with the implementation of a tighter monetary policy by the European Central Bank and a post-pandemic risk aversion that seems to have started to subside (see Chart 2.5-w).

Meanwhile, according to data from the European Mortgage Federation (EMF), in Spain, the mortgage interest rate with a lock-in period between 5 and 10 years was 4.45% in Q3 2022, up 11% from the previous quarter and extending the growth that began in 2020. In turn, the mortgage interest rate with a lock-in period longer than 10 years was 1.72%, which continues the upward path initiated during Q1 2022 (see Chart 2.5-x). Clearly, the data are in line

Chart 2.5-y
Spain: interbank and monetary policy rates
(%)



Source: MAPFRE Economics (based on Bloomberg and EMF data) with the ECB's rate hikes aimed at curbing inflation.

In this regard, as shown by the data illustrated in Chart 2.5-y, it is noteworthy that interbank interest rates, monetary policy rates and sovereign bond rates are experiencing a steep increase in 2022. It is all part of a restrictive monetary policy by the European Central Bank aimed at curbing inflation not seen since the introduction of the euro. This scenario of tightening financing conditions will imply, at least in the short term, a strain on real estate market growth, restricting demand and slowing its expansion, in a market that has been accustomed to a prolonged low-interest rate environment for a decade and is now facing an accelerated increase in interest rates.

Household credit gap

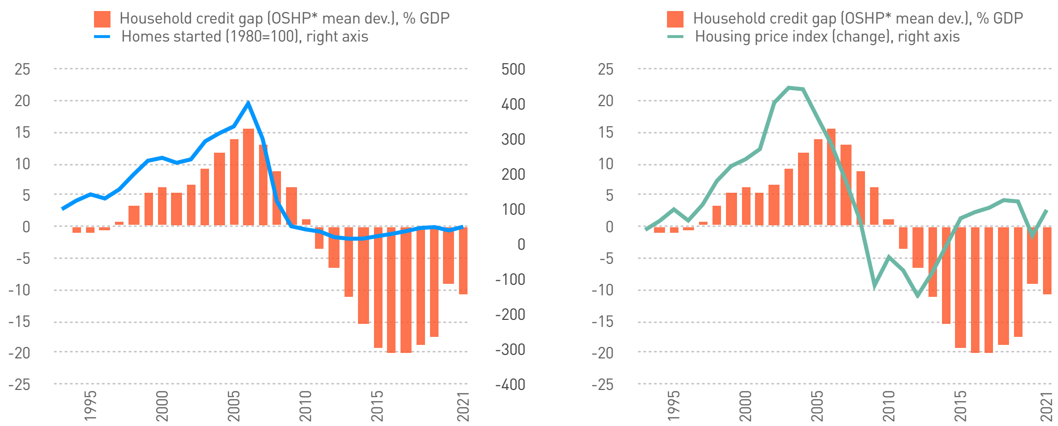
In terms of the development of the household credit gap, from the late 1990s through 2006, we can distinguish a period in which the volume of household debt was significantly higher than its long-term average, reaching its peak in 2006, the year prior to the onset of the real estate crisis; this was reflected in both the number of new housing starts and the level of prices (see Chart 2.5-z), which experienced a strong rebound (in this sense, the credit gap can be seen as a leading indicator of the 2008-2009 housing crisis). Subsequently, a period was observed from 2007 to 2021, in which the household credit gap is below the average, as reflected in a decline in the number of new homes and prices, especially between 2007 and 2011, after which they began to improve, despite the wide household credit gap that began to narrow starting in 2016.

Residential leasing

The development of residential leasing in Spain, published by the Housing and Land Observatory shows a continuous increase in homeownership as opposed to renting between 1950 and 2001. However, the trend reversed in 2011, at which point the number of leases increased with respect to ownership, which represented 78.9% compared to 21.1% of leases (see Chart 2.5-aa). The latest ten-year data published in 2021 show that the trend continues to increase in favor of rental housing (24.2%) or other forms over ownership (75.8%).

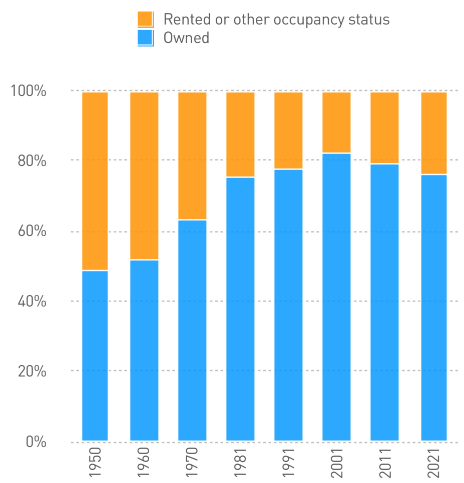
It is revealing that in 2020, unlike the previous five years, the weight of households with market-rate rental contracts decreased to 14.7% in 2020 (15.4% in 2019), while those households with below-market-rate rents rose from 2.7% to 3.3% in

Chart 2.5-z
Spain: household credit gap



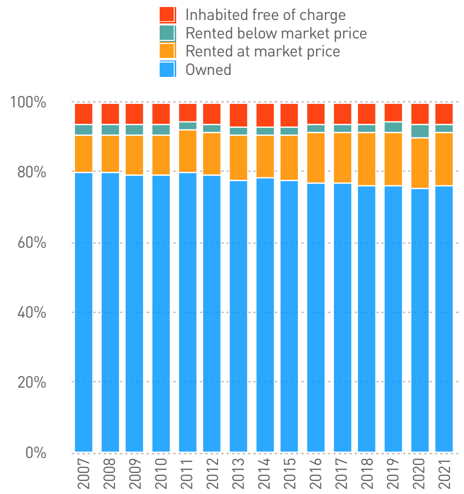
Source: MAPFRE Economics (based on data from BIS, Oxford Economics and Haver Analytics)
*OSHP = One Sided Hodrick-Prescott

Chart 2.5-aa
Spain: trends in home ownership, rental and occupancy free of charge
(%)



Source: MAPFRE Economics (based on data from the Ministry of Transportation, Mobility and Urban Agenda)

Chart 2.5-ab
Spain: breakdown of homes by type of occupancy
(%)



Source: MAPFRE Economics (based on INE data)

2020. Finally, another increase of note is the one in the number of leased homes, which reached 6.8% in 2020, up from 6.0% in 2019. In 2021, the weight of homes with market-rate leases increases to 15.2%, and those with below-market-rate leases decrease to 2.8%. The number of dwellings under assignment also dropped to 6.2% (see Chart 2.5-ab).

Affordability in home acquisition

According to the Bank of Spain's 2021 annual report, on average, at least the 33.4% of household disposable income before deductions would be needed to purchase a home. This report points out the desirability of reducing inequality in housing access, which has worsened in recent years for both homeownership and rental housing, especially for lower-income households and young people. Although the Right to Housing Bill attempts to reduce these difficulties, including instruments such as rent control, this could have adverse effects, in addition to the failure to consider specific actions such as effective legal certainty for owners of rental housing.

The report also points to the need to review certain regulations that do not facilitate the construction of new housing or that restrict residential use of real estate, in order to reduce real estate price pressures on local markets where there is insufficient supply.

Spain in the IRPII ranking

Spain ranks 35 in the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) ranking; the synthetic index calculated by MAPFRE Economics for a universe of 43 countries (see Table 4.2-b). Among the various components weighted to calculate the indicator, in general all of them contribute to Spain's lagging position, in particular, the weighted index of *economic and demographic factors* (see Table 4.2-a). It should be noted that Spain's population in 2023 is 47.5 million inhabitants, and it is considered to have entered a downward trend that could reach 30.8 million by the end of the century, according to United Nations estimates[85].

2.6 Germany

Introduction

In the case of Germany, in 2023 the estimated housing stock totaled €5.3 trillion[86]. This represents about 164% GDP, estimating the gross financial wealth at €7.8 trillion (241% of GDP)[87]. The development of the housing stock over the last four decades has grown in real terms, while its relative weight in household wealth has decreased slightly over the same period (see Chart 2.6-a). Meanwhile, the analysis of gross capital formation in housing construction in relation to GDP in Germany since 1980, illustrated in Chart 2.6-b, shows a downward trend from levels close to 8%, with a significant upturn in the second half of the 1990s, to levels that have stabilized in the last decade at around 6% of GDP.

Analysis of relevant indicators for the development of insurance activities

Housing stock and new construction

Housing stock

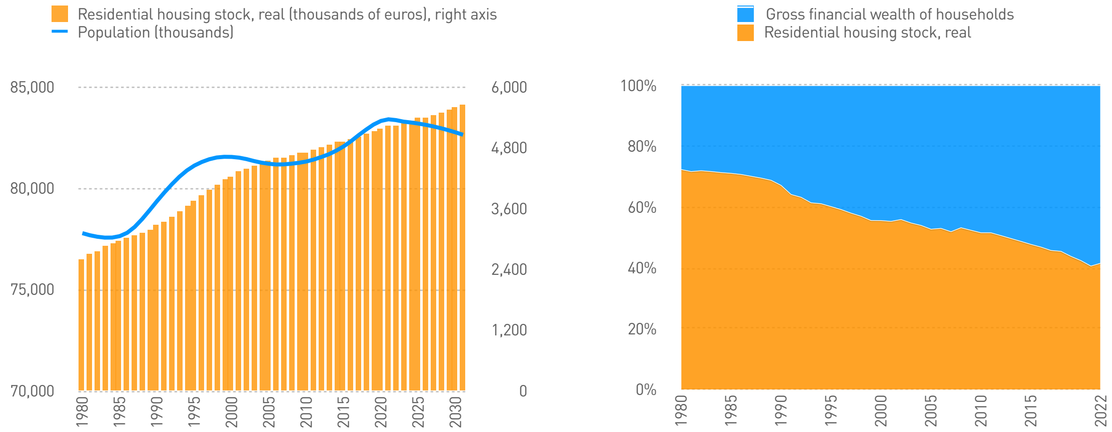
In 2021, the number of residential households in Germany reached 41.7 million, with 0.7% growth[88]. This data implies a continued positive growth trend since 2011. A medium-term analysis, illustrated in Chart 2.6-c, shows a slowing growth trend from 2001 to 2010 when the Great Recession resulted in a sudden, marked decline in the series. However, as of the following year, the German housing stock adjusted back to a positive trend, reaching 0.69% growth in 2020. Overall, the housing stock has grown by 9.9% compared to 2001.

New home construction and sales

Historically, the intensification of the German housing supply between 1991 and 2001 is noteworthy, especially in East Germany, as a result of the reunification of the two Germanies after the fall of the Berlin Wall. This has contributed to the development of residential surplus supply in some regions of the country, which in turn has kept residential purchase and rental prices affordable in the decades since.

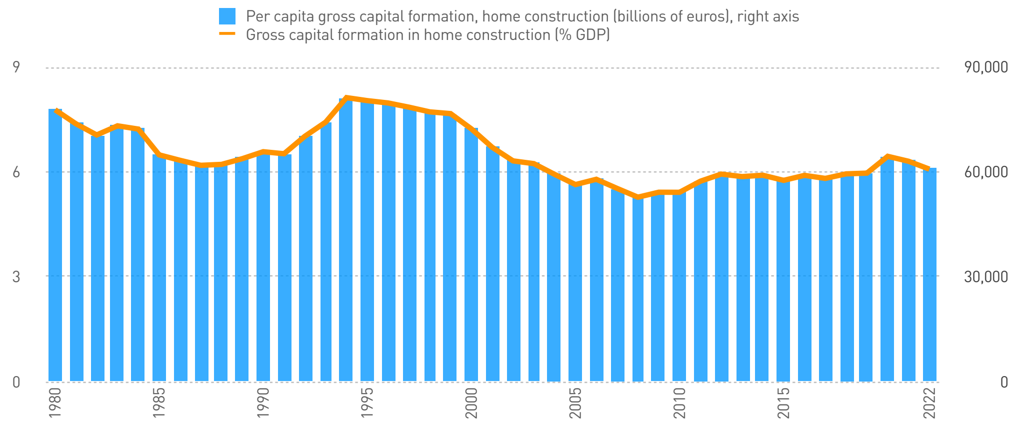
At a more current point in time, it is noteworthy that growth has been sustained during 2021, a year affected by the COVID-19 pandemic, despite bottlenecks in the supply of materials and economic resentment. This is evidence of the underlying growth in residential demand caused, to a large extent, by the wave of immigra-

Chart 2.6-a
Germany: real residential housing stock, gross financial wealth of households and population



Source: MAPFRE Economics (based on data from Oxford Economics, Haver Analytics and the United Nations)

Chart 2.6-b
Germany: gross capital formation in home construction



Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

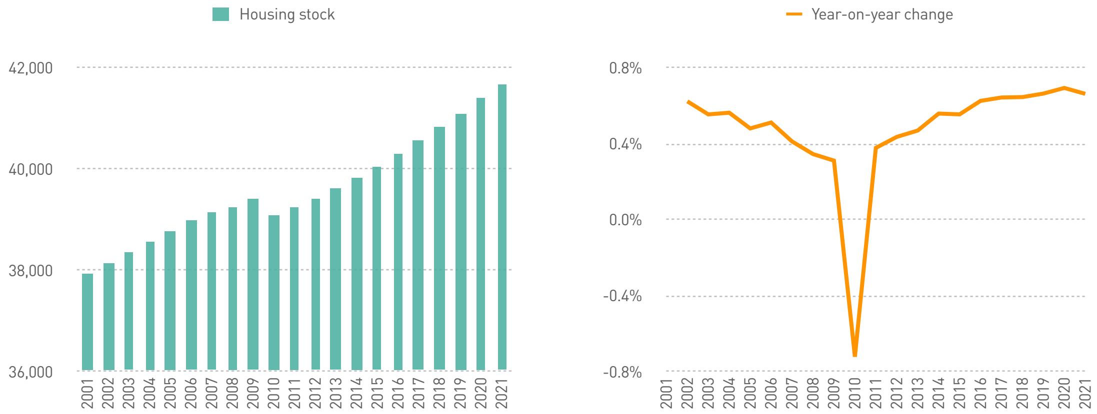
tion experienced that same year. By 2022, such growth is expected to intensify in the face of amplified residential demand following the arrival of Ukrainian refugees.

In terms of the percentage of vacant housing, in 2018, the Statistisches Bundesamt reported that 8.2% of the housing stock (residential and commercial) was vacant. This represents 0.2% growth over the five-year period, which has continued a relatively stable trend since 2002 (see Chart 2.6-d).

Home-linked insurance developments

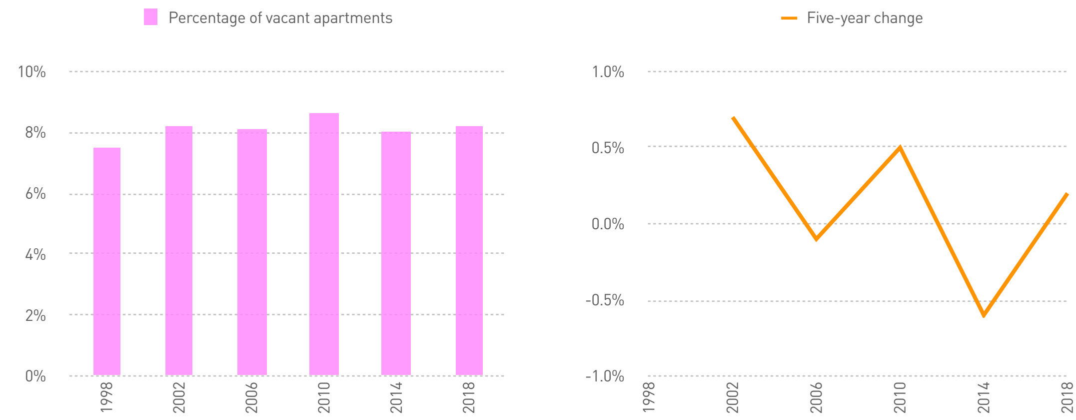
The German Non-Life insurance market is a mature sector with a high penetration rate in all branches. During the last few years, competition has been very important in attracting new customers at very competitive prices. According to information from the German Insurance Association (Gesamtverband der Deutschen Versicherungswirtschaft eV - GDV), the national total of direct Non-Life insurance premiums in 2021 was €77.288 billion, a 3.19% increase over 2020. Among the most im-

Chart 2.6-c
Germany: housing stock
(number of homes, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on Statisches Bundesamt data)

Chart 2.6-d
Germany: vacant apartments
(vacant apartments, %; five-year change, %)



Source: MAPFRE Economics (based on Statistisches Bundesamt data)

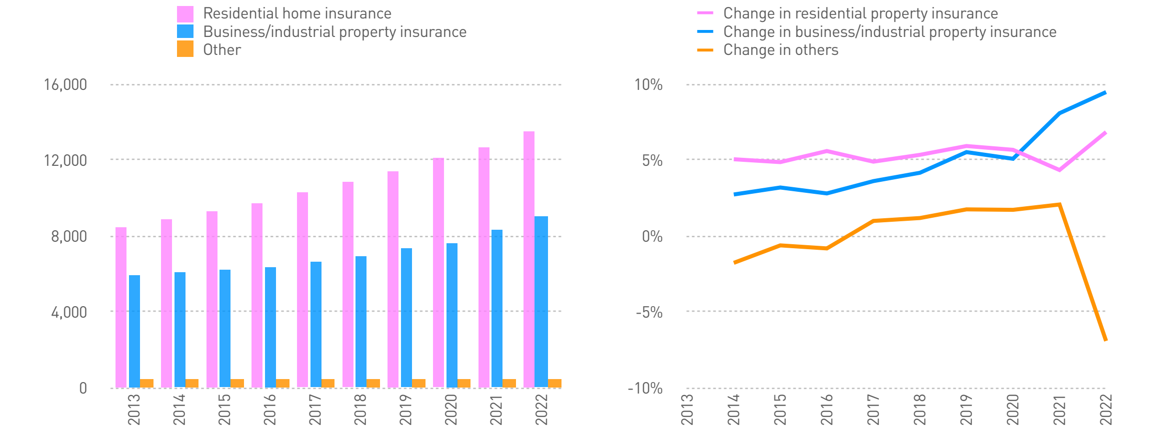
portant branches, property insurance accounts for approximately 30% of premiums versus 38% for automobile insurance. In the case of property-related insurance, and more specifically for private homes, there is home insurance, homeowner's insurance, rental protection insurance and basic insurance[89].

What is known as home insurance in Germany (Hausratversicherung) is contents insurance, which protects household goods against water damage, fire or theft, with additional modules (exterior windows, repair of large household appliances, garages, basements, etc.). In turn, the homeowner's insurance (Wohngebäudeversicherung) is building insurance, which covers fire, storm and water damage to the property, including repair costs up to reconstruction of the building, thus protecting the homeowner from financial ruin.

Rent protection insurance (Mietschutzversicherung) provides coverage for past-due or unpaid rent, as well as property damage and renovation costs caused by tenants. The elementary insurance (Elementarversicherung) also called supplemental weather protection insurance (Zusätzlichen Schutz gegen weitere Naturgefahrenes) is insurance that completes home and homeowners insurance with additional coverage, as it covers risks due to atmospheric phenomena (storms, hail and lightning), with extended modules covering risks generated by natural disasters, earthquakes, landslides, snow avalanches, etc. In addition to the aforementioned branches, there are others that provide a wide variety of coverage related to housing, such as third-party liability insurance, real estate legal protection insurance, construction insurance, home insurance for multi-family dwellings or apartments, and insurance for buildings and outbuildings.

Chart 2.6-e shows that, over the period 2021-2022, the distribution of the German insurance market in real estate was mainly concentrated in the residential real estate segment over the commercial/industrial and other segments. Specifically, in 2022, it accounted for 58.4% underwriting of residential properties, compared to 39.4% in commercial/industrial properties and 2.2% in other properties. Likewise, the year-on-year variation shows that, unlike in previous years, from 2020 onwards, growth in the commercial/residential property insurance branch is higher than in the residential property insurance branch, with rates above 8%, while other property insurance branches show small variations (less than

Chart 2.6-e
Germany: property insurance premiums
(premiums, millions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on AXCO data)

2%), as well as a very significant drop from 2022 onwards, of around 6.9%.

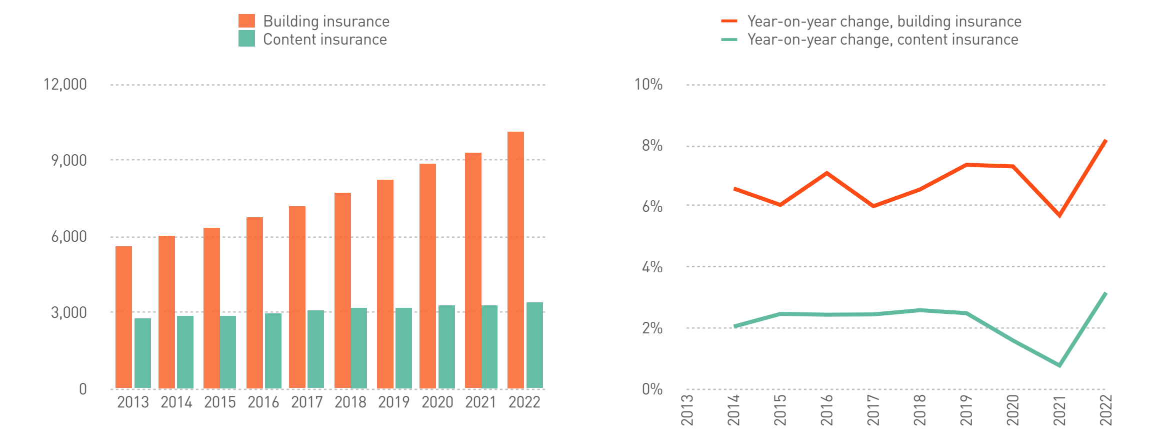
Analyzing the distribution of residential property insurance during the period 2014-2022 illustrated in Chart 2.6-f, we see that building insurance has always been much higher in number than contents insurance; the percentage in 2022 would reach 74.81% for the former and 25.19% for the latter. This difference tends to widen if we examine growth rates since, in the period under consideration, growth in building insurance averaged more than 6%, while contents insurance grew by an average of 2.2%.

Mortgage balance and new mortgages taken out

Mortgage balance

The German outstanding mortgage balance, as reported by the Bundesbank, reached €1.676 trillion in the last quarter of 2022, with year-on-year growth of 5.35% (see Chart 2.6-g). It should be noted that

Chart 2.6-f
Germany: residential property insurance premiums
(premiums, millions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on AXCO data) the balance has grown steadily since 2011, although much faster from 2014 onwards, until suffering a slowdown in 2020 and a reversal in 2021. However, the 2022 figure is the highest nominal figure in German history, and broadly speaking, this sudden upturn can be attributed to an increase in real estate demand catalyzed by the monetary and fiscal policies enacted by the German central bank and government in the wake of the COVID-19 crisis.

It should be noted that the German mortgage market is characterized as a strictly regulated and controlled financial system. This has the effect of restricting access to property for a large sector of the population. However, the other side of the coin is that it is a robust system, with comparatively low default rates, prepared to combat financial crises and where it is difficult to generate local inflationary bubbles[90].

New mortgages taken out

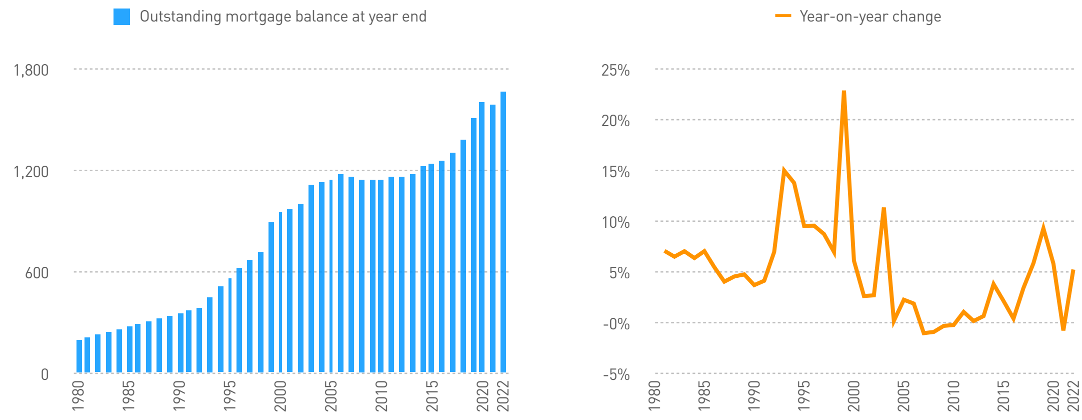
The German central bank (Bundesbank) offers a variable that shows the amount of loans granted specifically for home purchases, broken down by interest rate. Chart 2.6-h shows the behavior of this variable. According to this information, we see that the total volume of loans granted for housing in 2022 amounted to €257.4 billion, a decline of -9.4% compared to 2021 (the year in which it reached its absolute maximum). The recent behavior of the series showed an increasing trend between 2017 and 2021. Broadly speaking, this growth can be attributed to an increase in demand catalyzed by ultra-accommodative monetary policies that have long been maintained in a sustained low-interest rate environment. However, the accelerated interest rate hikes implemented by the European Central Bank since July 2022 (the first increase in the series since 2011) have had a negative effect in the last year and may alter this trend in the coming years.

Development of Risk life insurance

Life insurance is an essential factor for the mortgage and real estate market. These allow lenders to ensure that repayment of the loan amount will be honored in the event of the borrower's death, thereby reducing the risk considerably. In the German market, the Life insurance branch is very relevant within the insurance market, capturing 57% of total insurance premiums in 2021 (see Chart 2.6-i).

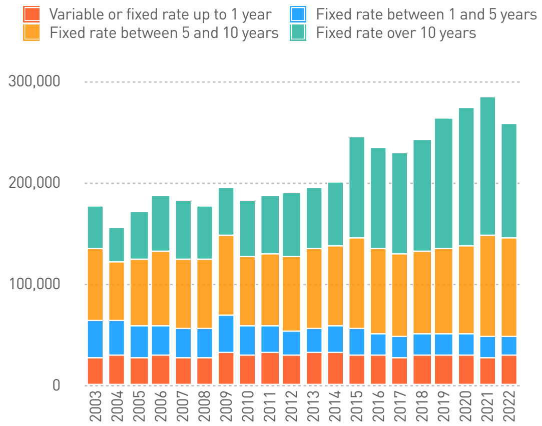
In terms of premium volume in the Life insurance sector, this amounted to €103.231 billion, with a year-on-year variation of

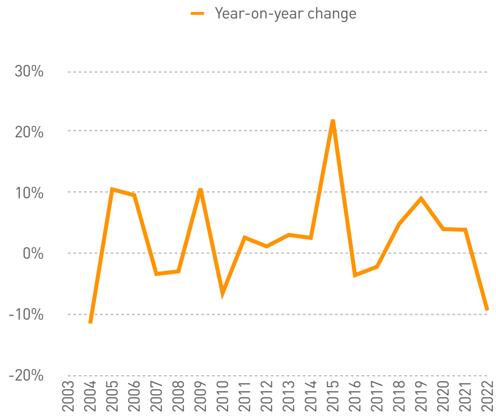
Chart 2.6-g
Germany: outstanding mortgage loan balance
(amount, billions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on BBK data)

Chart 2.6-h
Germany: loans to households for home purchases by interest rate
(loans granted, billions of euros; year-on-year change, %)



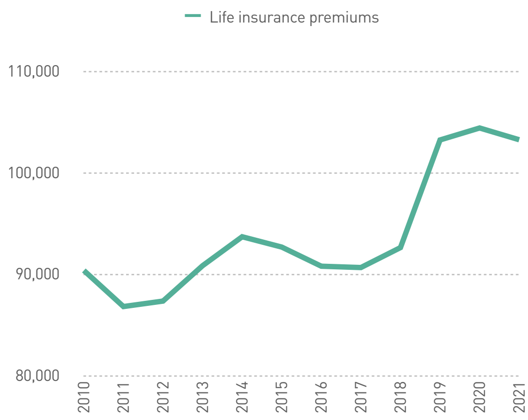


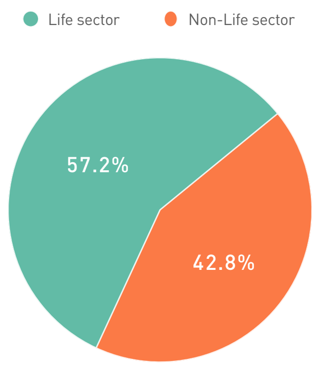
Source: MAPFRE Economics (based on BBK data)

-1.1%. Historically, it highlights the significant growth of this branch in 2019, which has been sustained since then. The variation in the branch's weight over total insurance premiums, despite reporting a -4.88 pp decrease in 2021 compared to 2010, is mainly due to the growth in the Non-Life business and not to a nominal decrease in the Life sector, following the European trend established over the last decade.

In Germany, the main product in the life sector is classic life insurance, commonly called *term life insurance*, which indemnifies the beneficiaries in the event of the policyholder's death. In addition, some insurance companies add, as an option, occupational disability insurance, with which, in the event of an illness or condition that limits the policyholder's ability to work, the insurance would remain in force, although the policyholder would no longer be required to pay the agreed premiums. The indemnification is paid immediately and is not taxable under the IRPF. Likewise, the insured capital has no established limit

Chart 2.6-i
Germany: Life insurance premiums
(Premiums, millions of euros; insurance premium structure in 2021, %)





Source: MAPFRE Economics (based on BAFIN data) and, generally, may be increased at the policyholder's request. In case of unemployment or other circumstances involving a financial bottleneck, most companies offer a contract with reduced premiums and coverages, and the option of restoring the original contract within a limited period of time, under certain conditions.

The difference between this type of insurance and an *endowment life insurance* is noteworthy since the latter, while insuring the capital to the policyholder's heirs in the event of death, also functions as an individual pension plan, thus releasing the insured capital after the policyholder's retirement, and not only after their death. It is important to emphasize that *term life insurance* is aimed at those customers who want to protect their dependents financially in the event of their death, but it is also required (not mandatory, but requested) by those lending companies that demand a guarantee of payment in the event of the borrower's death. In addition, they are essential for the self-employed and entrepreneurs so that their death does not prevent the company's continuation and protects their employees and business partners.

Finally, another product offered in the German market is *death benefit insurance,* which covers funeral expenses up to a limit of approximately €15,000, on average, depending on the company.

Reverse mortgage

Less than half of the people in Germany live on their own property. Recently, the rate of homeownership in Germany has even decreased, and for the first time since 1993, in 2018, the rate dropped to 42%. In no other country in the European Union is the homeownership rate so low, especially among younger people. However, some estimates indicate that the homeownership rate in Germany among 70-79 year olds in 2018 reached 58%, the highest proportion of all age groups[91].

Therefore, the reverse mortgage represents a possible retirement real estate model in Germany. The scheme is aimed at retirees aged 65 and older; through a loan model, in which the owner's home serves as collateral, the person receives a lump sum or a monthly pension. The major attraction of the reverse mortgage is that homeowners can remain in their property and at the same time supplement their pension income, unlike the real estate annuity in which the home is sold and the amount is paid as an annuity or temporary annuity. Table 2.6 shows a comparative table of the main alternatives to the reverse mortgage in Germany[92], with respect to the real estate annuity (purchase and sale of real estate that reserves the seller's right of residence until death, with the buyer paying the seller an annuity until death), partial sale (in which only a percentage of the property is purchased as an investment) and transfer of the usufruct.

In a reverse mortgage, the bank or insurance company grants a loan to the homeowner using the securitized home as collateral. They will remain the owner and occupant of the property, and only after the owner's death will the bank or insurance company be able to sell the property and pay off the loan with the proceeds of the sale (which could also be paid by the heirs). As a requirement, the property must be free of liens in order to be accepted (or at least modestly encumbered) and offer the right of residence for life. If a lump sum payment is established, the final loan amount is the market value of the property. In the case of monthly payments, between 15-35% of the property value will be paid, and the retiree will receive between 60-80% of the value in regular monthly installments, even up to 110 years (or shorter terms with higher payments can be agreed upon). It should be noted that the owner will continue to have property tax, maintenance and repair obligations, among others. If the retiree's relatives inherit the property, they must either enter into the loan agreement and repay the financing to

Table 2.6
Germany: reverse mortgage alternatives

	Reverse mortgage	Real estate annuity	Partial sale	Usufruct
Payment of maintenance costs	✓	✗	✓	✓
Monthly use fee	✗	✗	✓	✗
Possibility of repurchase	✗	✗	✓	✗
Rental, moving out	✗	✗	✓	✓
Freedom of use and design	✗	✗	✓	✓
Possible inheritance	✗	✗	✓	✗
Single payment	✗	*Optional*	✓	✓
Monthly pension payments	✓	✓	✓	✗
Purchase at market value (without deduction)	✗	✗	✓	✗

Source: MAPFRE Economics (based on DEGIV data)

the bank or sell the property and pay off the mortgage with the proceeds of the sale, reducing the estate.

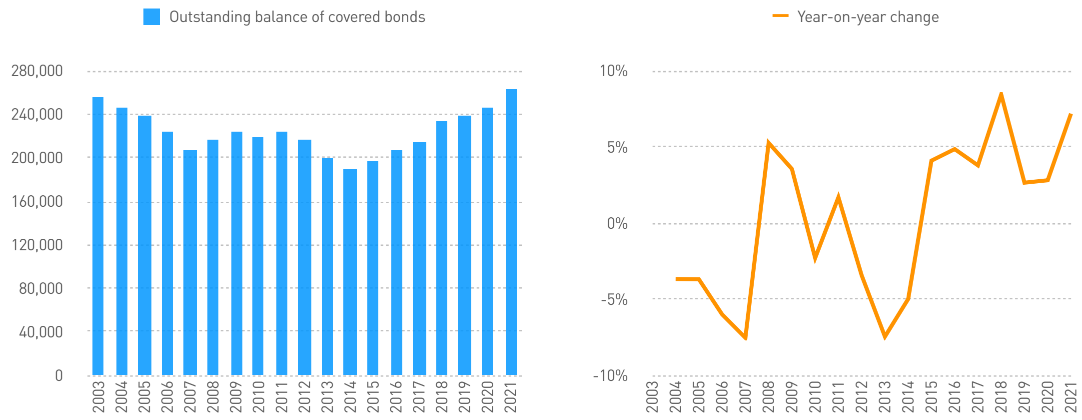
Real estate investment instruments for insurance companies' investment portfolios

Covered mortgage bonds (Pfandbriefe)

Pfandbriefe represent a large segment of the covered bond market and the German private debt market. Generally, these are bonds issued by mortgage or public institutions and are secured by a pool of assets that, in the event of bankruptcy of the issuing entity, continues to provide benefits to the investor. Therefore, it is considered a very safe financial instrument, typically rated AAA.

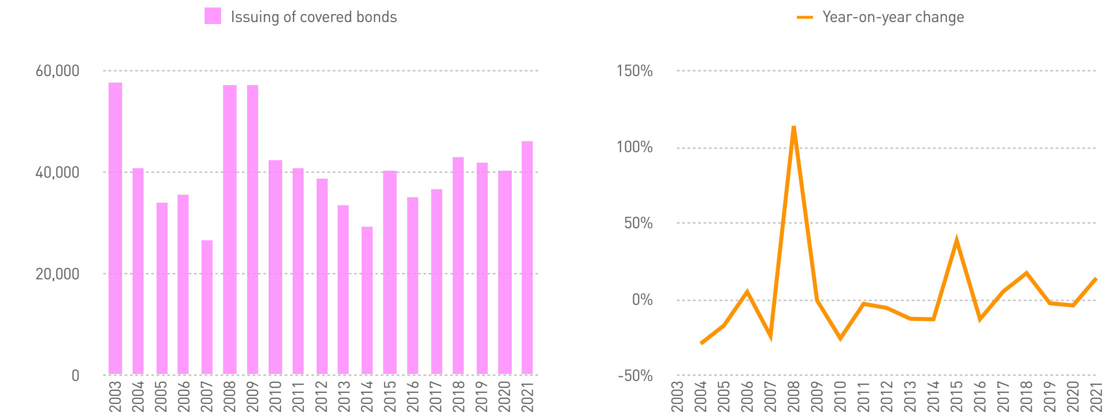
The latest data from the European Collateralized Bond Council (ECBC), report that, in 2021, the outstanding Pfandbriefe mortgage balance amounted to €264.016 billion, with annual growth of 7.19% (see Chart 2.6-j). This is a clear symptom of a boiling mortgage market, expanding its financial capacity. In fact, the balance had already

Chart 2.6-j
Germany: covered bond balance
(outstanding balance, millions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on ECBC data)

Chart 2.6-k
Germany: issuing of covered bonds
(issuing, millions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on ECBC data)

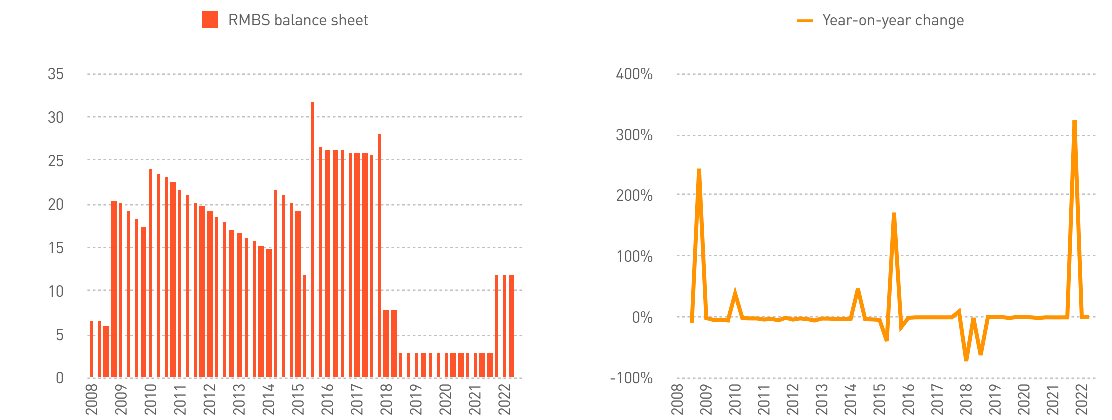
been growing at a good pace since 2015, after a period of decline between 2012 and 2014, and between 2003 and 2007. In terms of Pfandbriefe issues, €45.812 billion of debt was issued in 2021, which is 13.82% more than in 2020 (see Chart 2.6-k).

Mortgage securitizations

Another mortgage securitization instrument in Germany is the Residential Mortgage Backed Securities (RMBS). It is used less commonly than in other European countries, accounting for only 2.8% of the total outstanding balance in the European Union, a far cry from France, the Netherlands, the United Kingdom or Spain. Data provided by the Association for Financial Markets in Europe (AFME), available since 2008, report an outstanding balance in Q2 that reached €11.7 billion, much higher than the €2.8 billion reported in Q2 2021 (see Chart 2.6-l).

An analysis of the historical series confirms that the outstanding amount of RMBS

Chart 2.6-l
Germany: outstanding RMBS balance
(outstanding balance, billions of euros; year-on-year change, %)



Source: MAPFRE Economics (based on AFME data) in Germany, despite overcoming a period of stability at minimum levels between 2019 and 2021, has been at much higher levels. In 2009, in the midst of the financial crisis, the figure was approximately €20 billion, dropping progressively until the period 2015-2018, when figures of around €25 billion were reported, the highest in the last decade.

Non-performing loans ratio

The non-performing loans ratio includes the percentage of failed loans over total loans. In the case of the German market, the amount reported in 2019 was 1.05%, with a 0.19% pp decrease from the previous year (see Chart 2.6-m). In 2005, the non-performing loans ratio was 4.05% and started to decline until 2008, when the international credit crisis led to an increase in unpaid loans. However, compared to other countries, the non-performing loans ratio did not increase excessively in Germany. In fact, since then the rate has dropped considerably until it reached current levels. This is another symptom of German risk aversion on both the supply and demand sides and of a restrictive and cautious financial system.

Cost-income ratio

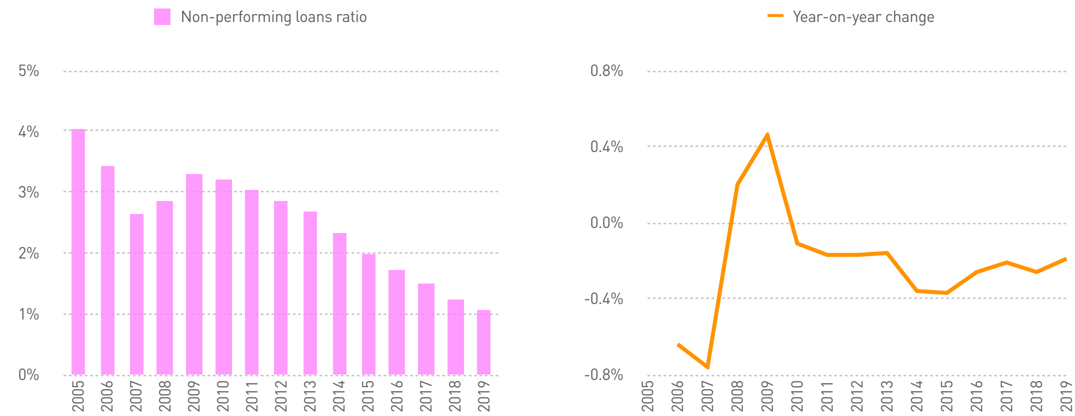
The cost-income ratio reflects the relationship between bank income and assumed acquisition costs. In the case of Germany, in Q2 2022, this ratio drops to 69%, with a year-on-year decrease of 2.3 pp (see Chart 2.6-n). Consequently, and without entering into a more in-depth analysis of the income statement of banking companies, it can be stated that banking yields have increased slightly. Thus, the German cost-to-revenue ratio has been on an increasing path from 2015 until Q1 2020, when it reached 91%. Since then, the ratio has declined rapidly, stabilizing at around 70% as of 2021.

Real estate transactions, home prices and mortgage interest rates

Real estate transactions

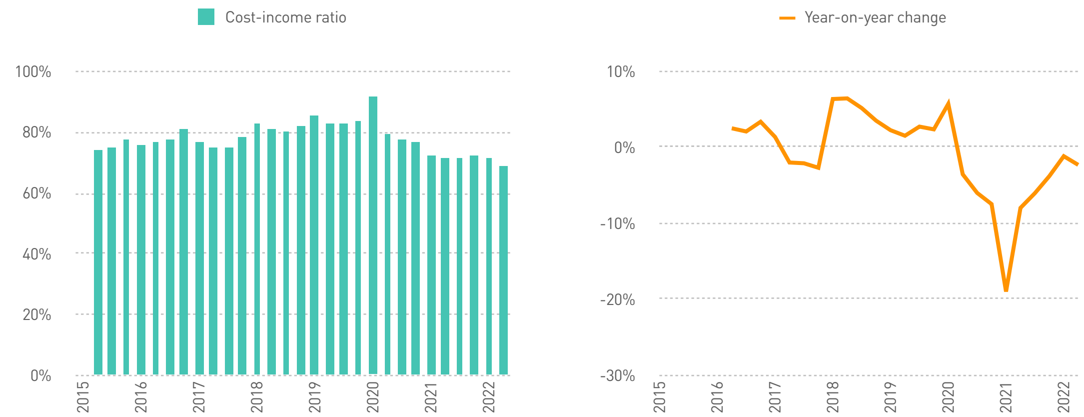
Data published by the BORIS-D project (report on the German real estate market published by a committee of real estate appraisal experts), available through 2020, report a slight drop in the number of real estate sales and purchases in that year (1,018,900 transactions; with a year-on-year decrease of -0.6%). In a pandemic context, this data prolongs the relatively

Chart 2.6-m
Germany: non-performing loans ratio
(non-performing loans ratio, %; year-on-year change, %)



Source: MAPFRE Economics (based on data from the World Bank)

Chart 2.6-n
Germany: cost-income ratio
(cost-income ratio, %; year-on-year change, %)

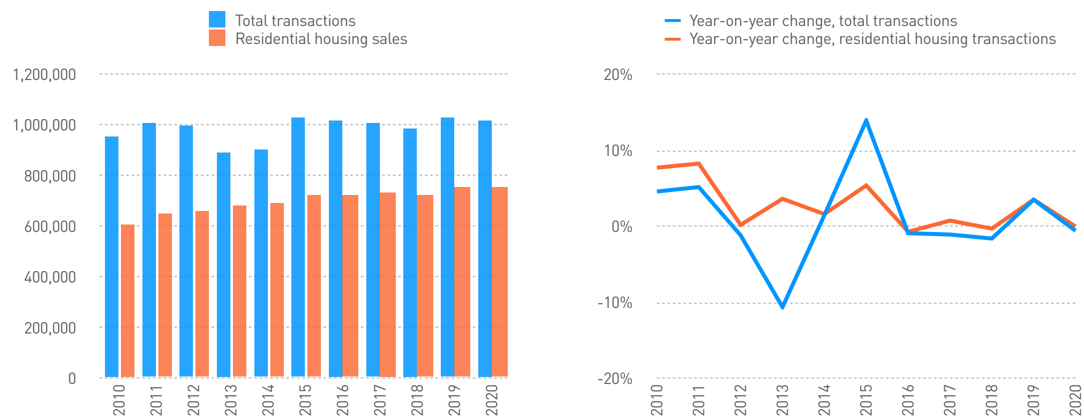


Source: MAPFRE Economics (based on AFME data)

stable trend the series has been following since 2016, after experiencing substantial growth in 2015 (see Chart 2.6-o). Prior to this, the strength of the German real estate market during the 2008-2009 crisis, when the international market was suffering a huge downturn, stands out. This stability is particularly reflected in the residential housing transaction segment. The reasons behind this robustness are based on demographic development (low fertility rates offset by a positive migration flow), a relatively stable per capita disposable income, a conservative interest rate and other characteristics of the real estate financial sector (high percentage of fixed and mixed rate mortgages, low LTV ratio for first-time buyers and high fiscal transaction costs). In short, supply under tight control and demand in line with it[93].

Official data for 2021 and 2022 are not yet available, but demand for real estate is expected to be uncertain, driven by cultural and population factors, but restrained fol-

Chart 2.6-o
Germany: total and residential transactions
(transactions, units; year-on-year change, %)



Source: MAPFRE Economics (based on BORIS-D data) lowing the recent interest rate hike by the European Central Bank. The reasons for this increase in demand are based on a demographic explosion due to the migratory phenomena observed in Germany, a progressive reduction in the number of people per family unit and an increase in the population's need for residential space. In terms of supply, it is lagging behind due to bottlenecks in the supply chains (particularly the shortage of iron and wood, which are essential for real estate construction).

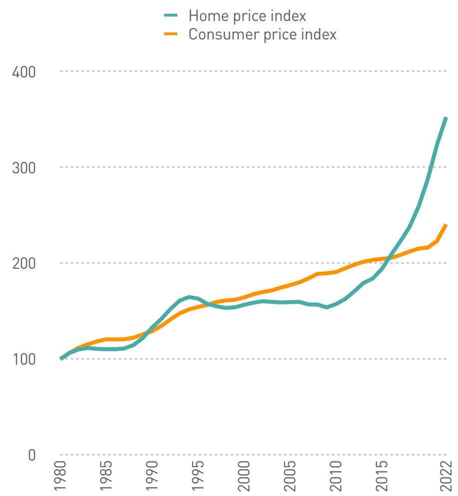
Home prices

The development of median home prices in Germany, compared to the development of the general price index in a series since 1980, shows that both indexes follow a similar path through 1990s. Thereafter, the two paths diverge and home prices take a slightly declining path starting in 1994, coinciding with German reunification, until 2010 when the trend in home prices changed again, significantly above the general price index since then (see Chart 2.6-p).

Meanwhile, residential home sale prices in Germany have experienced steady and sharp growth over the past decade, which has slowed in 2022 following the European Central Bank's interest rate hike. According to data from the Bank for International Settlements, prices in 2021 increased by 59.5% compared to 2010, an increase of remarkable magnitude. However, the upward cycle that had already lasted more than a decade came to an end in 2022, as a result of the aforementioned interest rate hike (see Chart 2.6-q).

In terms of the historical series, at the beginning of this century, average residential prices remained stable, with sporadic slight decreases. As mentioned above, the conservative attitudes of German real estate supply and demand prevented the international crisis from having a significant impact on this market. However, starting in 2011 prices began to rise, accelerating further during the second half of the decade. The arrival of these hikes set up a boom period in the real estate market, driven by the decade's low-interest rates and the population explosion, which would come to an end in 2022, following the increase in these rates.

Chart 2.6-p
Germany: home and consumer price indexes
(1980=100)

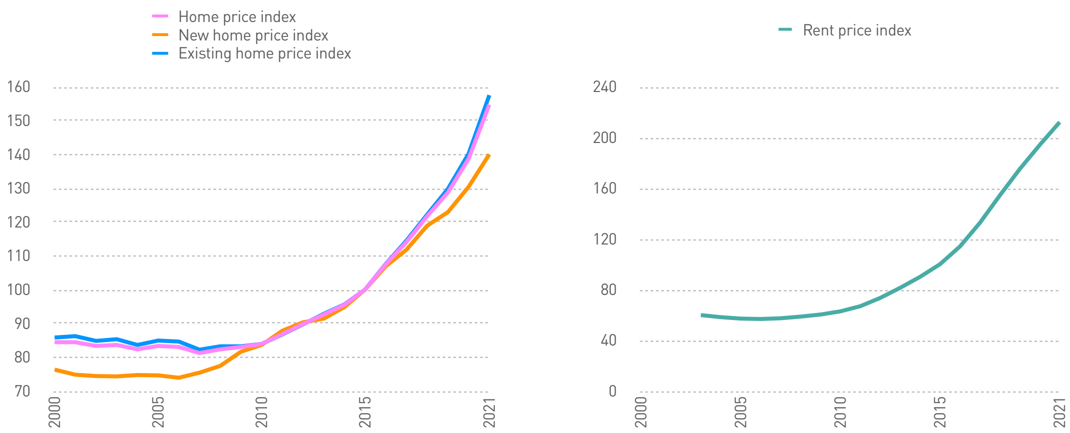


Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

Chart 2.6-q
Germany: home price index
(2010=100)

Source: MAPFRE Economics (based on BIS data)

Chart 2.6-r
Germany: price indexes related to the real estate sector
(2015=100)

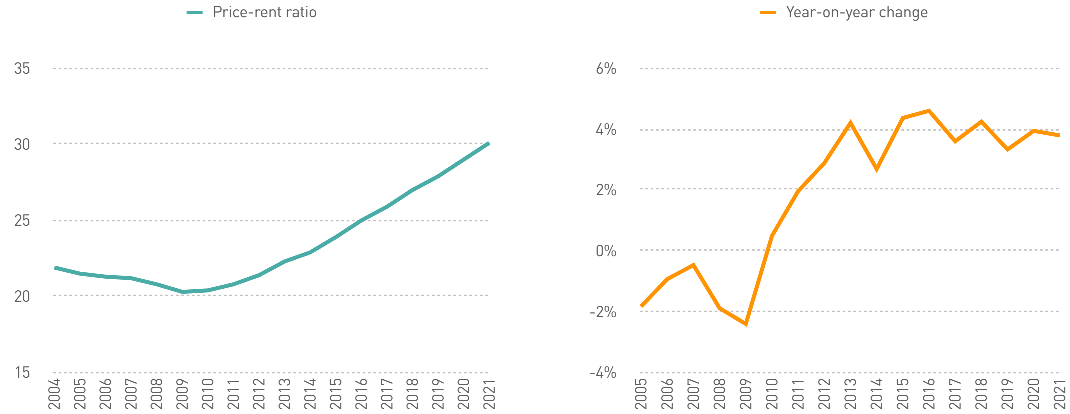


Source: MAPFRE Economics (based on BIS and Statistisches Bundesamt data)

It is important to emphasize that, despite the general rise in prices over the last decade, resale homes have experienced higher inflation compared to new construction. By 2021, existing homes had grown by 57.5% over 2015, and new homes by 40%. In terms of rental housing prices, they follow a trajectory very much in line with the aforementioned purchase and sale prices: constant during the first decade of the century and an explosion as of 2010. However, the increase in rental prices is even more dizzying. In 2021, prices were 112% higher than in 2015; that is, more than twice as high as 6 years ago and more than three times higher than in 2010 (see Chart 2.6-r).

Meanwhile, the price-to-rent ratio for housing in Germany was 30.1 (meaning that, theoretically, the purchase price of a home is 30 times higher than its rent for one year), with a year-on-year variation of 3.79% (see Chart 2.6-s). This ratio has been rising steadily by 3-4% since 2010. A grow-

Chart 2.6-s
Germany: price-rent ratio
(price-rent ratio, year-on-year change, %)



Source: MAPFRE Economics (based on BBK data) ing price-to-rent ratio has resulted in a real estate market that is becoming increasingly less attractive than the rental alternative.

Regional notes on home prices

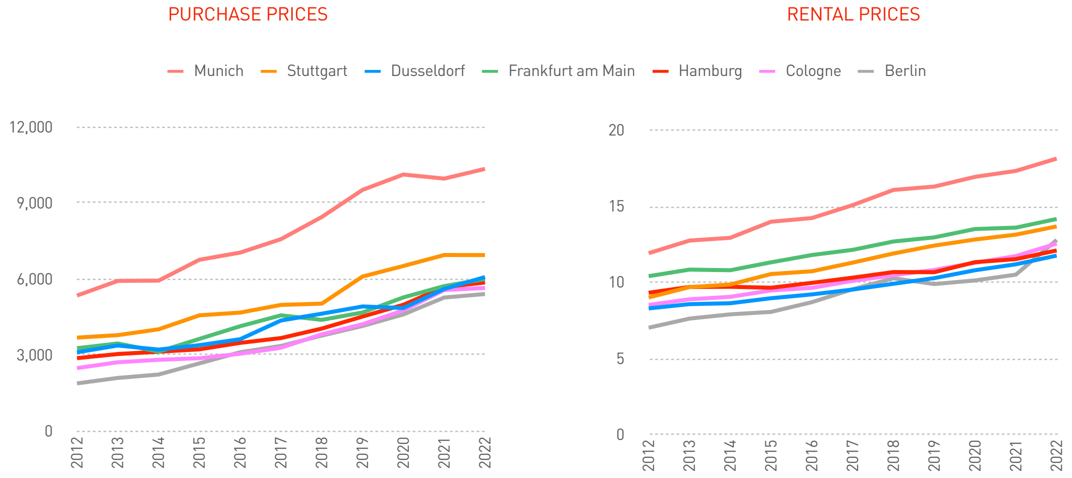
In terms of residential housing prices, Munich stands out as the predominant city with respect to other cities (see Chart 2.6-t). In fact, according to the latest Bundesbank report, it is the fourth most expensive city in Europe and the seventh most expensive in the world (behind Hong Kong, Seoul, Paris, Geneva, Tel Aviv and Zurich), costing on average €10,349 per square meter in 2022. The other large cities in Germany are not far behind: Frankfurt is the ninth in Europe, and Dusseldorf, Hamburg, Augsburg, Berlin and Cologne are among the top 30.

For rents, the story is the same: Munich dominates, where, in 2022, the price per square meter of rent was €18 per month (with a year-on-year variation of 4.6%). As with buying and selling, prices have risen steadily in most major German cities, with Frankfurt standing out as the second most expensive city to rent, despite being behind Stuttgart in the average transaction price, and Berlin's recent sharp growth (up 21.7% year-on-year in 2022).

Mortgage interest rates

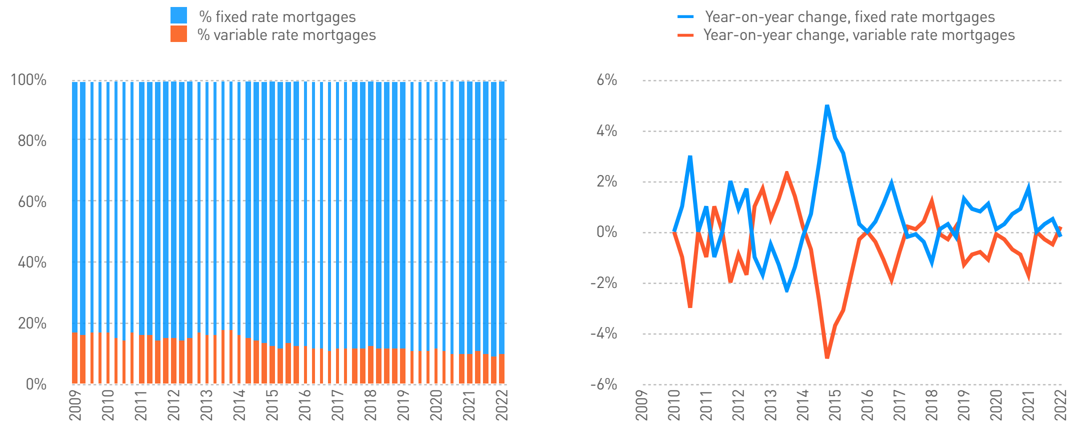
Another feature contributing to German stability in the real estate market is the distribution of its mortgage products. The conservative nature of mortgage demand stands out as, in Q1 2022, the number of mortgages with at least one year at a fixed interest rate accounted for 90.4% of the total number of new mortgages taken out. In contrast, only 9.6% of mortgages were taken out at a purely variable interest rate (see Chart 2.6-u). This structure contrasts with that of other European countries, where the percentage of variable interest rate mortgages is much higher (Portugal, Spain or Greece). Thus, the historical trend of German borrowers has been, and continues to be, to resort to a fixed interest rate, especially in the medium and long term. Proof of this is that the maximum figure registered for the percentage of variable rate mortgages since 2009 is 18.1% of total mortgages and, according to Bundesbank data referring to 2022, the percentage of housing loans with a fixed rate equal to

Chart 2.6-t
Germany: residential housing prices per square meter
(prices, euros)



Source: MAPFRE Economics (based on Empírica data)

Chart 2.6-u
Germany: mortgage structure by fixed and variable interest rates
(fixed and variable-rate mortgages, %; year-on-year change, %)



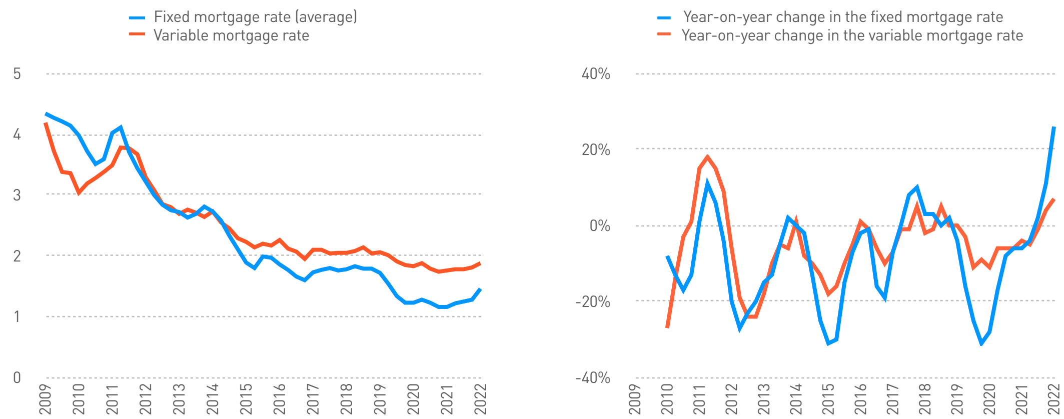
Source: MAPFRE Economics (based on EMF data)

or greater than 5 years accounted for 81% of the total.

With respect to mortgage interest rate levels, Q1 2022 reported a 1.88% floating rate and an average fixed rate of 1.46%, both increasing since reaching their decade lows in the last quarter of 2020 (see Chart 2.6-v). Both rates, after reaching considerable values in the years following the Great Recession, declined steadily from the last quarters of 2011 onwards, at the pace set by monetary expansion policies. In the wake of the COVID-19 crisis and the economic slowdown, even more expansionary measures led to an exceptionally low interest rate, which is currently being corrected by raising the monetary policy rate to curb the inflationary crisis.

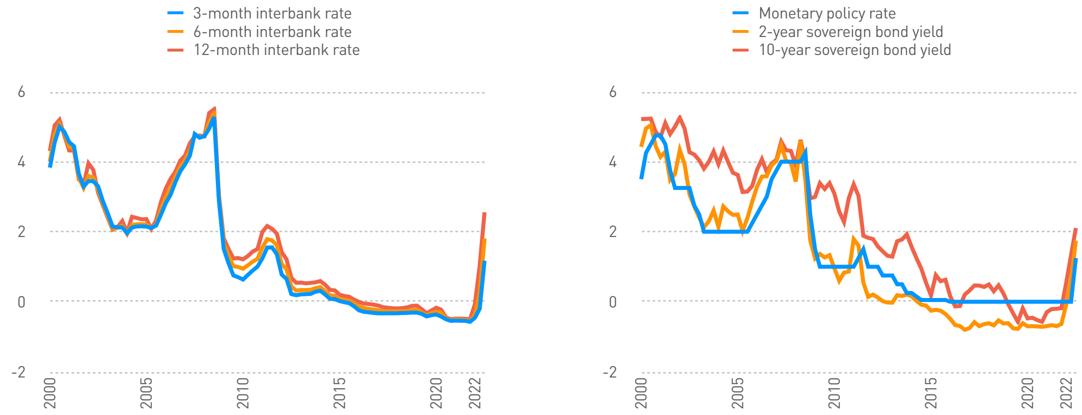
In terms of competitiveness between fixed and variable interest rates, the highest average values in the years immediately following the 2008-2009 crisis were for the fixed interest rate. Subsequently, with the advent of ultra-accommodative monetary

Chart 2.6-v
Germany: fixed and variable interest rates in mortgages
(fixed and variable interest rates, %; year-on-year change, %)



Source: MAPFRE Economics (based on EMF data)

Chart 2.6-w
Germany: interbank and monetary policy rates
(%)



Source: MAPFRE Economics (based on Bloomberg and EMF data)

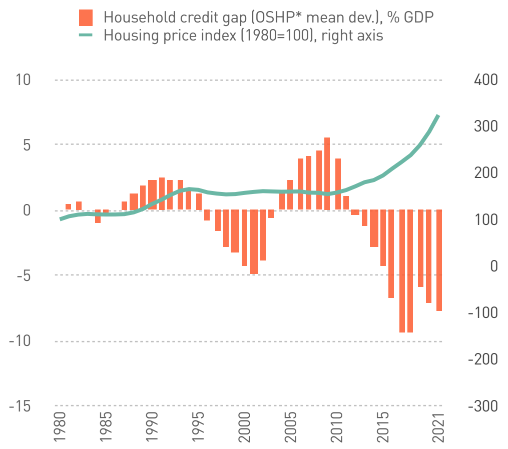
policies, rates were equalized until 2014, at which point the variable rate was placed above the fixed rate, which continues to this day and has led to more borrowers choosing fixed-rate mortgages. These two factors (lower fixed rather than variable interest rates and financial risk aversion), coupled with a restrictive supply (low LTV, low loan amounts and high transaction costs), make the German mortgage market a conservative one, resistant to international crises.

Finally, for comparative purposes, Chart 2.6-w shows that interbank interest rates, monetary policy rates and sovereign bond yields have risen in recent months as a result of a tighter monetary policy established with the aim of curbing inflation. In the short term, this limited financing scenario will constrain the growth of the real estate market, restricting demand and slowing its expansion. In a medium-term analysis, the hike in the monetary interest rate as of 2004, coinciding with the rise in interbank rates, is noteworthy. This restrictive policy made a decisive contribution to containing an out-of-control real estate bubble in the rest of the world, thus avoiding the major consequences of its bursting in 2008. Since then, monetary expansion was applied that would last through the next decade.

Household credit gap

In terms of the development of the household credit gap with respect to its historical average level, it should be noted that in Germany the financial crisis of 2008-2009, and its aftershock in the Eurozone in 2011-2012, had a different impact than in markets such as the United States, the United Kingdom or Spain. In the latter, prices remained fairly stable and only began to subsequently rebound as of 2014, coinciding

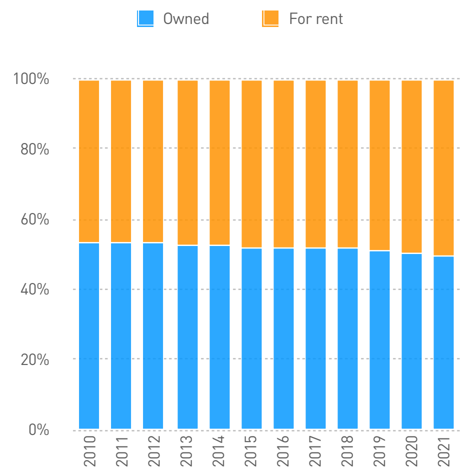
Chart 2.6-x
Germany: household credit gap



Source: MAPFRE Economics (based on data from BIS, Oxford Economics and Haver Analytics)

*OSHP = One Sided Hodrick-Prescott

Chart 2.6-y
Germany: trends in home ownership and rental
(%)



Source: MAPFRE Economics (based on Eurostat data)

with the low-interest rate environment due to the ultra-accommodative monetary policies applied by the European Central Bank in recent years (see Charts 2.6-x).

Residential leasing

The household occupancy system in Germany is very divided. Practically half of the population lives in homes they own, while the other half lives in rented housing. The recent trend, however, favors renting, which has grown 3.7 pp since 2010, and which has risen for the first time in the last decade in 2021 as the majority residential option with 50.5% of the population living in this format (see Chart 2.6-y). This distribution is largely due to the restrictive system observed in the German real estate market, whose inflationary control (high transaction costs, low LTV ratio and high-interest rates) makes the decision (and the feasibility) of buying a house considerably more difficult.

In addition, German society is largely a leasing society. Unlike in most Anglo-Saxon and European countries, the aspiration to buy a house is not so deeply embedded in the cultural norm of society. Apart from this cultural factor, politically, there is an incentive in favor of this model that benefits both interests: on one side, the tenants, ensuring them favorable lease price conditions, housing characteristics and necessary repairs; and, on the other, the landlords, by means of tax deductions that make renting housing a more attractive business. These factors make the German private real estate rental market a very large and relevant market[94].

Germany in the IRPII ranking

The German real estate market ranks 27 in the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) ranking calculated by MAPFRE Economics for a universe of 43 countries (see Table 4.2-b). Among the different components weighted to calculate the indicator, *mortgage loan growth* is the largest contributor to improving Germany's position in the sample of countries analyzed (see Table 4.2-a). Conversely, the component related to the *growth of disposable income* and its foreseeable development over the next few years has caused it to fall behind. Germany's population in 2023 is 83.3 million and is estimated to be on a slightly decreasing path that could bring it to 68.9 million by the end of the century, according to UN estimates[95].

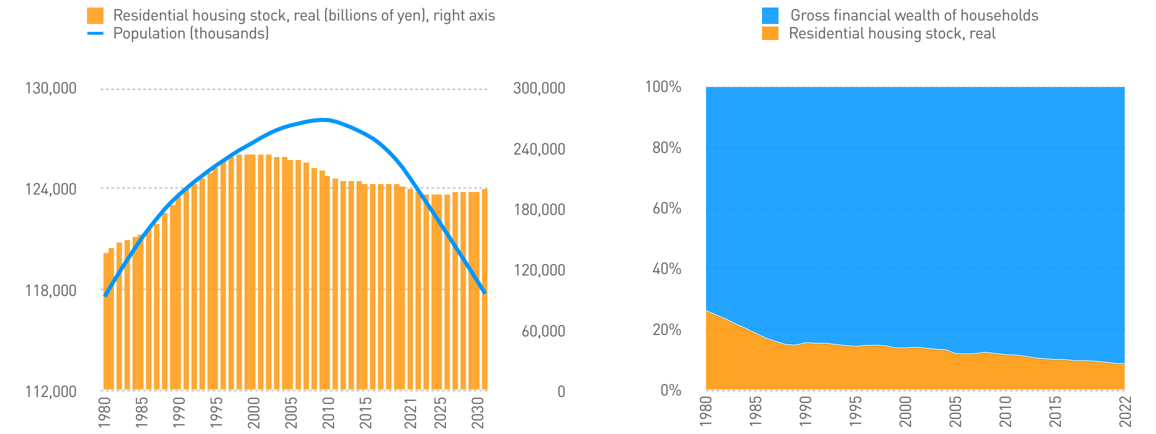
2.7 Japan

Introduction

The estimated housing stock value in Japan in 2023 was 195.6 trillion yen[96], which represents 35.5% of the Japanese GDP, while the gross financial wealth of households is estimated at 2.128 trillion yen[97] (386% of GDP). The development of the housing stock over the last four decades has grown in real terms through the end of the 1990s, to later start on a downward path, while its relative weight in household wealth has decreased slightly over the same period (see Chart 2.7-a).

An analysis of gross capital formation in housing construction in relative terms in relation to Japanese GDP shows a significant drop starting in the late 1980s, when it

Chart 2.7-a
Japan: real residential housing stock, gross financial wealth of households and population



Source: MAPFRE Economics (based on data from Oxford Economics, Haver Analytics and the United Nations)

reached levels close to 9%, and has been on a markedly declining path since 1988, reaching 3.3% in 2022 (see Chart 2.7-b).

Analysis of relevant indicators for the development of insurance activities

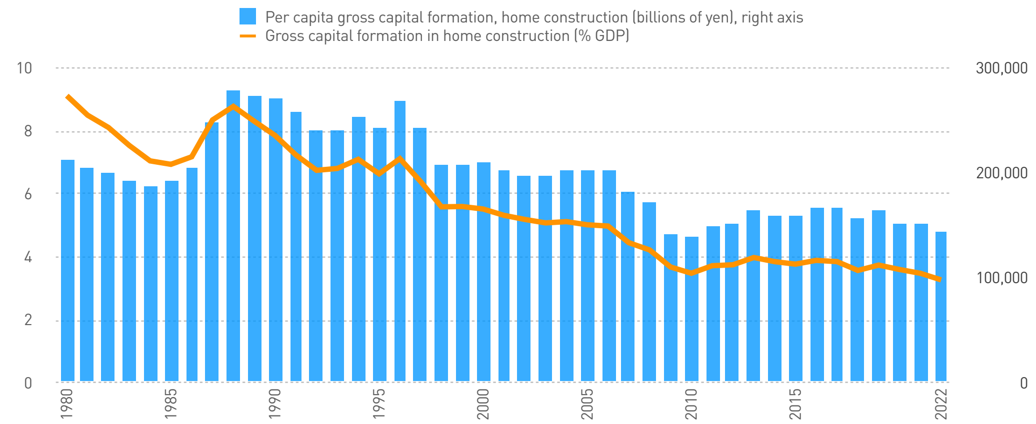
Housing stock and new construction

Housing stock

The five-year census published by the Official Statistics Portal of Japan estimates that the number of existing residential dwellings in 2018 was 62,407,400, representing a growth of 2.93% over 2013. The latter figure is the lowest five-year growth in Japanese housing stock since 1948, continuing a gradual slowdown that has been brewing for some time (see Chart 2.7-c).

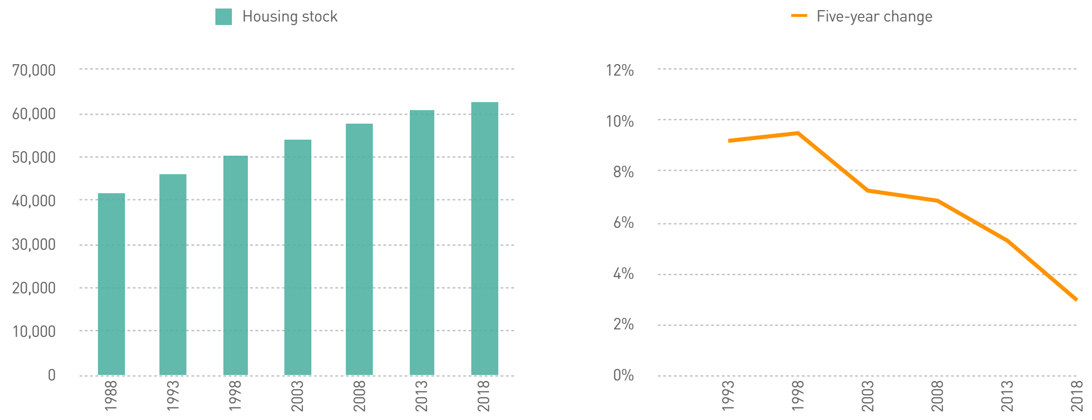
A key point in the recent history of Japanese residential real estate stems from just after World War II, when wartime destruction resulted in a five-year reduction of 49% in the number of housing units in 1953. To address this problem, the Ja-

Chart 2.7-b
Japan: gross capital formation in home construction



Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

Chart 2.7-c
Japan: housing stock
(number of homes, thousands; five-year change, %)

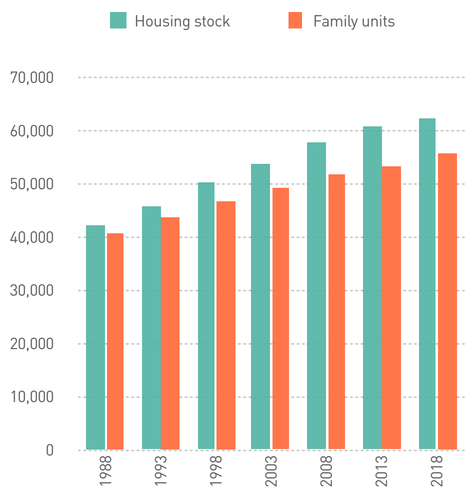


Source: MAPFRE Economics (based on data from the Portal Site of Official Statistics of Japan)

panese government established several public agencies to stimulate the housing market and build affordable public housing. This quantitative approach to housing supply was a great success: in 1958, the five-year variation was 152%, and throughout the 1960s and 1970s it did not fall below 13%. Starting in the 1980s the number of housing units hovered around 10% and, from the 2000s onwards, a steady slowdown began, reaching 3% in 2018.

This rapid cooling can be explained by the bursting of the Japanese housing bubble in the 1980s and, more recently, by a change in the Japanese government's housing policy, which now focuses on a more qualitative approach to housing, and faces a problem of surplus housing supply with 8.43 million vacant homes in 2018 (see Chart 2.7-d).

Chart 2.7-d
Japan: excess housing supply
(number of homes, number of family units)



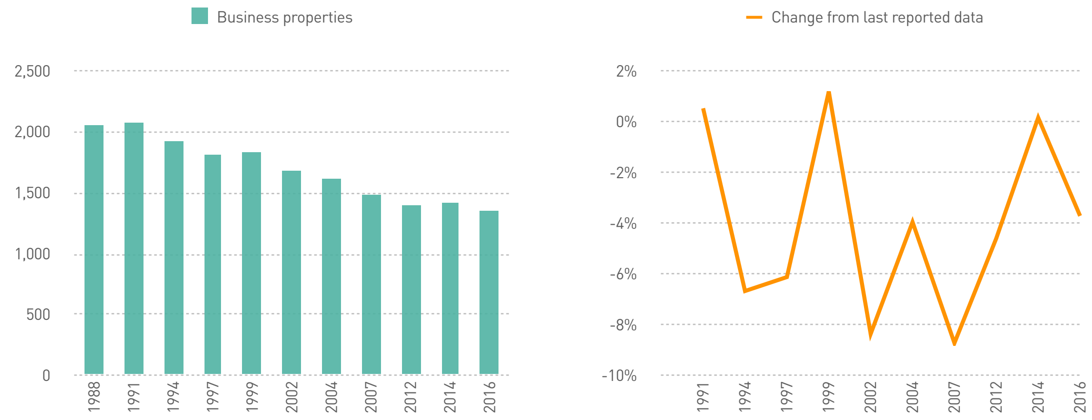
Source: MAPFRE Economics (based on data from the Portal Site of Official Statistics of Japan)

In terms of the number of commercial establishments, the latest data published by the Official Statistical Portal of Japan, corresponding to 2016, reports 1,355,060 premises. This represents a variation of -3.71% with respect to 2014 and continues a negative trend, already far from the 2,150,323 reported in 1982, the highest figure since this has been counted (see Chart 2.7-e).

New home construction and sales

The division of the Japanese real estate transaction market is of particular interest, as there has been a major structural change within it. A few years ago, the number of new home sales dominated the residential real estate transactions market

Chart 2.7-e
Japan: number of commercial establishments
(Number of commercial properties, thousands; change from last reported data, %)

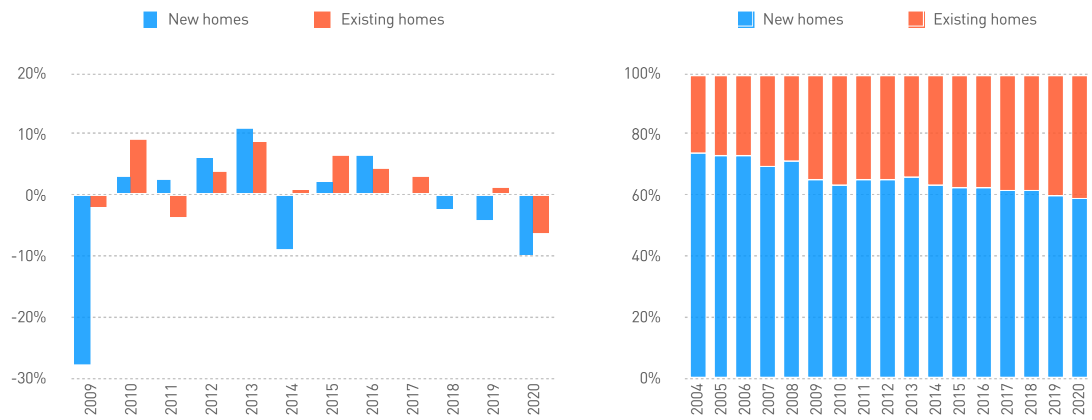


Source: MAPFRE Economics (based on data from the Portal Site of Official Statistics of Japan)

(71.4% market share in 2008), while the number of resale home sales accounted for only 28.6% of the market share in the same year. However, over the last decade, this gap has gradually closed to 59% and 41% of new and resale housing, respectively (see Chart 2.7-f).

The increase in existing home transactions has been largely encouraged by government policies in response to a scenario of real estate inefficiency characterized by a high vacancy rate, due to cultural, technological (high degree of property depreciation, greater risk of catastrophes and lower energy efficiency of second-hand homes) and economic factors (tax deduction for owning a property on land greater than that obtained by demolishing it). To correct this situation, Japan's Ministry of Land, Infrastructure and Transport (MLIT) implemented a series of reforms seeking to shift from a quantitative approach to real estate supply to a qualitative approach by encouraging resale transactions. Thus, measures were adopted, such as the elimination of

Chart 2.7-f
Japan: sales of new homes vs. sales of existing homes
(year-on-year change, %; breakdown, %)



Source: MAPFRE Economics (based on FRK data) tax deductions for houses not suitable for residential use, the establishment of better guarantees on the standards of homes for sale and the promotion of qualitative construction values.

Home-linked insurance developments

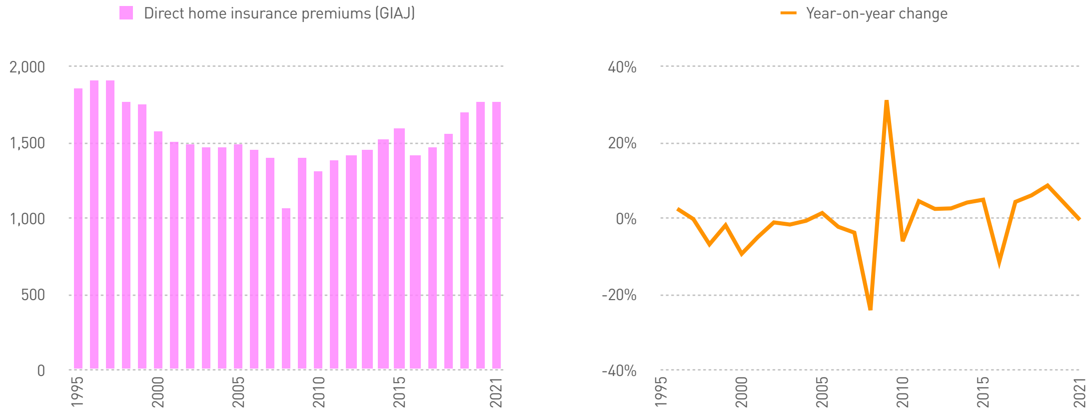
In Japan, home insurance is operated under the name of fire insurance, although it covers more than just fire damage. They also cover damage caused by lightning, wind, floods, storms, explosions, snow, theft, falling objects and external collisions, among the most important. This lexical tradition is based on the fact that in the past the vast majority of property damage was caused by fire.

An important nuance should be noted: fire (home) insurance may not include coverage for damage caused by earthquakes (also including tsunamis and volcanic eruptions), which would be taken out as a separate option, depending on the policy of each company, with the prerequisite of having already taken out fire insurance. Therefore, sources that provide data on these branches may include earthquake insurance within home insurance, or count it separately.

In Japan, taking out home insurance is a requirement for purchasing a mortgaged property or for renting, both for the security of the lender and the landlord, although it is not mandatory as such. In general, their price in 2023 ranges between ¥20,000-40,000 (€143-286) every 2 years[98]. As mentioned above, insurance coverage for earthquakes, tsunamis and volcanic eruptions can be taken out as an additional option. This option is interesting, given that the Asian country frequently suffers from this type of natural disasters. The premium cost varies by company, coverage and location but ranges from ¥6,500-32,600 (€46-233)[99].

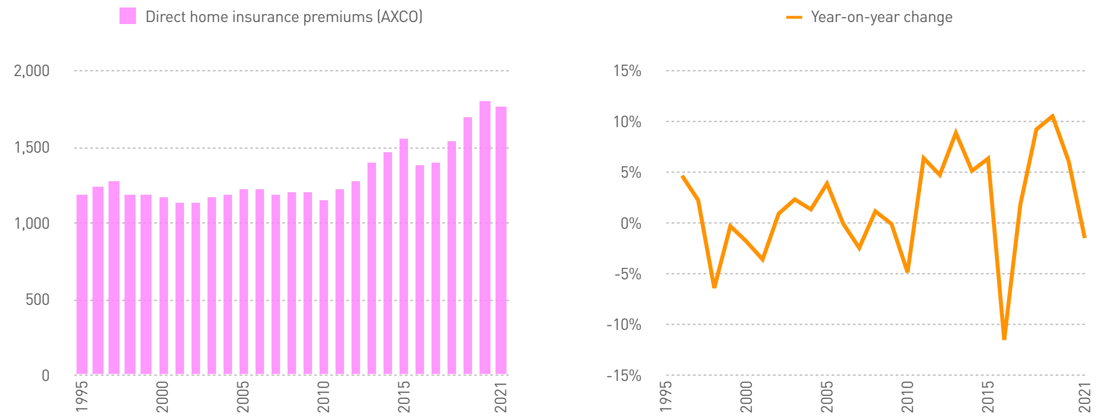
Earthquake insurance has been difficult to implement in Japan, due to the country's seismic risk, located above the Circum-Pacific Seismic Belt or "Ring of Fire," where, according to the United States Geological Survey (USGS), about 81% of the most severe earthquakes occur. In addition to this factor, the lack of uniformity in the seismic risk of the different Japanese districts creates an adverse selection problem that reduces the number of insured agents so that the economic consequences caused by a tectonic disaster would run the risk of not being mitigated, since there would not be

Chart 2.7-g
Japan: direct home insurance premiums (GIAJ data)
(premiums, billions of yen; year-on-year change, %)



Source: MAPFRE Economics (based on GIAJ data)

Chart 2.7-h
Japan: direct home insurance premiums (AXCO data)
(premiums, billions of yen; year-on-year change, %)

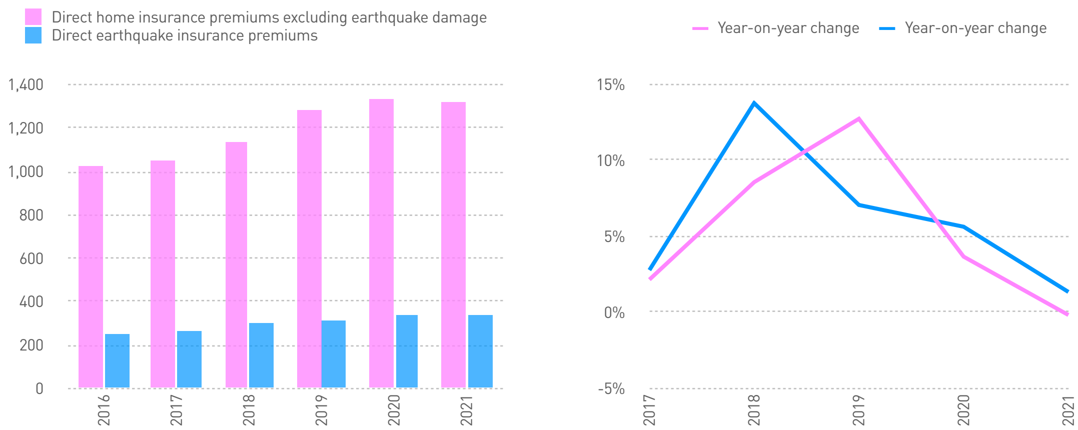


Source: MAPFRE Economics (based on AXCO data)

sufficient capital to meet the loss ratio costs. Therefore, after numerous previous attempts, in 1966 Kakuei Tanaka[100], the Japanese Finance Minister at the time, introduced a system of public reinsurance in the event of a natural disaster, defraying the costs to the insurance companies up to a limit decided that same year, based on the economic losses incurred in previous catastrophes of the same nature. In terms of the indemnification the policyholder receives, the figure varies from 100% if the loss of the property is total[101], 30-60% if the loss is between 30-60% of the market value of the insured property, and 5% if the loss is partial (5% of the loss of value of the insured property).

In 2020, the General Insurance Rating Organization of Japan (GIAJ)[102] reports that annual direct premiums for household insurance (including earthquakes) amounted to ¥1.777.201 trillion, with 4.28% year-on-year growth (see Chart 2.7-g). Thus, premiums have experienced growth for the fourth consecutive year and continue to re-

Chart 2.7-i
Japan: direct home and earthquake insurance premiums
(premiums, billions of yen; year-on-year change, %)



Source: MAPFRE Economics (based on GIROJ data) cover from a sudden decline in 2016 (-11.25%). Historically, the gradual decline in premiums between 1997 and 2004 and the significant decrease in 2008, a year of great financial crisis (-24.04%), are noteworthy.

The data published by AXCO however, point to premiums in 2021 amounting to ¥1.771.209 trillion (with a year-on-year variation of -1.47%), that is, the end of the growth cycle that had lasted since 2017, following a significant decrease in 2016 (see Chart 2.7-h). In terms of the historical series, the relative stability (compared to the GIAJ) at the beginning of this century is noteworthy. In terms of the drop reported by the GIAJ in 2008, AXCO's data place it as late as 2010, before recovering the following year.

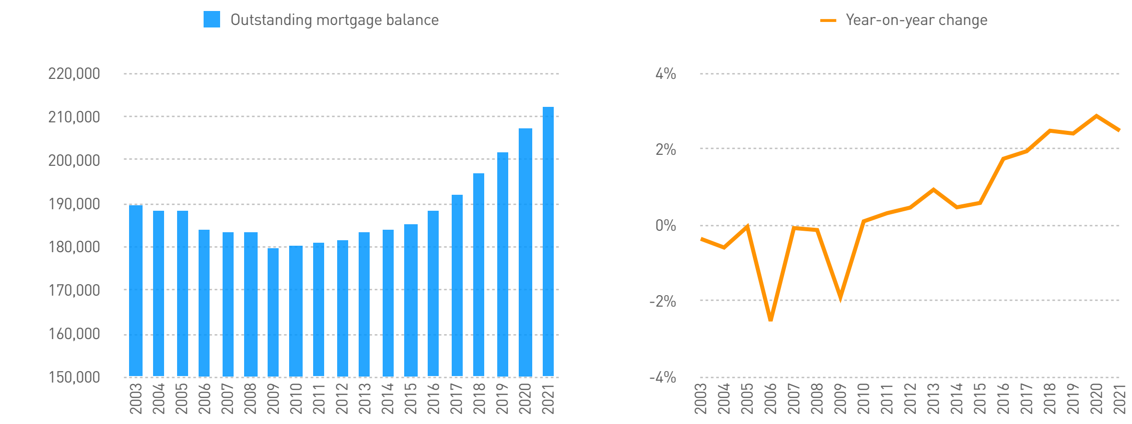
Finally, data from the General Insurance Rating Organization of Japan (GIROJ) estimate that, in 2020, direct household insurance premiums, excluding earthquake damage coverage amounted to ¥1.326 trillion, with a year-on-year variation of 3.68% (see Chart 2.7-i). In turn, direct earthquake premiums amounted to ¥336.313 billion, with a year-on-year variation of 5.46%.

Mortgage balance and new mortgages taken out

During 2021, according to data from the Bank of Japan, the asset balance of the Japanese mortgage balance continued to grow at 2.5% year-on-year, reaching ¥212,500 trillion. This figure represents a growth path that started in 2010 after a decline period during the 2000s (see Chart 2.7-j). Historically, the series has been recorded since 1989 and grew steadily until 2001, when it began a period of stagnation and a slight decline that lasted until 2010. Thereafter, the balance grew steadily, first at around 1% and then at around 2.5% year-on-year.

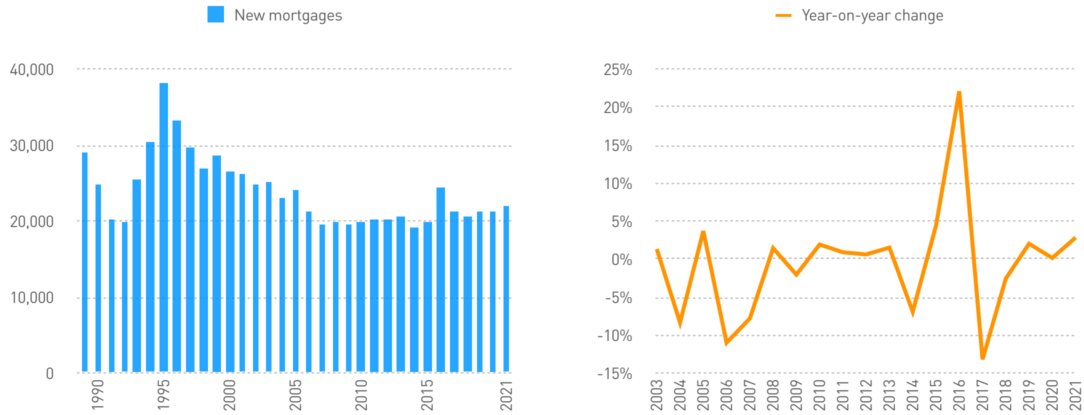
In terms of new mortgage originations, the annual amount loaned amounted to ¥21.836 trillion, up 2.9% year-on-year (see Chart 2.7-k). After a boom in 1993, mortgage originations began to decline after 1996, stabilizing in 2008 at around ¥20 trillion. Recently, there was significant growth in 2016, with ¥24 trillion in mortgage loans being reported, but the market quickly corrected to stabilize again at around ¥21 trillion. It is noteworthy that the amount loaned was only slightly affected by the COVID-19 pandemic, showing only a slight slowdown in 2020 of 1.3 pp year-on-year.

Chart 2.7-j
Japan: outstanding mortgage balance
(outstanding mortgage balance, trillions of yen; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Bank of Japan)

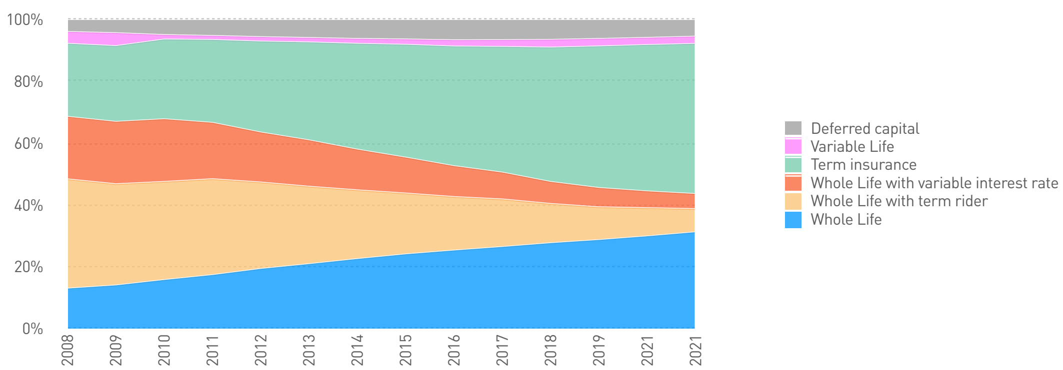
Chart 2.7-k
Japan: new mortgages
(new mortgages, trillions of yen; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Bank of Japan)

One of the most significant events in the history of the Japanese mortgage market arises again in the post-war period with the invention of the GHLC (Government Housing Loan Corporation). This agency, along with the JHC (Japan Housing Corporation) and the Public Housing Act, was established by the Japanese government to stimulate the housing market after wartime destruction. The GHLC, specifically, was founded to act as a mortgage bank and provide financial liquidity to low- and middle-income families. It did so through low-interest, fixed-rate mortgage loans. It was financed with FLIP (Fiscal Investment and Lending Program) funds from the Ministry of Finance and, in the event that the operation generated losses, it was subsidized with government funds. There was a price limit in terms of housing, and the interest rate limit they could set was 5.5%. The GHLC's contribution was crucial to the restoration of the real estate supply (it participated in about 30% of post-war real estate construction), in addition to standardizing the legal mortgage system.

Chart 2.7-l
Japan: individual Life insurance
(percentage of insured capital)



Source: MAPFRE Economics (based on data from The Life Insurance Association of Japan)

However, in the 1990s, the difficult economic climate and the agency's decision to allow prepayment of loans without penalty (something that was not anticipated in its business system) sank the GHLC's public viability. Its role changed in 2007 when it became the JHF (Japan Housing Finance Agency), an agency providing liquidity to the real estate market but acting in the secondary market. JHF is now engaged in issuing MBS collateralized by a portfolio of 35-year fixed-rate mortgages (Flat 35), thus passing on the prepayment risk to investors. This shifting role implies further liberalization of the primary market while continuing to stimulate mortgage origination and increasing the agency's viability.

Development of Risk life insurance

In relation to the housing market, the outstanding mortgage balance is an important indicator for the insurance business because it is potential insurable capital for life insurance, as has been emphasized throughout this report. In Japan, there is a wide variety of life insurance with death risk coverage that can be used as protection, as illustrated in Chart 2.7-l, which presents the distribution of the insured capital in the Japanese insurance market for the different types of life insurance.

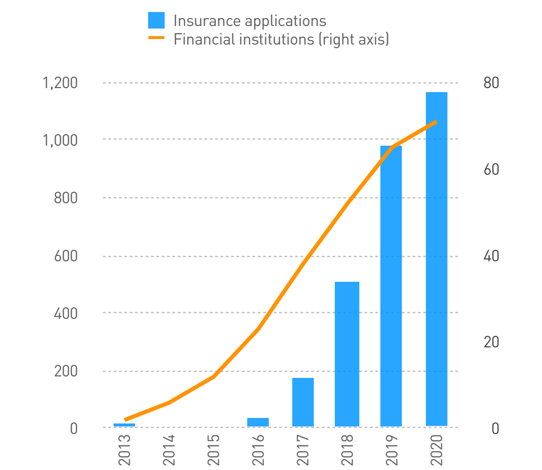
Reverse mortgage

The first reverse mortgage in Japan was created by the municipal government of Musashino, Tokyo metropolitan area, in 1981. As a result, two different methods were developed. First, the *direct model*, in which loans were provided directly by the local government. In 2002, the Ministry of Health, Labor and Welfare introduced a national real estate-backed living expense loan program, expanded in 2007, with the aim of reaching households with long-term care needs. Since this state program was implemented, most of the local programs have been suspended. Alternatively, there is the *indirect model,* in which the local government allies itself with a financial institution.

However, these public programs and public-private partnerships were not widely used. In terms of the private sector, the first bank to introduce them was Shokusan Bank (now Kirayaka Bank) in June 1999. However, until the entry of two large banks in 2005 (Chuo Mitsui Trust and Banking, now Sumitomo Mitsui Trust Bank, and Tokyo Star Bank), the product was not widely known[103]. With data as of 2020, 79 financial institutions handled applications for this type of operation under the name "Reverse 60" loans, an increase of 14.5% over the previous year. It should be noted that, in addition to banks, this is also offered by insurance companies in terms of supply within the financial industry, which are the most active in this regard (see Chart 2.7-m).

Nevertheless, reverse mortgages are still not popular in the Japanese market, which is partly attributed to the fact that the conditions and characteristics of these operations are very strict. According to JHF data, in 2021, there were 458 applications, up 44.0% from the previous year, the number of units borrowed was 350 (up 41.7% year-on-year), and the amount borrowed was ¥4.74 billion (up 32.4% year-on-year).

Chart 2.7-m
Japan: financial institutions offering reverse mortgages and insurance applications



Source: MAPFRE Economics (based on data from the Japan Housing Finance Agency, JHFA)

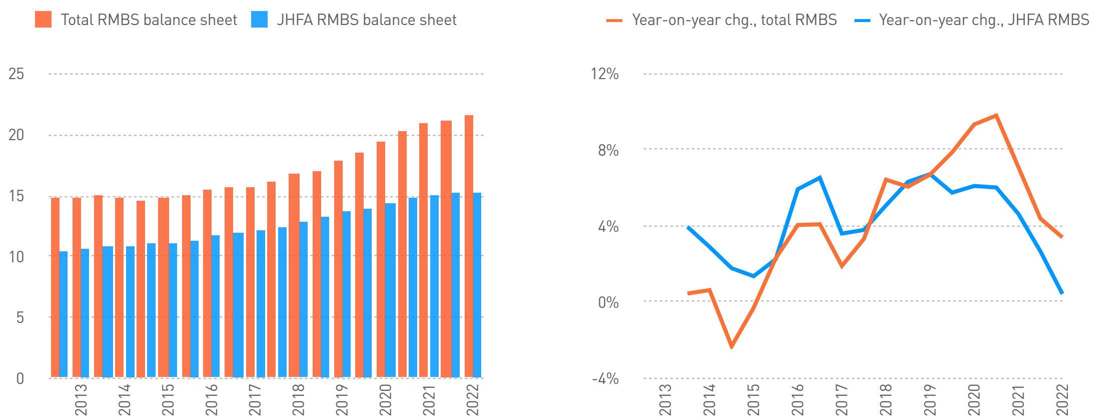
In terms of profile, retirees accounted for 50.2% of applicants, and the average applicant was 69 years old with an annual income of ¥4.14 million. The largest use of funds was for "custom homes" (31.2%), followed by "refinancing an existing loan" (21.8%) and for "new condominiums" (21.6%). The average amount of financing requested was ¥29.09 million, the average loan amount approved was ¥16.22 million, and the average monthly payment was ¥35,000. The non-recourse loan was selected by borrowers 100% of the time. One of the most unique features of reverse mortgages in Japan is that in most cases, apartments are not eligible[104]. Moreover only the value of the land can be used as security for the loan. The fact that the value of the property is not taken into account means that the size of the loans can be quite small.

The stated purposes of the reverse mortgage with life insurance in Japan are: (i) home construction, purchase or renovation by the homeowner; (ii) purchase of a home in which the borrower's child or other descendants live; (iii) lump-sum payment for the borrower's assisted living arrangement; or (iv) refinancing of an existing loan. The reverse mortgage applicant must be 60 years of age or older. Upon the death of the borrower, the total amount of the reverse mortgage is calculated and paid off with the sale of the property for which the loan was taken out; in the event that the total amount received from the sale is not sufficient, the outstanding debt is subrogated to the heirs.

Real estate investment instruments for insurance companies' investment portfolios

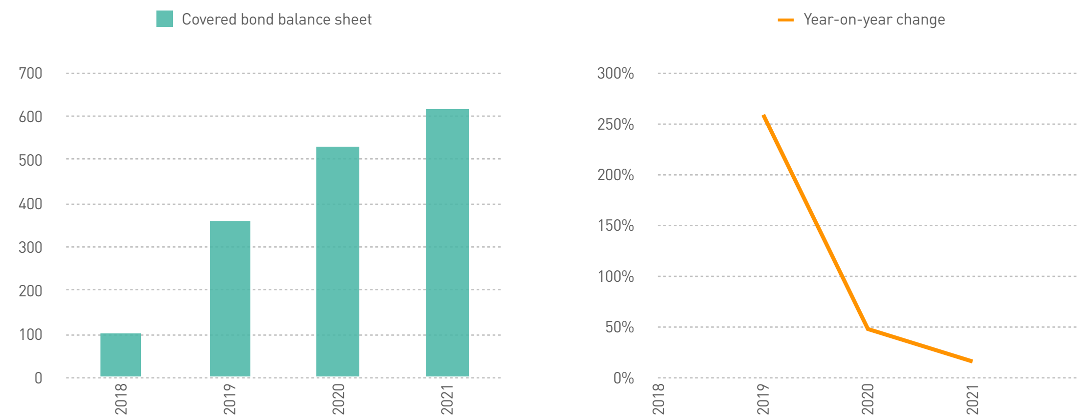
In Japan, securities issued to finance the mortgage market are mainly RMBS (mortgage-backed securities collateralized by residential real estate assets), especially those issued by the JHF. The agency, founded with the objective of acting as a subsidized public mortgage lender, transitioned its functions in 2007 to act as a financing agent in the secondary market, thus supporting the sector without the need to be directly involved. JHF occupies a large percentage of the Japanese RMBS market (see Chart 2.7-n) and offers a product similar to European covered bonds, based on the brokerage of mortgage securitizations, retaining the assets on its balance sheet as collateral so that, in the event of bankruptcy, the assets are transferred to another fund and continue to generate income. In addition, the risk of

Chart 2.7-n
Japan: outstanding RMBS balance
(outstanding balance, trillions of yen; year-on-year change, %)



Source: MAPFRE Economics (based on JSDA data)

Chart 2.7-o
Japan: covered bonds
(balance sheet, billions of yen; year-on-year change, %)



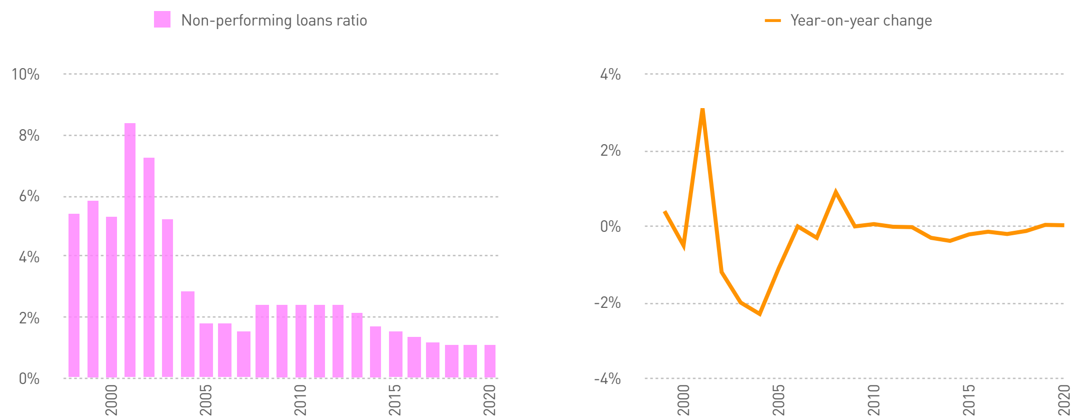
Source: MAPFRE Economics (based on ECBC data)

massive waves of defaults, which wiped out its predecessor, the GHLC, has been eliminated.

Data reported by JSDA (Japan Securities Dealers Association) indicated that the total RMBS balance in Japan in the first half of 2022 amounted to ¥21.58 trillion, with a year-on-year variation of 3.41%. The balance of RMBS issued by the JHF was ¥15.17 trillion, or 70.27% of the total, with year-on-year growth of 0.44%.

Recently, the Japanese RMBS balance sheet has been on a positive trajectory, following a decrease in 2014-2015. Even so, this growth has slowed considerably in 2021, especially the JHF balance sheet. In fact, in 2017, the percentage of the total balance sheet corresponding to the JHF balance sheet was as high as 77.0% and is now at 70.3%. Therefore, we can extrapolate the conclusion that the private market in the mortgage securitization sector is growing.

Chart 2.7-p
Japan: non-performing loans ratio
(non-performing loans ratio, %; year-on-year change, %)



Source: MAPFRE Economics (based on data from the World Bank)

Another form of mortgage financing widely used in Europe is collateralized mortgage bonds. These were introduced in Japan in 2018 and, despite growing considerably in the last few years, are still far from playing a leading role in the securitization market. Data provided by the European Collateralized Bond Council (ECBC) reports that, in 2021, the Japanese covered bond balance amounted to ¥617.4 billion (16% year-on-year growth), up from ¥21.58 trillion in the total RMBS balance (see Chart 2,7-o). Historically, the rapid development of this financial instrument since its introduction is noteworthy.

Non-performing loans ratio

Japan's non-performing loans ratio stood at 1.14% in 2020, a year-on-year variation of 0.03 pp (see Chart 2.7-p). This marks two consecutive years in which the non-performing loans ratio has grown, albeit very slightly compared to other considerably more volatile periods. Thus, the non-performing loans ratio reached maximum levels in 2001 and 2002, at 8.4% and 7.2%, respectively. Since then, the rate has fallen sharply and, after a slight upturn following the 2008-2009 crisis, has stabilized at approximately 1-2% to the present.

Loan-to-value ratio

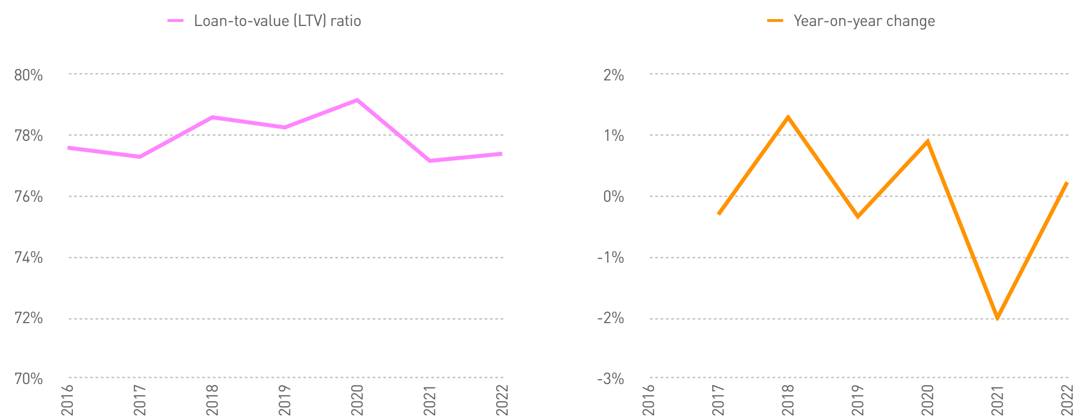
As indicated above, a mortgage loan-to-value (LTV) ratio is the ratio between the loan granted by a financial institution for the purchase of a property and the appraised value of the property. In Japan, data collected from annual surveys of private mortgage lending trends indicate that the unweighted average loan-to-value ratio is 77.4%, with a change of -0.2 pp in 2022 (see Chart 2.7-q). The value has remained relatively stable since 2016, so it can be concluded that there has been no relevant change in supply or demand in terms of the amount requested when buying a home.

Real estate transactions, home prices and mortgage interest rates

Real estate transactions

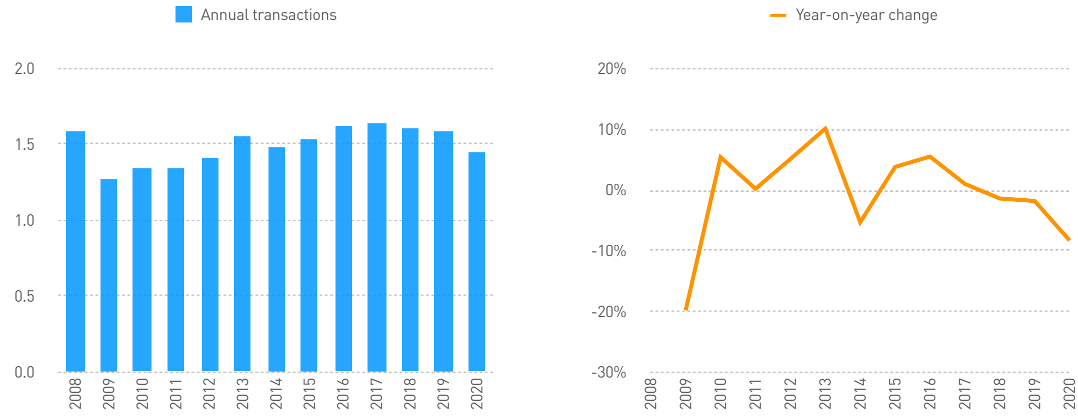
In 2020, the number of real estate transactions was 1,451,798 units sold, down 8.3% from 2019, according to data from the Realtors Association of Japan (FRK). The data show a downward trend starting in 2017, the year in which the highest sales volume of the last decade was reached (see Chart 2.7-r). 2020 marked the third consecutive year in which the

Chart 2.7-q
Japan: loan-to-value ratio
(loan-to-value ratio, %; year-on-year change, %)



Source: MAPFRE Economics (based on JHFA data)

Chart 2.7-r
Japan: home sales
(number of transactions, millions; year-on-year change, %)



Source: MAPFRE Economics (based on FRK data)

number of real estate sales and purchases declined year-on-year.

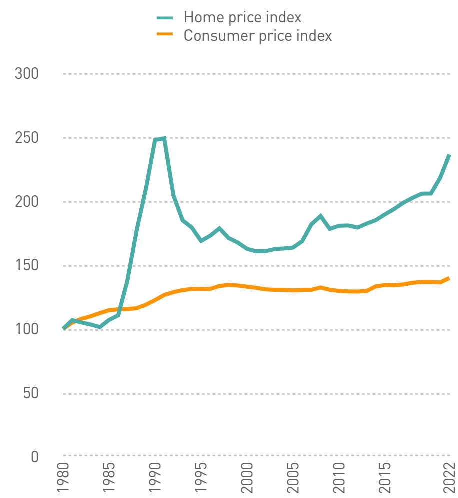
A short-term analysis of the Japanese real estate market reveals two key stages of difficulty: the aftermath of the 2008-2009 financial crisis and the COVID-19 pandemic. The first occurred in 2009 when the volume of transactions fell by 19.8% with respect to the previous year. The recovery was gradual, and it was not until 2016 that the number of units sold in 2008 was surpassed. Starting in 2018, the real estate market began to cool, becoming considerably more pronounced after the shutdown and confinements caused by the pandemic in 2020.

Home prices

A comparison of the development of average home prices in Japan with the development of the general price index in a series since 1980 shows that from the late 1980s and early 1990s, home prices (which had experienced strong growth in the previous years) underwent an abrupt correction and reversed their trend, decreasing throughout the 1990s, returning to growth from the beginning of this century, remaining above inflation throughout the period analyzed, except in the eighties when they were below it (see Chart 2.7-s).

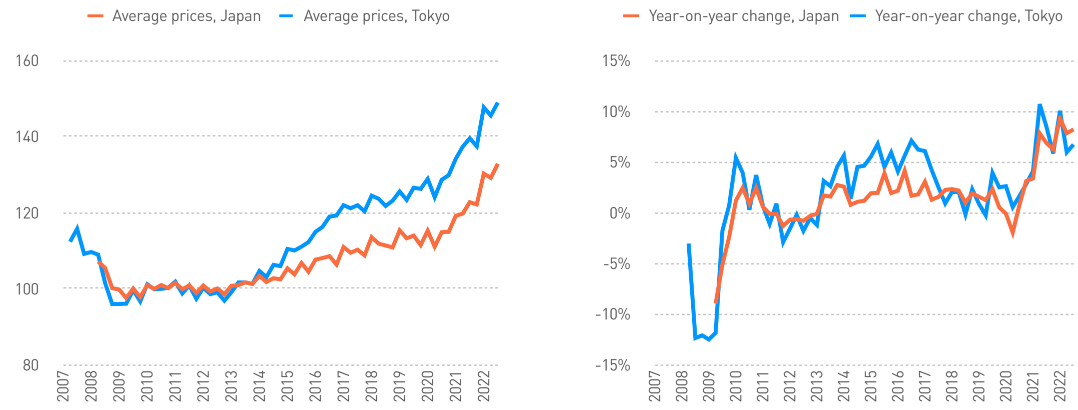
Meanwhile, data published by MLIT (Ministry of Land, Infrastructure, Transport and Tourism) on average residential prices in Japan indicate that, in Q3 2022, the index was at 132.9 (2010=100), year-on-year growth of 8.2% (see Chart 2.7-t). The same series is also shown in the chart above, but only taking into account the Tokyo metropolitan area. In this case, the data indi-

Chart 2.7-s
Japan: home and consumer price indexes
(1980=100)



Source: MAPFRE Economics (based on data from the Japan Ministry of Land, Infrastructure, Transport and Tourism, Haver Analytics)

Chart 2.7-t
Japan: average residential housing prices per square meter
(average prices, 2010 index=100; year-on-year change, %)



Source: MAPFRE Economics (based on MLIT data)

cate that in the Asian megalopolis the index stands at 149.0, a year-on-year variation of 6.7%.

A historical analysis of average housing prices shows a period of stagnant prices both in Tokyo and nationwide during the period 2009-2013, after a sharp drop in prices during the previous years as a result of the international financial crisis. Starting in 2013, prices resumed an upward path, although Tokyo real estate diverged from the rest of the country as a whole in 2014, growing at a faster rate. The COVID-19 crisis appears to have negatively affected prices during Q2 2020 more sharply in Tokyo than in the rest of the country, although their recovery has been early and swift.

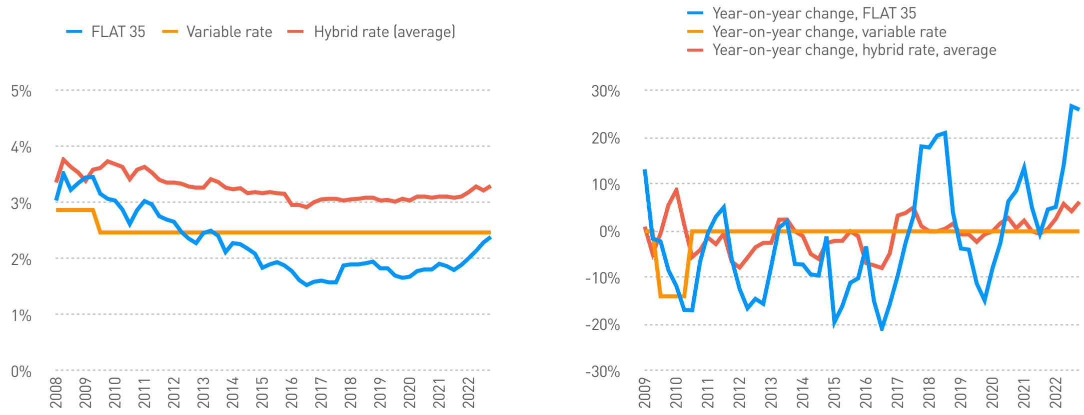
Given the historical data, the similarity of the country's behavior as a whole with the three most important metropolitan areas of the Asian nation (Tokyo, Aichi and Osaka) is worth noting, as they maintain very similar trajectories, except for slightly higher growth in the latter as of 2015. This trajectory starts from a sharp decline after the Great Recession of 2008-2009, followed by stagnation between 2009 and the end of 2012. Since then, a path of growth has been established that continues to this day, albeit with cyclical ups and downs. Of particular note is the pandemic shock of 2020, more pronounced in Tokyo, Aichi and Osaka than in the rest of the country, and more profound in commercial properties than in residential properties, given the inherent volatility in the former in times of crisis. However, the recovery has been very rapid, resulting in the highest levels of year-on-year growth in the last decade.

Mortgage interest rates

In terms of mortgage rates, three models are offered in Japan. The *FLAT 35* (35-year fixed interest rates guaranteed by the JHF), the *variable* and the *mixed* (combination of both). For Q4 2022, Japan Housing Finance Association data on the average interest rate reported for FLAT 35 was 2.4%, for variable 2.48% and for mixed, on average, 3.31% (see Chart 2.7-u).

As shown in Chart 2.7-u, the variable interest rate has remained at the same level since 2009. The FLAT 35, however, maintained a downward path for most of this decade, falling below the floating rate in 2012, and has not reverted since then. However, in 2020, with the arrival of the pandemic and its economic consequences, the trend shifted and began a steep growth tra-

Chart 2.7-u
Japan: mortgage rate
(mortgage rates, %; year-on-year change, %)

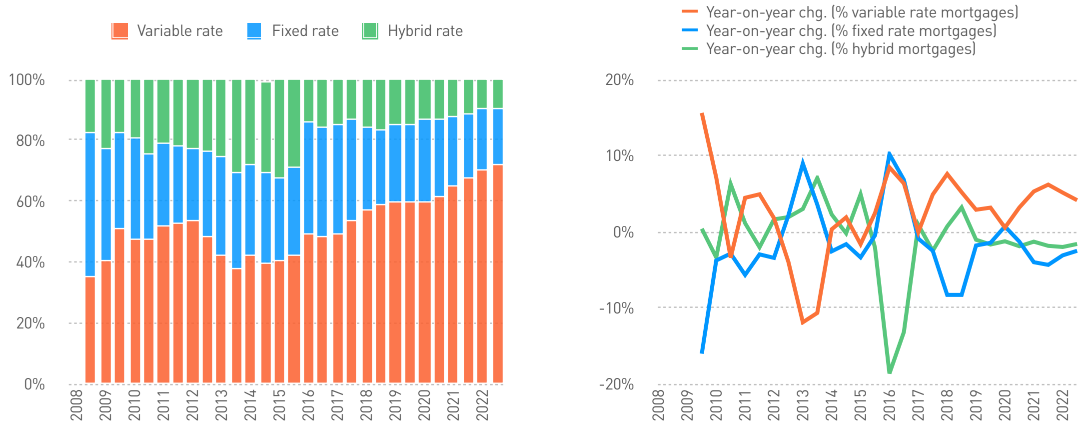


Source: MAPFRE Economics (based on data from the Housing Financing Association of Japan)

jectory, on the verge of surpassing the levels of the variable interest rate. The mixed rate has remained relatively constant since 2009, reporting levels of around 3-4%.

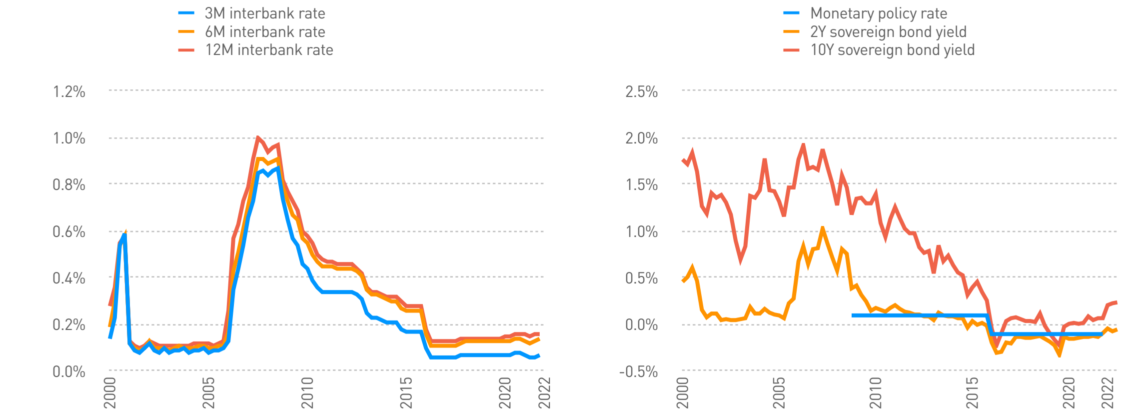
Finally, in terms of the percentage of mortgages taken out according to the interest rate model chosen, in the second half of 2022 71.9% of mortgages taken out were variable rate, 18.7% fixed rate and 9.4% mixed rate, with year-on-year variations of 4.2 pp, -2.5 pp and -1.6 pp, respectively (see Chart 2.7-v). It should be noted that the predominance of the variable interest rate is accentuated, given the recent growth of the fixed interest rate. In 2008, the situation was reversed: the fixed rate prevailed in the market, while the variable rate barely obtained 35% of the total. Over the years, however, the trend reversed and the fixed rate considerably reduced its share, while the variable rate rose. There was relative growth in terms of mixed between 2010 and 2015, after which it began a downward path that has led to its current minimum levels.

Chart 2.7-v
Japan: mortgage structure by interest rates
(interest rate structure, %; year-on-year change, %)



Source: MAPFRE Economics (based on JFHA data)

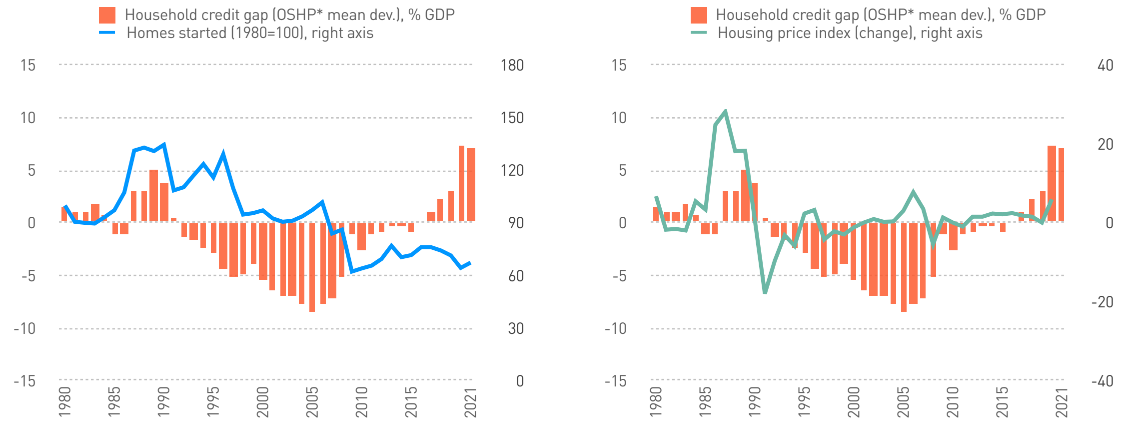
Chart 2.7-w
Japan: interbank and monetary policy rates
(%)



Source: MAPFRE Economics (based on Bloomberg data)

Finally, for comparative purposes, Chart 2.7-w represents data on interbank, monetary policy and sovereign bond interest rates, at different maturities. Japanese monetary policy has not changed much over the last decade: in the period 2009-2016, the policy rate stood at 0.1%, while between 2016 and 2021 it was -0.1%, and is currently at 0%. Interbank interest rates, in turn, stood at 0.07%, 0.14% and 0.16% at the end of 2021, at 3, 6 and 12 months, respectively. Historically, interest rates remained at discrete levels during the 2001-2005 period. They increased from 2006 onwards, reaching around 1% between 2006-2008. Later, the interest rates decreased progressively, until they reached the current discrete levels. Sovereign bond interest rates, at the beginning of the century, maintained high volatility through 2007, when they began to gradually decline until they went into negative values. Since then, levels have remained negative, in the range of 0.15% (2 years), and close to 0% (5 years). However, it is noteworthy that, in 2022, 5-year bonds have grown to 0.2%, remaining consent of the next two quarters.

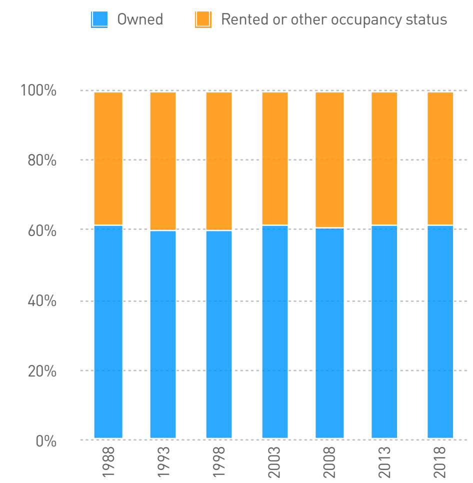
Chart 2.7-x
Japan: household credit gap



Source: MAPFRE Economics (based on data from BIS, Oxford Economics and Haver Analytics)

*OSHP = One Sided Hodrick-Prescott

Chart 2.7-y
Japan: trends in home ownership, rental and occupancy free of charge
(%)

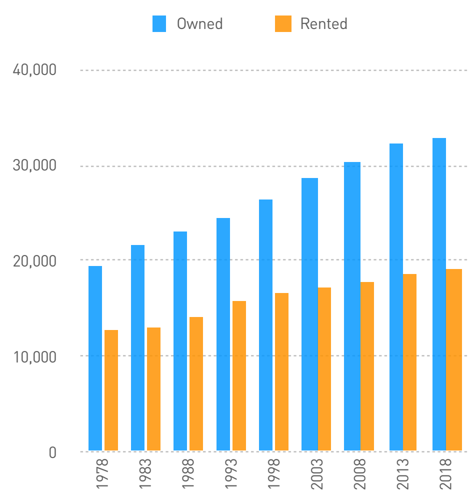


Source: MAPFRE Economics (based on data from the Statistics Bureau, Ministry of Internal Affairs and Communications of Japan)

Household credit gap

In terms of the evolution of the household credit gap relative to its historical average level, the pattern in the Japan is unique. Thus, we can distinguish a first period, from 1986 to 1989, in which the volume of household debt as a percentage of GDP was significantly higher than its long-term average.

Chart 2.7-z
Japan: number of people living in owned and rented dwellings
(thousands)



Source: MAPFRE Economics (based on data from the Statistics Bureau, Ministry of Internal Affairs and Communications of Japan)

Subsequently, a second period is observed, after the burst of the deep real estate crisis Japan experienced in the 1990s and through 2006, in which the credit gap is negative (with a credit percentage over GDP below the long-term average), increasing progressively. Finally, there is a third period after that in which credit begins to approach the long-term average, presenting a positive gap as of 2015. This patter of home loan behavior was reflected both in the number of new home starts, which have followed a long decreasing trend since the 1990s, and in prices, which have not recovered since the drop in the nineties (see Chart 2.7-x).

Residential leasing

The housing occupancy system in Japan continues on a relatively stable path, which it has been on for decades. Official data from the Japanese government's five-year census reveals that 61.2% of Japanese people live in a single-family dwelling, while 38.8% live in rented housing or other forms. These figures are very similar to those obtained in 1978 and have remained stable since then (see Charts 2.7-y and 2.7-z). This predominance of homeownership, apart from cultural factors, is also due to the public effort of the Japanese government during the post-war period, which, as previously mentioned, stimulated the supply of real estate and access to housing for low and middle-income families.

Japan in the IRPII ranking

Finally, it must be noted that Japan ranks 43 in the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) ranking; the synthetic index calculated by MAPFRE Economics for a universe of 43 countries (see Table 4.2-b).

Among the various components weighted to calculate the indicator, all of them contribute to Japan's lagging position, both economic and demographic factors such as the sensitivity of the insurance business to variations in disposable income (see Table 4.2-a). The Japanese population in 2023 is 123.3 million and is estimated to be on a slightly decreasing path that could bring it to 73.6 million by the end of the century, according to UN estimates[105].

2.8 South Korea

Introduction

The estimated population of South Korea in 2023 is 51.8 million, and according to latest United Nations forecasts[106], this country's population is on a decreasing path, with a more pronounced slope from mid-century, which could bring it to 24.1 million by the end of this century (see Chart 2.8-a). On the other hand, the analysis of gross capital formation in housing construction relative to GDP shows two distinct periods. The first of these, which runs from 1980 to the early 1990s, presents an upward trend that reached its peak in 1992, at 10.5%. And the second, presented thereafter, shows a declining path, with a low in 2012 of 3.1%, to current levels around 5% (see Chart 2.8-b).

Analysis of relevant indicators for the development of insurance activities

Housing stock and new construction

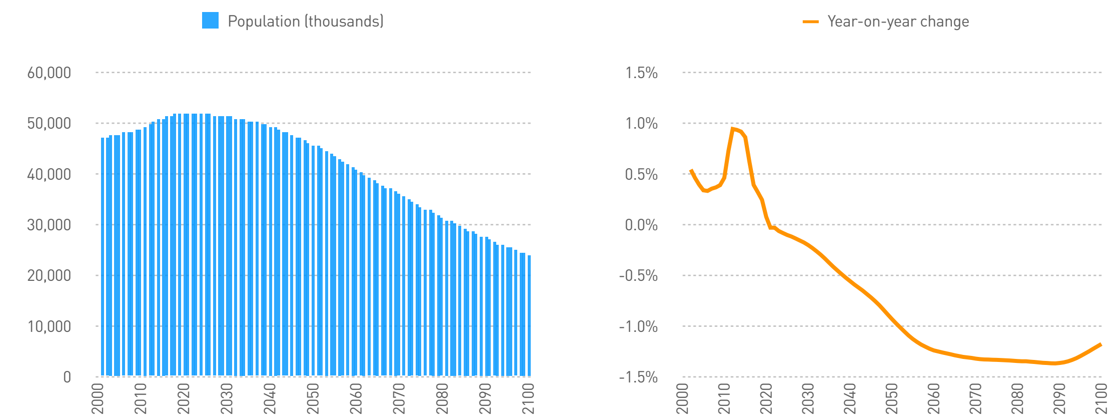
Housing stock

According to the 2021 population and housing census, the number of housing units in South Korea in 2021 totaled 18,811,627 units, up 1.5% (285,783 units) from 2020. Apartments total 11.95 million units, accounting for 63.5% of the total housing stock, up 2.5% over 2020 (see Chart 2.8-c). By administrative district, housing in the Dong (neighborhoods) accounted for 77.9% (14.66 million units) of the total, those in the Myeon (more rural townships) accounted for 11.2% (2.11 million units) and those in the Eup (villages) accounted for the remaining 10.8% (2.04 million units).

The housing supply ratio is the most popular measure of South Korea's housing policy and is defined as the ratio of the number of housing units to the number of households. This indicator has increased significantly since 1990, as the rate of increase in the housing stock has outpaced the growth of households, and in the early 2000s there were almost as many homes as households in the country[107]. In 2008, the housing supply ratio exceeded 100%, and has been gradually increasing to reach 103.6% in 2020.

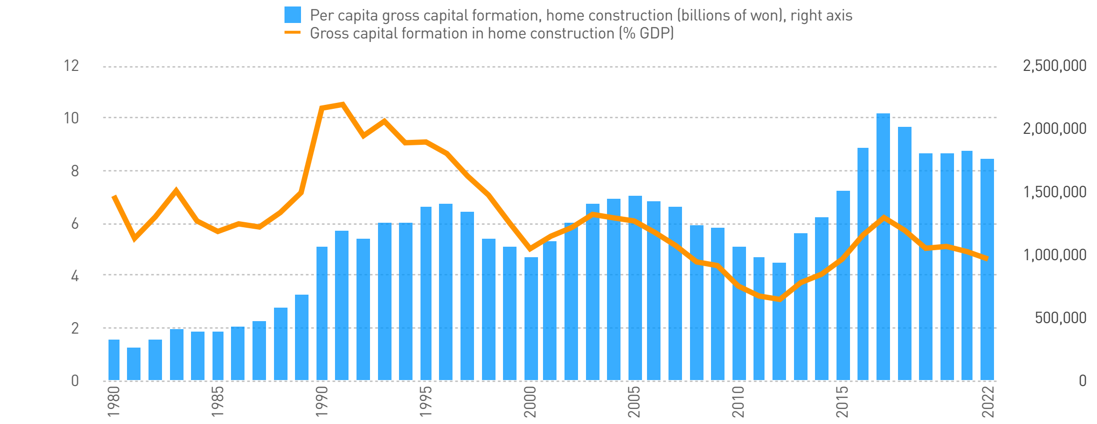
A milestone in South Korea's housing policy, which enabled the rapid expansion of the housing stock, was the national housing plan launched by the government in 1988, called Two Million Housing Drive (TMHD), for the construction of two million new

Chart 2.8-a
South Korea: population growth
(population, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on United Nations data)

Chart 2.8-b
South Korea: gross capital formation in home construction

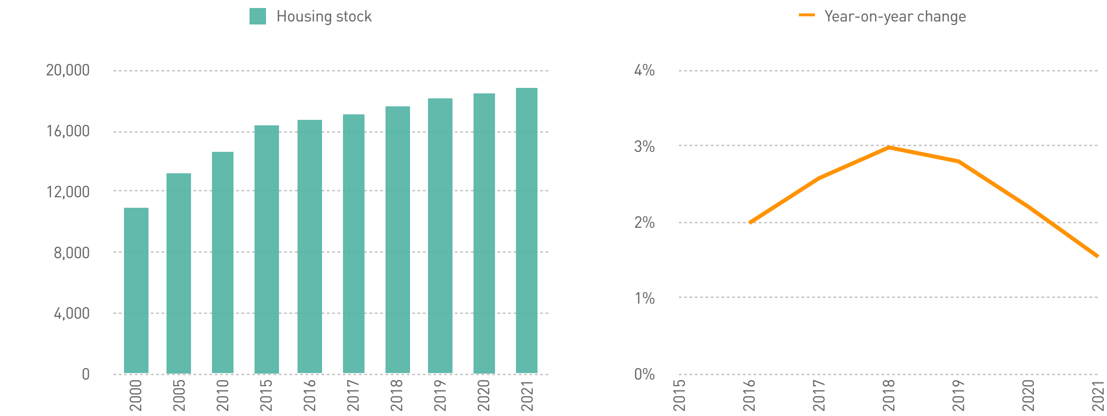


Source: MAPFRE Economics (based on Oxford Economics and Haver Analytics data)

housing units during the period 1988-1992. The plan involved public and private sector participation and included the construction of five new cities in the suburbs of Seoul. Among other aspects, this campaign served to overcome the severe housing shortage, to provide public rental housing to the most vulnerable households, and helped stabilize real estate prices by increasing the supply of new housing on a large scale and improving the quality of the housing stock[108].

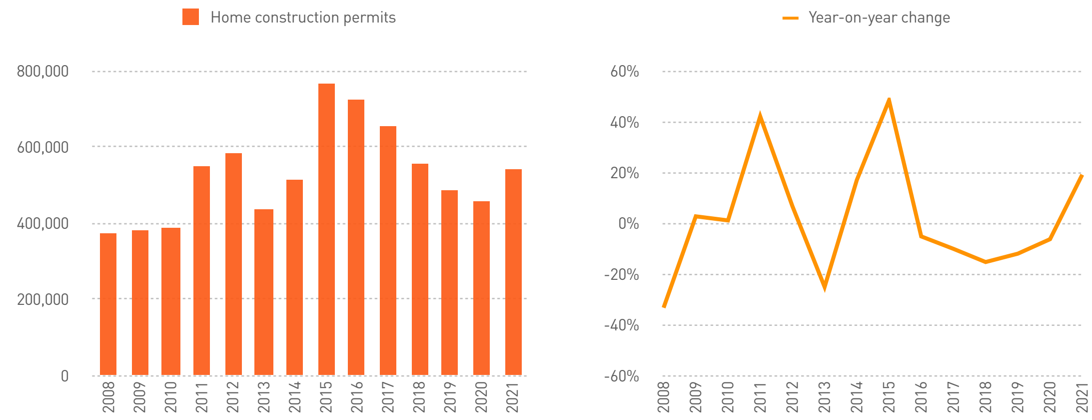
The South Korean government has announced that it will relax regulations on urban development and reconstruction to provide 2.7 million housing units nationwide over the next five years and boost private sector-led housing supply. The plan was presented in August 2022 at a real estate-related ministerial meeting chaired by the Deputy Prime Minister and Minister of Economy and Finance. The previous government had introduced a series of measures and regulations to discourage speculative home buying and curb runaway prices. Of the planned housing, 520,000 homes will be provided through government-led development and reconstruction

Chart 2.8-c
South Korea: housing stock
(number of homes, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on data from the KOSIS census and housing report)

Chart 2.8-d
South Korea: home construction permits
(number of construction permits; year-on-year change, %)



Source: MAPFRE Economics (based on data from the Ministry of Land, Infrastructure and Transport, Korea Housing Survey)

projects in cities, 880,000 public housing units will be available in metropolitan areas, and 1.3 million homes will be provided through private sector development programs[109].

New home construction and sales

After five consecutive years of declines in residential building permits, they increased by 19.2% in 2021 over the previous year to 545,400 permits. However, these figures are much lower than the 765,328 permits granted in 2015, the highest figure since 2008. After that date, the number of permits began to decline, while maintaining very high figures, to 457,514 in 2020, marking a low in recent years and coinciding with the year of the pandemic outbreak. In 2021, this parameter recovered and, in the first nine months of 2022, the number of residential building permits continues to grow, to exceed the September 2021 data by 5.9% (see Chart 2.8-d).

Home-linked insurance developments

The companies operating in Non-Life insurance in South Korea offer the following lines of insurance: fire, marine, automobile, surety, accident, annuities, long-term insurance[110], pension plans and direct insurance abroad. Long-term and automobile insurance are the branches with the highest market share, 54.6% and 18.9%, respectively. Fire insurance premiums written in 2021 amounted to 318 billion won (US$278 thousand), 15.3% higher than in 2020[111].

Non-Life insurance companies offer fire and liability products for home, commercial and business with coverage for fire, theft, property damage, third-party liability, business interruption and personal injury. They also cover guaranteed damages for financial telecommunications fraud and direct internet transaction fraud or household appliance breakdown repair costs. Comprehensive property products are also offered that cover not only property damage and corporate liability risks, but also injuries and costs resulting from damages to the company's owners and employees.

The South Korean insurance market offers comprehensive insurance including building or facility restoration cost support (fire), business closure damages, damages for legal costs (civil and administrative), temporary housing costs, damages for internet fraud in shopping malls, damages for financial telecommunication fraud, appliance breakdown repair costs, etc. Home coverages offer protection against property damage; damages caused by leaks in buildings, household goods, furniture, fittings and drains; liability coverage; fire compensation; accident coverage for injuries; disability after an injury, fractures, burns, hospitalization allowances for injuries, etc.; driver's coverage; automobile accident processing subsidies, fines, attorney's appointment fees, among others. Likewise, insurance company products in that country cover explosion and rupture damage; collapse, sinkhole and landslide damage; wind and flood damage to special buildings; wind and flood damage to non-special buildings; etc.

With regard to the technical results of the Non-Life segment, the loss ratio was 80.7% in 2021, an improvement of 1.6 percentage points (pp) over the previous year's ratio, while the expense ratio reached 21%, resulting in a combined ratio of 101.7%, 2.6 pp lower than the previous year. The fire branch, in turn, obtained a loss ratio of 60.4%, a decrease of 22.4 pp. with respect to 2020.

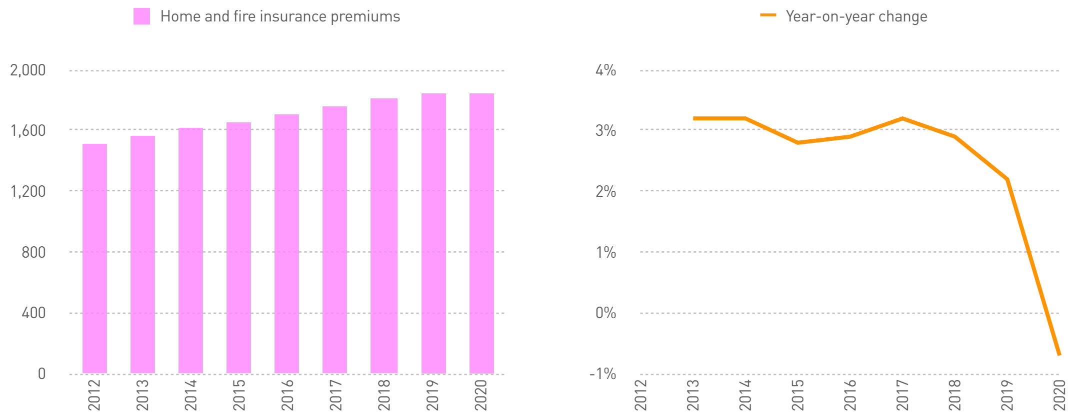
It is estimated that the majority of businesses and households in South Korea are underinsured[112]. Home insurance penetration is very limited, with only an estimated 30% of households being insured, although it is difficult to identify more than one million relevant policies in the insurance market statistics. This would suggest a much lower penetration rate of less than 10% of households. Most home policies are subscribed for the long term, and part of the attraction is the savings element. The low insurance penetration rate is mainly due to low risk perception. As shown in Chart 2.8-e, written premiums in 2020 for the home and fire branch amounted to 1.8395 trillion won (US$1.558 billion), giving the Non-Life segment a market share of 10.8% and a premium-to-GDP ratio of 0.1%, penetration that has remained unchanged since 2012.

Finally, it should be noted that Contractors' All Risk Insurance (CAR) covers both domestic construction and overseas construction projects by Korean contractors. In 2020, the engineering business generated a premium amount of 298.7 billion won (US$253 million), with a 0.3% share of Non-Life premiums[113].

Mortgage balance and new mortgages taken out

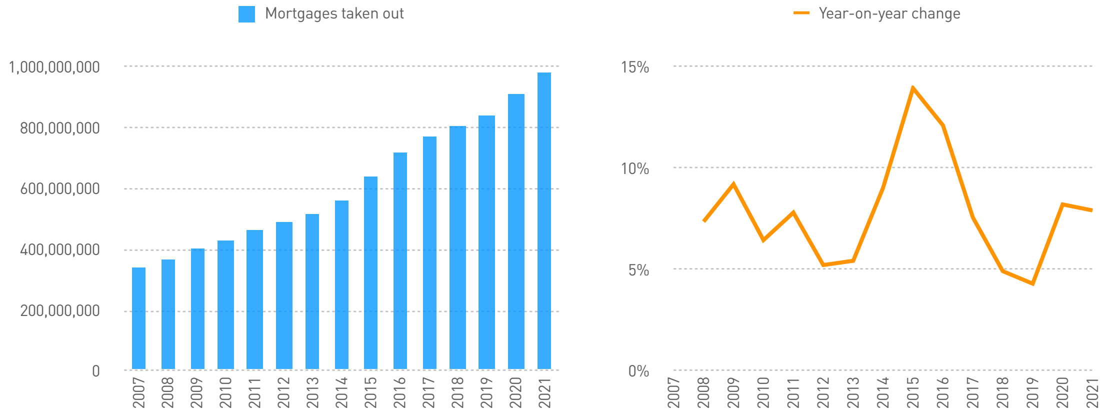
By the end of 2021, the amount of mortgage loans arranged by the private sector reached 984.5 trillion won, 52.8% of total

Chart 2.8-e
South Korea: home and fire insurance premiums
(premiums, billions of won; year-on-year change, %)



Source: MAPFRE Economics (based on AXCO data)

Chart 2.8-f
South Korea: mortgages taken out vs. total properties
(mortgages taken out, millions of won; year-on-year change, %)



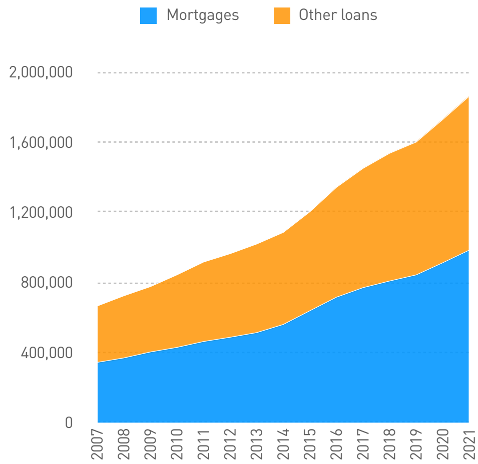
Source: MAPFRE Economics (based on data from HOUSTAT House Finance Statistics)

household loans. This amount represents an increase of 7.9% over 2020 (see Chart 2.8-f). With data as of Q3 2022, the total amount of mortgage loans stood at 1.0079 trillion won, accounting for 53.9% of total household credit, up 3.7% from the same period the previous year. Rising interest rates have increased the household debt burden. Of that amount, commercial and specialized banks lent 637 trillion, up 2.8% from September 2021, non-bank depository corporations 111.3 trillion (+9.4%) and other financial institutions (including insurance companies) 258.9 trillion (+3.7%). In recent decades, mortgages have been the fastest growing segment of household lending, driven mainly by rising real estate prices.

However, if we include the 194.5 trillion in housing loans held by the Korea Housing Finance Corporation (KHFC) and the Housing and Urban Fund, the total amount of mortgages reached 1,179 trillion won at the end of 2021 and 1,209.4 trillion won in Q3 2022 if we add the 201.5 trillion loaned by these institutions.

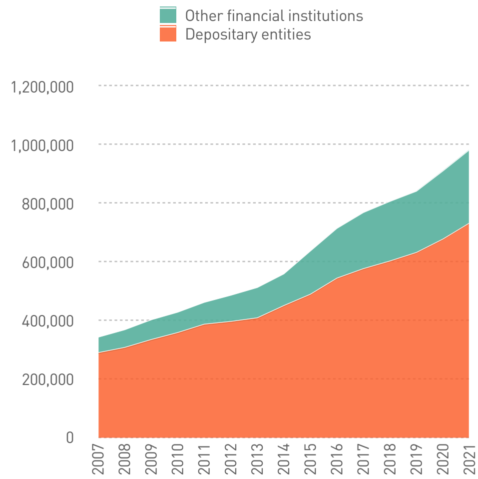
Meanwhile, when analyzing the mortgages taken out in the 2017-2021 period by type of institution (see Charts 2.8-g and 2.8-h), it is evident that the loans granted by all of them have increased, with the pace of growth dropping in the two years prior to the start of the pandemic, increasing dynamism that year and moderating again in 2021. Banks are the leading mortgage lenders, with a 64% market share by the end of 2021, followed by other financial institutions, such as insurance companies, with a 25% share. The remaining mortgage lenders on the market are non-bank companies, such as cooperatives and savings banks, which have an 11% market share. In

Chart 2.8-g
South Korea: types of loans granted to households
(total loans)



Source: MAPFRE Economics (based on data from HOUSTAT House Finance Statistics)

Chart 2.8-h
South Korea: types of mortgages granted by institution (total mortgages)



Source: MAPFRE Economics (based on data from HOUSTAT House Finance Statistics)

addition to the foregoing, mortgages provided by the Korea Housing Finance Corporation and the Housing and Urban Fund have increased the most during the period analyzed (37.6%), followed by other financial institutions (30.5%), and depository institutions (banks and other non-bank institutions) with 27%. Insurance companies account for 25% of total loans to households made by other non-bank financial corporations.

In 2021, the residential real estate transaction price index increased on a large scale in most regions, registering an increase of 9.9% over 2020. In particular, the Seoul metropolitan area experienced a high price increase of 12.8%, and in Gyenggi and Incheon, prices increased by 16.6% and 16.4%, respectively. However, in Q4 2021, the upward price trend moderated somewhat overall.

According to the Housing Finance Corporation's annual report, the national median apartment price exceeded $472,700 at the end of 2021, registering a year-over-year increase of $81,800. By region, in metropolitan areas, the median price rose to $700,000 by the end of 2021, up $118,200 from the previous year. In the five metropolitan cities, the price increased from $254,500 to $310,000, while in the eight provinces the price rose from $145,500 to $172,700.

After several years of uninterrupted increase, South Korea's real estate market prices have started to show signs of fatigue in early 2022, when the nationwide home sales price index, published by the Korea Real Estate Board, stabilized at 104.8 from February to July 2022, gradually falling thereafter to 101.7 in November. The aforementioned rise in interest rates and tightening mortgage lending conditions have put pressure on South Korean consumers, who had a household debt-to-GDP ratio of 104.9% at the end of March 2021, according to Bank of Korea data, far exceeding the average of the top 30 countries in terms of nominal GDP (63.2% in 2020). It should be noted that, at the September 2022 press conference on the country's financial stability situation[114] , the Financial Stability Office indicated that home sale prices have recently declined due to the perceived overvaluation of home prices and weakening expectations of price increases following the hike in lending rates, while the number of home sales is declining. As the Bank of Korea's reference interest rate rose, the interest rate on mortgage loans has been on an upward trend after the first half of 2021. At the end of 2021, the weighted average lending rate of deposit banks rose 1.04 pp from the previous year to 3.63%.

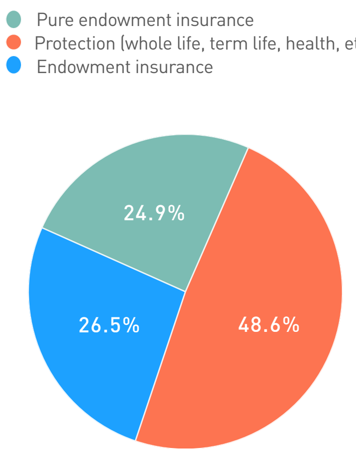
Development of Risk life insurance

In 2021, South Korea was the eighth largest Life insurance market in the world, with a penetration rate (premiums/GDP) of 6.2%. Life products are divided into individual insurance and group insurance, and individual insurance is further subclassified into: death coverage, which includes sickness, accident, term life and whole life insurance; pure endowment insurance, which covers pensions and education expenses; and endowment insurance, which consists of tax-advantaged savings insurance and variable universal life insurance.

In 2021, life insurance premiums reached 118,849 billion wons (100.6 million dollars), entailing a decrease of -0.6% versus 2020. The individual life segment accounts for 79% of premiums and group insurance (general group insurance and pension plans) for the remaining 21%. Protection-type products (death and health insurance) have the highest share of individual life insurance, with 48.6% (see Chart 2.8-i), compared to capital insurance (26.5%) and pure deferred capital insurance (24.9%)[115].

A characteristic feature of the Korean insurance industry is the high percentage of insurance companies' technical reserves that are invested in loans. At the end of 2021, Non-Life insurance companies had 22.4% of their total assets invested in loans and Life companies had 15.6%. In 2022, South Korea's major insurance companies compete with commercial banks by launching mortgage loan products with a maturity of up to 40 years. By extending the maturity date, the amount of principal and annual interest is reduced, resulting in a reduction

Chart 2.8-i
South Korea: individual life insurance: premium distribution by line of business
(%)



Source: MAPFRE Economics (based on data from the Korean Insurance Research Institute, KIRI)

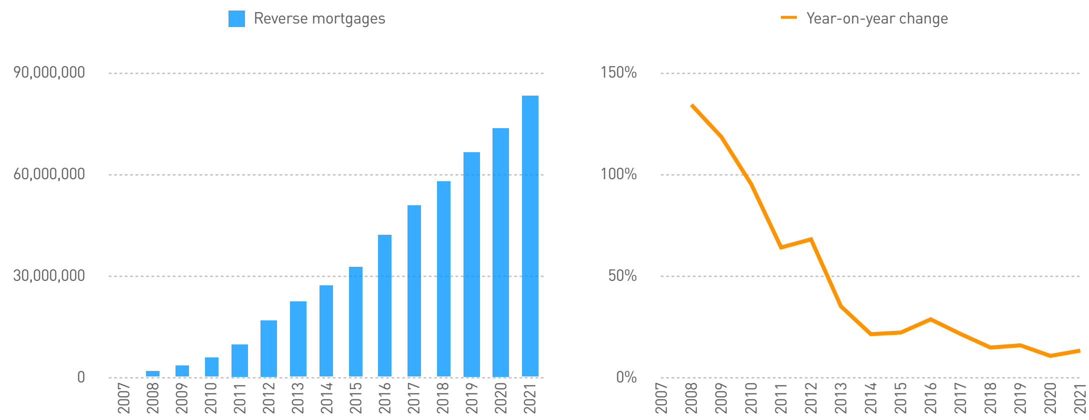
of the debt service ratio (DSR), which in the case of insurance companies is 50%, 10 pp more than banks.

Reverse mortgage

Data from House Finance Statistics (HOUSTAT) show that the reverse mortgage market in South Korea has been growing steadily in the South Korean mortgage market, accounting for approximately 8.4% of the total mortgage volume by 2021. Since its implementation, it has grown very rapidly (rates above 100% at the start) and although a downward trend is evident due to a simple base effect, in recent years it has remained at rates above 10%, reaching 12.9% year-on-year growth in 2021 with respect to 2020 (see Chart 2.8-j).

Notably, in 2017, the Korean government, through the Korea Housing Finance Corporation (KHFC), implemented a government guaranteed reverse mortgage program (Korean Home Pension) for its citizens, available to seniors (or their spouse) aged 55 or older, with a total declared home value equal to or above a certain amount ($818,200 in 2021). This program is also open to those who own two homes with a total declared value of more than that amount, provided that they sell the non-residential home within three years. Under the program, the beneficiary is guaranteed lifetime residency in the home and monthly payments in exchange for providing the home as collateral. The program is quite flexible, because a portion of the loan may be withdrawn to cover medical expenses or other duly justified unforeseen events. A variable interest rate is applied in the Korean Home Pension program, and subscribers can choose from a variety of terms, with interest rates that are lower than market mortgage rates. In addition, borrowers enjoy a number of tax advantages (25% discount on real estate taxes, as well as a tax deduction for interest payments, among others).

Chart 2.8-j
South Korea: reverse mortgages taken out
(mortgages, millions of won; year-on-year change, %)



Source: MAPFRE Economics (based on data from HOUSTAT House Finance Statistics)

There are several payment options in the reverse mortgage program, which are classified *by property type, modified property type* and *term type*. The property type modality allows them to receive fixed monthly payments without the possibility of cash withdrawals during their lifetime. In the case of the *modified property type*, a combination of monthly payments and a monthly line of credit is offered; this option allows up to 50% of the loan to be withdrawn at any time and a stream of monthly payments of the outstanding loan amount to be received. And finally, the *term type* offers payment over a specified period of time (from 10 to 30 years on a five-year basis).

Subscribers to the Korean Home Pension can receive monthly payments on a straight-line basis, with high and low payments, or in periodic increments. Subscribers with the linear option receive equal monthly payments for life, while those with the high and low payment option receive higher monthly payments than those with the linear option for a specified period (3, 5, 7 or 10 years at the subscriber's choice). The linear payment option is available for all payment types, but the periodic increase and high and low payment option are only available for property type or modified property type subscribers.

One of the reasons for the success of reverse mortgage marketing in South Korea compared to other similar markets is that reverse mortgages have been designed as a financial product using European-style option hedging, i.e. Korean reverse mortgages have a so-called "straddle" strategy, which provides a hedging strategy for consumers, making it an attractive product for borrowers, as they can receive a regular cash flow to cover living expenses without being affected by market risk, such as home price variations. Specifically, borrowers do not have to repay anything under this system, even if the total amount borrowed exceeds the price of the home, which is called a *non-recourse loan.* In addition, if the price of the home exceeds the total outstanding balance, the heirs may inherit the home and dispose of the value of the asset to help repay the loan balance. Likewise, public involvement as guarantor for the granting of these mortgage loans, through the country's financial companies, has encouraged its older population to take out this product.

Real estate investment instruments for insurance companies' investment portfolios

The establishment of the Korea Housing Corporation in 1962 and the Korea Housing

Bank in 1969 can be considered the beginning of institutional housing finance in South Korea. Subsequently, in 1981, the National Housing Fund was created to make it easier to obtain and provide funds to support citizens' home purchases. The fund was administered by the Korea Housing Bank and was financed by National Housing Bonds, Housing Subscription Plan deposits, direct government subsidies, lottery funds and others. While the fund was created to finance low-income housing, it increasingly provided complementary financing. These institutions dominated the housing finance market until the outbreak of the Asian financial crisis in 1998, and a market-based housing finance system was established in the second half of the 1990s following financial liberalization.

More recently, the National Housing and Urban Fund (NHUF) realigned the functions of the National Housing Fund and its role is not limited to providing stable housing for all people, but has been expanded to support urban regeneration. In 2014, the Korea Housing and Urban Guarantee Corporation was designated as the exclusive institution to manage the operation of the National Housing and Urban Fund.

Meanwhile, in 1999, Korea Mortgage Corporation (KoMoCo) was established and in April 2000 KoMoCo undertook its first securitization of mortgage loans granted by the National Housing Fund, with technical support from foreign investment institutions. In 2004, KoMoCo was transferred to the Korea Housing Finance Corporation (KHFC), so KHFC has been responsible for structuring public mortgage loans and issuing securities ever since. KHFC is a public institution established in 2004 to promote the stable and long-term supply of home financing and thus contribute to the well-being of the population and the development of the national economy. It works in four main business areas. First, in the provision of public mortgages: it issues MBS and MBBs, mortgage-backed securities and bonds as underlying assets to finance its long-term, fixed-rate, amortizing public mortgages. Second, in the issuance of mortgage-backed securities and bonds (MBS and MBBs) backed by mortgage loans purchased from financial institutions. Third, in the provision of loan guarantees for home financing, offering loan guarantees to individual tenants and homebuyers, as well as to real estate developers. And, fourth, by offering people over the age of 55 guarantees for the Korean Home Pension, the reverse mortgage program.

Residential mortgages are one of the most important underlying assets in the securitization market. Financial institutions, including banks, sell these mortgages to KHFC, which then registers the securitization, transfer and trust plan for the purchased mortgages with the Financial Services Commission (FSC). With these mortgages as underlying assets, KHFC issues mortgage-backed securities (MBS) or mortgage-backed bonds (MBB) to investors in the capital markets. The MBS and MBBs are then sold to investors in the capital markets, and the proceeds from the sales go to the originating financial institutions. To protect investors, the FSC discloses details of mortgages whose securitization plan, sales and trust were registered by KHFC online. As KHFC is a government-sponsored organization, securities issued by KHFC are public agency MBS that are guaranteed by the government. KHFC guarantees payment of the MBS principal, and KHFC's credit enhancement is backed by the government.

The MBS market in South Korea has grown dramatically since the mid-2000s. One of the most notable increases occurred in 2015, when MBS issuance increased by 285%, closely related to government housing policies that sought to promote the government-guaranteed home mortgage market. According to its annual report, KHFC regularly issued MBS 26 times for a combined amount of about US$31.3 billion in 2021. As the government adopted stricter measures against rising household indebtedness, the eligibility requirements for mortgage loans were tightened.

However, in order to finance the supply of public mortgages for financially vulnerable groups, KHFC kept the volume of MBS issuance stable. By the end of 2021, the cumulative issuance amount and outstanding amount of KHFC MBSs reached approximately US$317 billion and US$134.1 billion, respectively, becoming the leading domestic bonds along with Treasury bonds. In particular, 67.7%, or US$21.1 billion of the MBS issued during the year, were medium- and long-term securities with maturities of five years or more. Among them, the issuance of 30-year maturity super-long-term MBS, first introduced in 2020, amounted to US$200 million, a 450% year-on-year increase, providing stable funding for the newly introduced 40-year maturity super-long-term public mortgages.

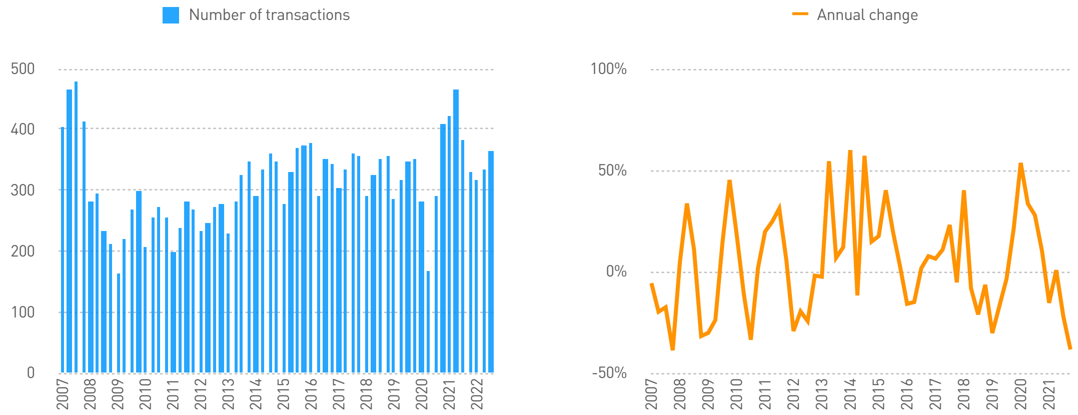
Covered bonds are bonds issued by financial institutions with prime assets, such as mortgages or public sector loans as collateral. Endowed with a right of first refusal on the collateral and a right of recourse to the issuer, MBBs offer investors double protection (double recourse), allowing a steady flow of low-interest financing. Since 2010, KHFC has raised a total of US$7.9 billion through the issuance of 12 rounds of foreign currency-denominated covered bonds, thus diversifying its funding sources.

Real estate transactions, home prices and mortgage interest rates

Real estate transactions

The number of real estate transactions concluded in South Korea in 2021 reached 1,620,781, which represents a decrease of -19.8% compared to 2020; this data contrasts with the significant increase of 28.8% that year (see Chart 2.8-k). Of the total number of transactions, 193,003 took place in Seoul, representing 11.9% of the total. It should be noted that, in 2020, the government implemented a series of economic stimulus measures in response to the COVID-19 pandemic that boosted the housing and credit market. In turn, this increase in home purchases has led to a significant increase in home prices, especially in Seoul, which, together with the successive price increases of previous years, has focused the attention of policy makers on curbing the growth of household debt. South Korea's high level of household debt has been considered a major risk factor for the country's economy, given its relatively high ratio to GDP.

Chart 2.8-k
South Korea: home sales
(number of transactions, thousands; year-on-year change, %)



Source: MAPFRE Economics (based on Korea Real Estate Board data)

A medium-term analysis (2013-2020) shows that South Korea's real estate sector has maintained a mostly upward trend. After an escalation in prices during 2002-2007, there was a period of stagnation from 2009 to 2012 due to the global financial crisis, with recovery beginning in 2013. To alleviate the effects of the crisis, government policy was aimed at stimulating the market through deregulation and more flexible taxation, and increased supply in two ways: areas in the city centers were designated for new development, and in the periphery a small fraction of greenbelt land was freed up to accommodate public housing[116].

From 2017 to 2019, government housing policy has been aimed at preventing speculation in some overheated or real estate bubble-prone areas and stabilizing housing prices. To this end, the loan-to-value (LTV) and debt-to-income (DTI) ratios were adjusted on several occasions. In addition, restrictions were established on the grant of mortgage loans based on the number of homes owned and in speculative areas. With respect to rentals, limits were placed on the granting of public guarantees on the rental deposit (called jeonse) for high-priced housing.

In order to minimize pressure on the economy and credit market, and keep inflation under control, the Bank of Korea has raised its prime rate nine times since August 2021, reaching 3.25% in November 2022. This increase has affected the real estate market, where, according to data from the Korea Real Estate Board, housing transactions have reached a volume of 713,000 units through October 2022, down 49.4% from the same period last year (1,407,837 units).

An analysis of housing real estate transactions by metropolitan areas and provinces in 2021 shows that 193,003 such transactions took place in Seoul, accounting for 11.9% of the total. In terms of their behavior, contrary to what happened in 2020, when practically all regions registered an increase in sales, in 2021 most of them show decreases in the number of transactions, with those of the special autonomous city of Sejong (-49.7%) and the metropolitan city of Dae-gu (-40.4%) standing out. Conversely, the provinces of Gangwon (11.4%), North Chungcheong (15%), South Chungcheong (15.7%), North Gyeongsang (18.1%), South Gyeongsang (1.4%) and the Jeju Special Self-Governing Province (17.3%) saw increases.

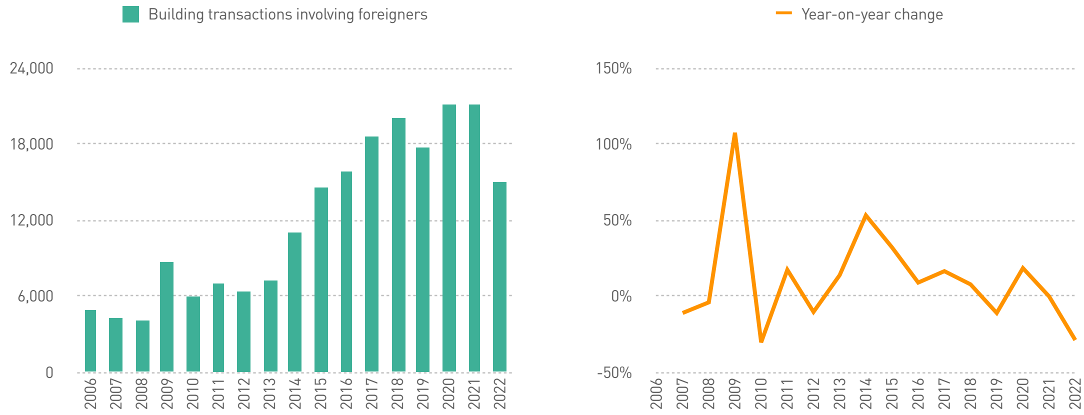
Real estate transactions carried out by foreigners

The acquisition of real estate by foreigners in South Korea increased rapidly after 1998 with the opening of the domestic real estate market. According to the Korea Real Estate Board, there were 21,033 housing and commercial building-related transactions by foreigners in 2021, a slight decrease of -0.1% from 2020, which saw an increase of more than 18% year-on-year. The decline has been more pronounced in the 11 months so far in 2022, where real estate transactions by foreigners have fallen by 24% compared to the same period last year (see Chart 2.8-l). Analyzing its development, we see that real estate transactions by foreigners fluctuated greatly in the period 2006-2021, with significant increases in 2009 (107.5%), 2014 (53.2%) and 2015 (32.1%), but also significant decreases in 2010 (-30.3%), 2012 (-10.3%) and 2019 (-11%). Nevertheless, the balance is very positive, with a 333% increase over the entire period.

Home prices

The development of median home prices in South Korea compared to the development of the general price index in a series since 1980, shows that both indexes follow a similar growth trend, while home prices suffered a decrease during the 1990s. Since then, housing prices have returned to a growth path and from 2020 onwards they accelerated significantly (see Chart 2.8-m). In addition to the economic situation, the performance of the South Korean housing

Chart 2.8-l
South Korea: real estate transactions involving foreigners
(number of transactions, thousands; year-on-year change, %)



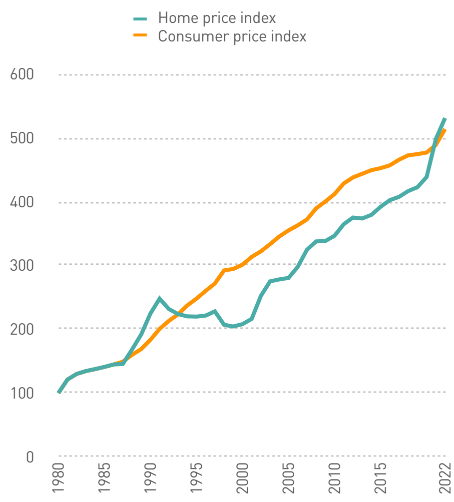
Source: MAPFRE Economics (based on data from the Department of Analysis and Transactions, KOSIS)

market is strongly conditioned on government intervention, whose policies have influenced the performance of this sector over the years. Stabilizing home prices, controlling household debt, and providing affordable housing options to low-income households have been a constant in the government's objectives. Its interventions include land use regulations, loan-to-value (LTV) and debt-to-income (DTI) limit adjustments, home financing subsidies, pre-sale price caps, tax changes, and government supply of new housing units, among others.

One of the public policy tools to achieve the goal of housing price stability includes adjustments to LTV and DTI limits. The Financial Supervisory Service (FSS) introduced LTV limits in 2002, which it set at 60%, and DTI limits in 2005, which it set at 40% for home purchase loans in speculative areas, only if the borrower is single and under the age of 30, or if the borrower is married and the wife has debts. Since then, LTV and DTI limits have been modified on numerous occasions, not only in terms of the levels themselves, but also in terms of the areas and financial institutions to which they apply.

As of August 2014, in order to boost the real estate market, the government set the universal LTV ratio at 70% and DTI at 60%, regardless of region and income level. On August 2, 2017, the government announced measures including significantly lower LTV and DTI rates to curb speculative demand in the real estate market: LTV and DTI rates were set at 40% for homebuyers in Seoul, Busan and other major cities, regardless of the type of home, amount and maturity of

Chart 2.8-m
South Korea: home and consumer price indexes
(1980=100)



Source: MAPFRE Economics (based on data from Statistics Korea, Kookmin Bank and Haver Analytics) such mortgages. However, to protect real housing demand, LTV and DTI ratios were relaxed to 50% for first-time homebuyers and low-income households. In December 2019, the Financial Services Commission (FSC) announced the tightening of mortgage regulations to curb overheating home prices: a 20% LTV ratio would be applied to properties valued at more than 900 million won in speculative areas, while a 40% LTV ratio would continue to apply for amounts up to 900 million won. Subsequently, in February 2020, the FSC revised the LTV ratio and reduced it to 50% for the purchase of homes valued up to 900 million won in designated speculative areas. An LTV ratio of 30% is applied for amounts over 900 million won.

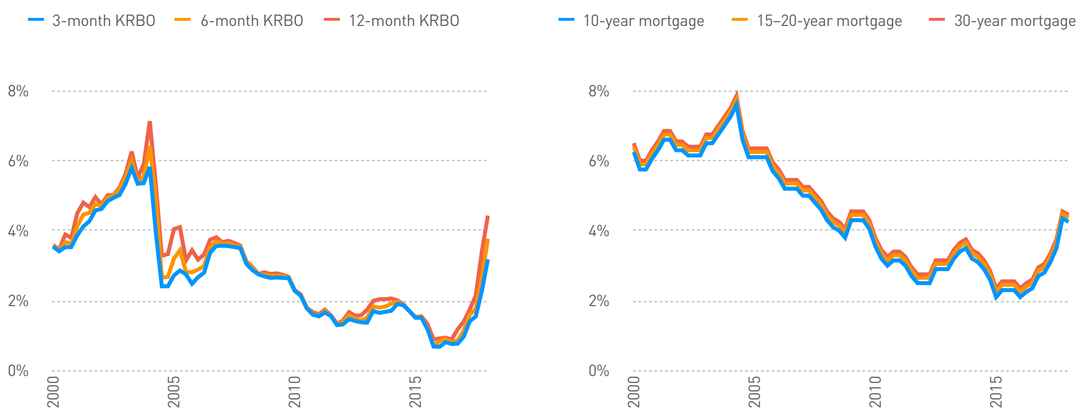
In addition to the above lending standards, in 2018, the Financial Supervisory Service introduced the debt service ratio (DSR) in the banking sector, which is the ratio of a domestic borrower's total debt repayment (i.e., principal and interest payments) to their annual income. It is considered a more effective tool than the LTV ratio to curb the growth of housing finance when house prices are rising. As of 2019, the DSR was also applied in the non-bank financial sector, such as savings banks, insurers and card companies. Non-bank financial companies, including insurance companies, have a DSR ratio of 50%, 10 pp higher than that of commercial banks.

Mortgage interest rates

The South Korean real estate market is very sensitive to changes in interest rates, as traditionally a very high percentage of home loans have a variable interest rate. Chart 2.8-n shows the development of the interbank interest rate in South Korea since 2004, with a significant rebound in 2022.

To improve loan quality and slow the pace of household debt growth, in 2011 the government announced for the first time the establishment of a target ratio for fixed-rate loans of 2.1%, raising it in subsequent years. In 2014, it set new targets for banks to increase the share of fixed-rate loans of total mortgages to 40% by the end of 2017. In 2016, that target was raised to 45% and 47.5% in 2018. Financial authorities also set targets to increase the proportion of amortizing loans (those where the borrower pays both principal and interest) which rose to 55% in 2016. The share of fixed-rate household lending by depository banks (based on new loans) has decreased from 48.4% at the end of 2019 to 31.9% at the

Chart 2.8-n
South Korea: interbank rate and Bogeumjari mortgage rate
(%)



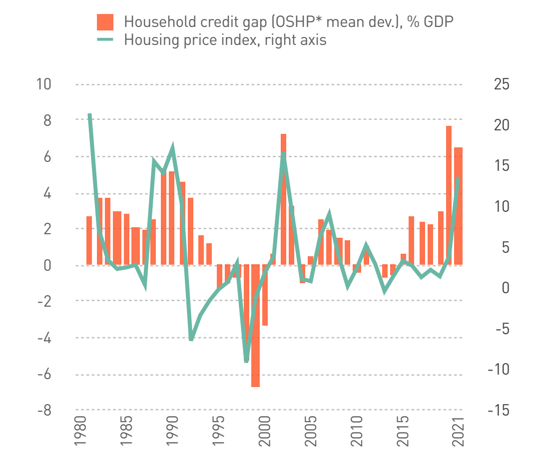
Source: MAPFRE Economics (based on Bloomberg data) end of 2020 and to 20.7% in October 2021[117]. The cited Chart 2.8-n also shows the development of mortgage interest rates in South Korea since 2004, highlighting the rebound in 2022.

Household credit gap

In terms of the development of the household credit gap relative to its historical average level, it is worth noting that the financial crisis of the years 2007 to 2009 affected South Korea less severely than most developed markets, and the subsequent price rebound has been more delayed, with a pronounced increase since 2020, coinciding with a significant increase in credit relative to its historical average (see Chart 2.8-o).

In April 2021, the South Korean government announced the household debt management plan for 2021-2023[118], which is intended to manage its growth to try to maintain stable levels and introduce regulatory measures to ensure that borrowers' ability to pay is considered in its concession. The measures include: (i) strengthen measures to manage the level of gross household debt; (ii) enforcement of DSR rules on individual borrowers; (iii)

Chart 2.8-o
South Korea: household credit gap



Source: MAPFRE Economics (based on data from BIS, Oxford Economics and Haver Analytics)

*OSHP = One Sided Hodrick-Prescott

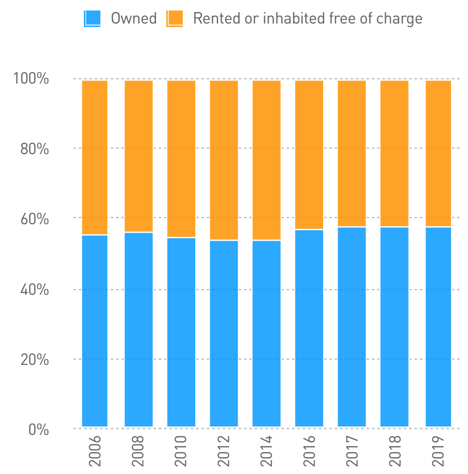
strengthen supervision of non-bank loans and non-housing mortgages; and (iv) improve financial access for first-time homebuyers. As a result of the implementation of these measures, the growth rate of household debts was gradually reduced in the second half of 2021. In addition, unsecured loans and mortgage loans, which acted as the main driver of the increase in household debt in the second half of 2020, also regained stability.

Residential leasing

According to the National Statistics Office, 58% of the country's housing stock was owner-occupied in 2019, while the remaining 42% was rental or rent-free housing. Of the total number of rental properties, 15.1% had a so-called jeonse (or chonsei) contract, a type of rental contract very specific to the South Korean real estate market, where the tenant, instead of paying monthly installments to a landlord, makes a lump-sum deposit for the duration of the contract (usually two years), based on a percentage of the value of the property (equivalent to an average of between 50% and 70% of its price), which the tenant recovers in full at the end of the lease term. A medium- and long-term analysis shows that there has been a change in housing occupancy over the period 2006-2019, with a small increase in owner-occupancy and a more significant decrease in jeonse-type rentals in favor of other types of rentals (with or without a deposit), from 22.4% in 2006 to 15.1% in 2019 (see Charts 2.8-p and 2.8-q).

The number of housing units owned by individuals (as opposed to housing units owned by corporations, central and local governments, or foreigners) was 16.2 million in 2021, accounting for 86.3% of the total housing stock (18.8 million units). Meanwhile, of the 21.4 million households that year, 12.1 million are homeowners, who own 16.25 million homes. Thus, the overall household homeownership rate stood at 56.2% in 2021 and the average number of dwellings per household is 1.35.

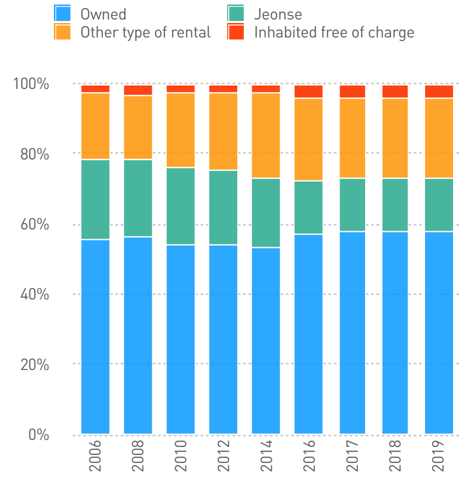
Chart 2.8-p
South Korea: trends in home ownership, rental and other
(%)



Source: MAPFRE Economics (based on data from the Ministry of Land, Infrastructure and Transport, Korea Housing Survey)

Finally, it should be noted that it has not been possible to construct the *Real Estate Potential Indicator for the Insurance Sector* (IRPII) for South Korea because not all the information necessary for its inclusion in this synthetic indicator was available.

Chart 2.8-q
South Korea: breakdown of homes by type of occupancy
(%)



Source: MAPFRE Economics (based on data from the Ministry of Land, Infrastructure and Transport, Korea Housing Survey)

However, the component corresponding to the demographic factor and its development is a factor that would have been negatively weighted.

3. Mortgage market and related financial instruments

Mortgage-backed securities and *securitizations* are financial assets in which insurance companies usually invest as many of these issues fit their risk profile. These financial assets are very important for the development of the real estate market, and their existence depends to a large extent on the level of development of the capital markets in each country, facilitating mortgage credit liquidity by establishing themselves as complementary channels to the banking channel, which increases the power of the debt markets to provide financing to economic agents in a more agile and efficient manner.

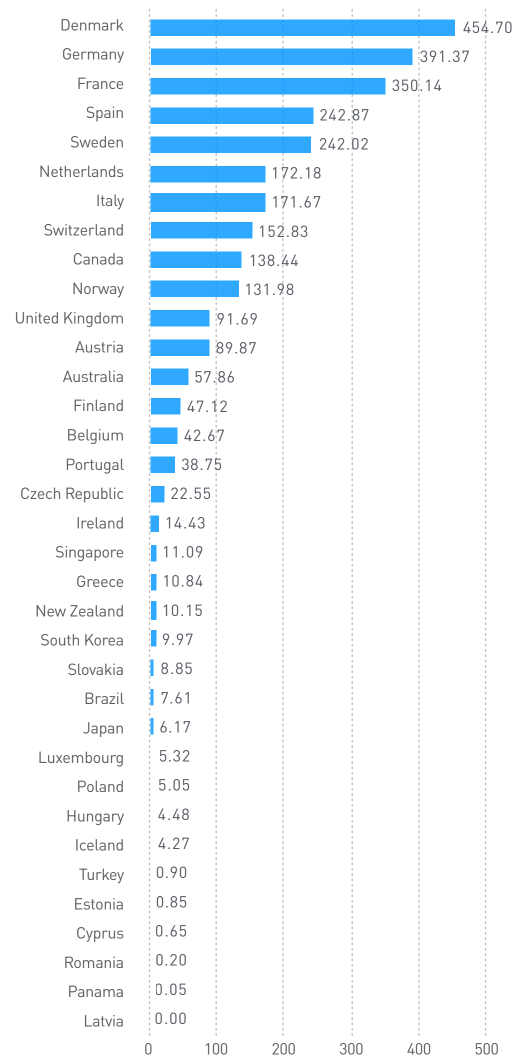
While these types of investments are not the majority, they have a significant weight in the insurance companies' investment portfolios, which would vary based on the different markets[119]. In this sense, the role played by insurance companies as investors, which channel medium- and long-term savings toward residential investment by investing in this type of instrument on the mortgage market, is notable.

3.1 Bank financing: Covered bonds

The "classic" bank financing formula is the main driver of commercial banking, providing credit through a term transformation process, thus facilitating access to housing, with the additional collateral to the loan granted, which is the real estate itself. Prior to approval, a series of conditions or metrics are established to both mitigate credit risk and guarantee the solvency and suitability of the counterparty.

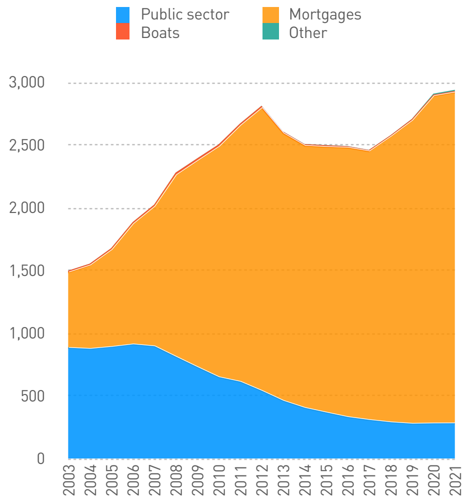
Among the different options for credit companies to raise funds to finance their activity, in certain economies, and notably in developed markets (particularly in the European Union), the meaning of regulation follows a modality called *covered bonds*, the purpose of which is to increase the levels of security or overcollateralization of the bonds issued through a double recourse mechanism (see Chart 3.1-a).

Chart 3.1-a
Selected countries: covered bond balance, 2021
(billions of euros)



Source: MAPFRE Economics (based on ECBC data)

Chart 3.1-b
Covered bond balance
(billions of euros)



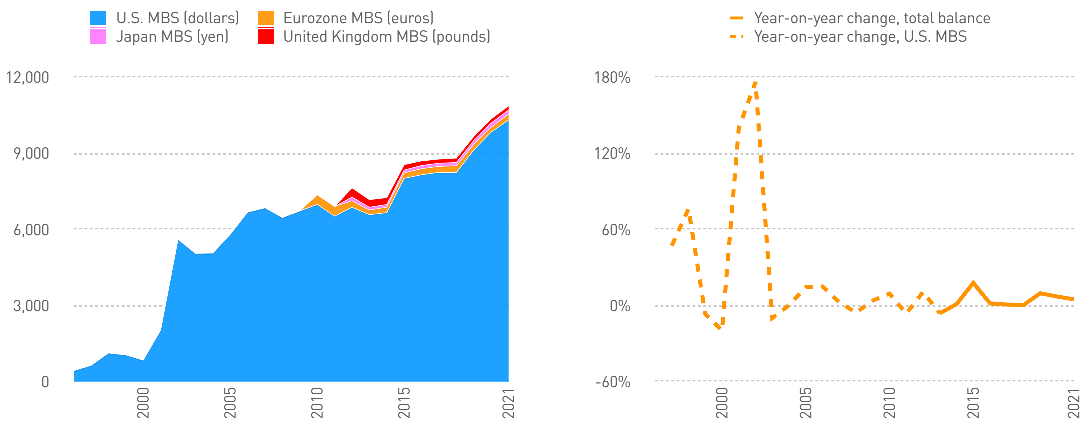
Source: MAPFRE Economics (based on ECBC data)

Thus, the collateral assets remain on the issuer's balance sheet offering both the generic guarantee of the securitizations and the additional guarantee on the loan portfolio, in what is known as "asset encumbrance", i.e., the part of the asset that is committed as a result of its use in secured financing transactions. Another differentiating aspect is found in the eligibility criteria, which are subject to defined standards in all terms. In this sense, and given their special relevance for the insurance sector due to their role as institutional investors, in addition to broadening the channel for attracting relevant funds for the companies, they are of great interest as prudent investors, due to the commitments acquired under products with yields linked to loan operations reinforced with guarantee schemes (see Chart 3.1-b).

3.2 Mortgage securitizations

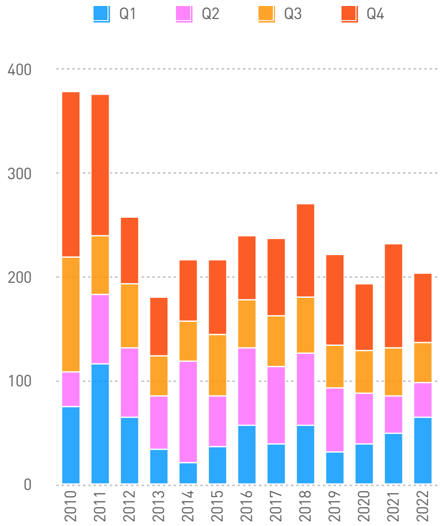
Meanwhile, although the banking channel continues to play the main role in the origination of mortgage financing transactions, the proliferation of alternative sources for their movement has been gaining relevance in recent years, mainly in those economies that enjoy greater depth and development of capital markets, as well as a favorable regulatory environment, hand in hand with evolving financial innovation. Under this format, *securitization* processes propose an alternative formula (see Chart 3.2-a) through which risk-taking falls on investors through the issuance of bonds composed of homogeneous assets, using (i) an investment vehicle independent of the traditional channel (SPV), (ii) legally isolating credit rights and (iii) enabling their subsequent subscription under the claim of the counterparty's future payment flows. In

Chart 3.2-a
Selected countries: mortgage-backed securities
(amounts, billions; year-on-year change, %)



Source: MAPFRE Economics (based on EFMA data)

Chart 3.2-b
Europe: issuing of securitized products
(billions of euros)



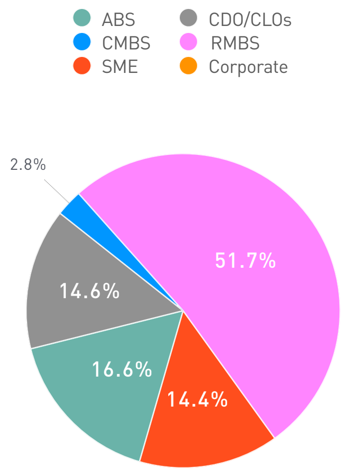
Source: MAPFRE Economics (based on EFMA data)

this way, a negotiable instrument is created, with counterparty exposures determined by a priority of losses in the event of default, which makes it possible to establish a yield according to the different risk profiles of the investors (*tranches*). More broadly and quantifying the role of securitized products in the European market[120], in Q4 2022, €65 billion of securitized products were issued up to €200.3 billion, an increase of 66.4% compared to Q3 2022 and a decrease of -12.8% year-on-year compared to 2021 (see Chart 3.2-b).

Meanwhile, looking at the product composition, with data referring to 2021, the highest concentration was in the mortgage-backed securities (MBS) segment, followed by CDO/CLO's (*collateralized debt obligations* and *collateralized loan obligations*) and asset-backed securities (ABS). In terms of the countries with the largest volume of collateral, in addition to pan-European originations, the United Kingdom, Germany and the Netherlands stand out (see Charts 3.2-c and 3.2-d). It should also be noted that the credit ratings of these instruments continue to improve in terms of quality, measured in terms of rating (see Chart 3.2-e).

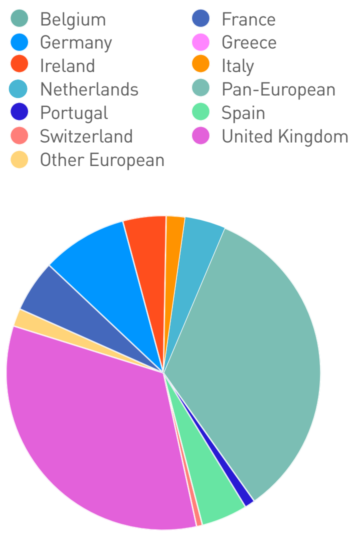
However, going into detail on the role of securitizations, given the differentiated structure of their operations, they enable

Chart 3.2-c
Europe: total issuing structure of covered bonds by type of collateral



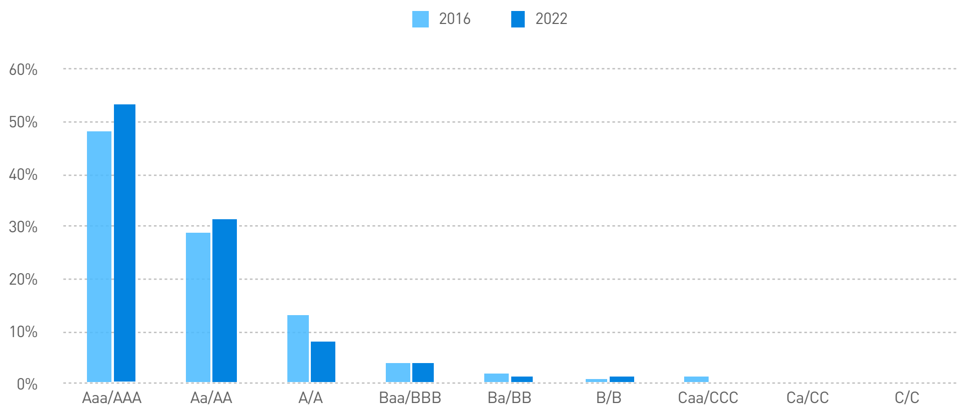
Source: MAPFRE Economics (based on EFMA data)

Chart 3.2-d
Europe: issuing structure by country of collateral



Source: MAPFRE Economics (based on EFMA data)

Chart 3.2-e
Change in credit quality of covered bonds issued



Source: MAPFRE Economics (based on EFMA data)

the transformation of a set of illiquid financial assets into a series of negotiable, liquid instruments with certain payment flows. The main elements involved in these financial structures are listed below and can be grouped as illustrated in the diagram shown in Chart 3.2-f.

Originator Company that held the assets on the balance sheet that are subsequently sold to the special securitization vehicle, or whose risk is transferred through securitization. The company may have originated the assets by granting direct financing, or it may have acquired them from a third party.

Administrator. Agent in charge of receiving payments on securitized assets and monitoring the borrowers' credit quality. They are also responsible for remitting payments to the securitization fund, which in turn will distribute them to the investors. This role can be played by the originating company itself or by a third party company.

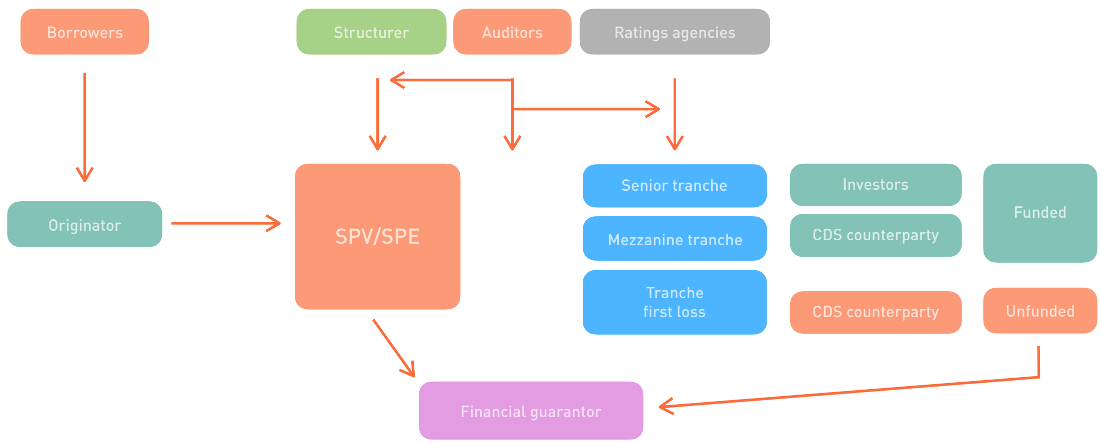
Structuring Agent. The company that designs and determines the structure of the securitization, deciding the amount of the credit enhancements and the tranches into which the securities to be issued will be divided, and normally participating in their placement in the market.

Special securitization vehicle or entity (SPV or SPE). Instrumental companies, with or without legal status, created for the sole purpose of acquiring the assets to be securitized and issuing the securitization bonds to be placed in the market. Through them, the risks of the securitized assets are separated from those affecting the originator. In the event that the vehicle does not have legal status, the role of the *securitization fund management company* arises, which is a third party that guarantees the rights of the holders of the securities issued. They also ensure that payments to investors are made properly, and that the legal documentation relating to the securitization is completed.

Financial guarantors. A third party that provides guarantees for certain tranches of the securitization and whose objective is to reduce the structure's credit risk, either with a direct guarantee or by being the counterparty (the seller) of a credit derivative (typically a CDS). Typically, these are large international insurance companies.

Liquidity suppliers. Companies that grant credit lines to the securitization vehicle in order to guarantee continuity in payments to investors. Its purpose is to cover possible temporary liquidity gaps, but not to absorb risks.

Chart 3.2-f
General structure of covered bonds issued



Source: MAPFRE Economics

Rating agencies. Companies that grant a certain credit rating to the securities issued, although sometimes they also participate in the designing the structures. In their statement, a distinction is made between credit exposures classified under fair value criteria, whose balance sheet value reacts directly to rating changes, and exposures classified under amortized cost criteria, which do not need to reflect impairment of their market value for accounting purposes.

Investors. Persons or companies that acquire the securities issued and, therefore, assume the risk and profitability based on the subordination of the securities they are acquiring.

Balance structure. The fund's equity consists of assets and liabilities. On the asset side are credit rights of the assigning asset that constitute the unequivocal assignment of ownership of the known or estimated amount of income, while on the liability side are fixed-income securities (securitization bonds) issued under a series or tranche scheme, where collection priorities are structured according to credit exposures.

Auditor. Independent unit that must ensure proper regulatory compliance and avoid conflicts of interest. The information collected includes the backup to the annual accounts through an auditor's report, the breakdown of assets and liabilities, and the committee report, among others.

Informational brochure. A document containing a series of precise information that allows for better transparency and identification of the operation.

Credit enhancement mechanism. This is a role typically assumed by insurance companies (typically monoliners) in hedging an underlying portfolio credit risk defined by the levels of risk stratification assumed. In this sense, the tranche included in the first loss group (also known as the "equity" tranche) has the worst credit rating, since they must face the first percentage of losses of the securitized portfolio, and is usually retained by the originator in order to grant a sufficient level of credit enhancement, or else be hedged by contracting credit derivatives. In this case, it is not strictly necessary to issue securities, since there is no need to finance any portfolio purchases (these are "unfunded" structures).

3.3 Other alternative financing sources

There are other financial instruments through which one may invest in the residential real estate market. Below is a brief description of the most relevant, while it is notable that investments made by insurance companies through these vehicles at the aggregate level are non-controlling interests.

Non-bank financial brokers

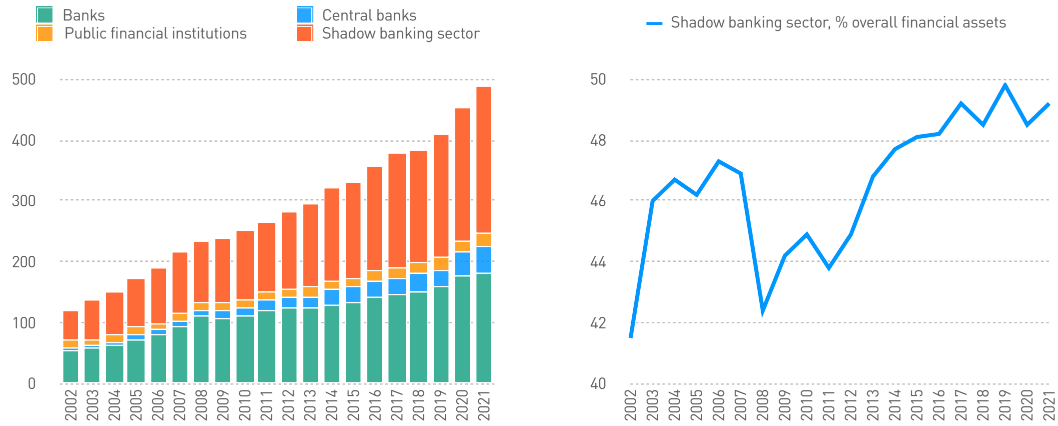
The non-bank financial intermediation (NBFI) sector has grown faster than banks over the last decade. Non-bank financial entities (known colloquially as *"shadow banking"*) perform an ever more important role in financing of the real economy, as well as managing household and business savings. While they operate in a manner similar to the commercial segment, the main difference lies in that they capture short term funds on the monetary markets (they do not have traditional deposits from the public) which they sue to purchase assets with longer maturity terms. However, as they are not subject to traditional banking regulations, in a liquidity stress situation they cannot (as banks can) borrow from the central bank and are therefore not in the direct orbit of regulation (but are "in the shadows").

Since their inception, these institutions have been heavily involved in mortgage intermediation, based largely on the model of transforming residential mortgages into securities (securitization chains), although subsequent regulatory changes in the banking industry and the use of new technologies to assess risks have contributed significantly to the upturn in parallel banking activity in the credit segment, which could be a source of systemic amplification in the event of a shock given their growing size (see Chart 3.3-a).

Real estate investment trusts (REIT)

Among the many investment channels in the real estate sector, Real Estate Investment Trusts (REITS) are worth mentioning. These are companies that are fully or partially listed on the capital markets that allow direct or indirect investment in real estate assets or related mortgage loans[121]. The idea behind these vehicles is to provide trading volume for illiquid underlying assets through marketable securities, under diversified management, both geographically and sectorially, and taxation generally more favorable than other types of prod-

Chart 3.3-a
Total finance sector assets
(amounts, trillions of dollars; share of overall financial assets, %)



Source: MAPFRE Economics (based on FSB data) ucts (via capital gains deferral as long as the securities are not transferred). Unlike the securitization market, the origination of the investment is based on the direct acquisition of the real estate (with the funds obtained and in some cases through leverage) for the subsequent generation of cash flows through property leasing to obtain returns for the investors and/or realizing, if applicable, capital gains.

For valuation purposes, in addition to traditional factors such as location, portfolio diversification, the degree of fulfillment of expectations or the solidity of flows, the Net Asset Value (NAV) and the price of the index in which it is included tend to be considered, as well as the ratio between both variables to determine an accurate approximation of the value of the underlying asset. Additionally, the structure of liabilities and equity is considered a differentiating element by amplifying the effects of valuation due to the effect of leverage.

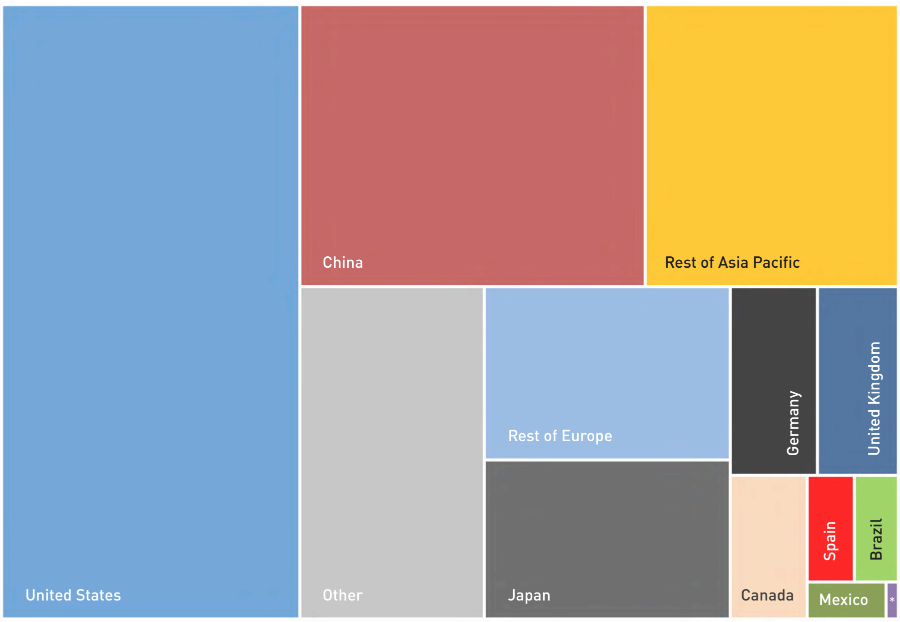
Based on EPRA (European Public Real Estate Association) figures, the global market capitalization of listed companies related to this sector is estimated at US$3.9 billion at the end of 2019, representing around 4.5% of the total composition of the reference indexes. In terms of geographic distribution, the United States leads the list, followed by China and Japan, whose combined weight accounts for 58% of total global capitalization (see Chart 3.3-b).

Likewise, at the level of large groupings, the 10 main companies in this sector represent around 17% of the total, the ranking being as shown in Chart 3.3-c. In addition, with regard to the European market, Chart 3.3-d shows the loan-to-value (LTV) metrics of the different portfolios at an aggregate level, while Chart 3.3-e shows the development of LTV by sector.

Other alternative mechanisms

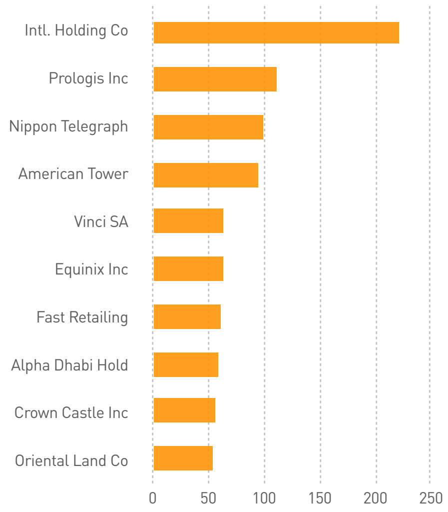
Currently, some real estate financing vehicles are beginning to proliferate through the Internet, such as the so-called Participative Financing Platforms (PFP). For the time being, it is a vehicle aimed at individuals rather than institutional investors, al-

Chart 3.3-b
Overall market capitalization structure of listed real estate companies



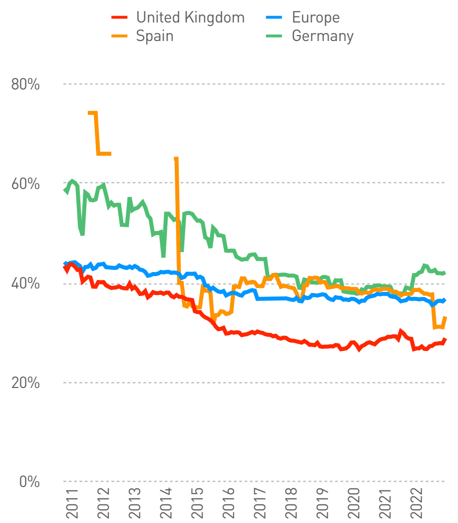
Source: MAPFRE Economics (based on EPRA data)
*South Korea

Chart 3.3-c
Ranking of companies by market capitalization
(billions of dollars)



Source: MAPFRE Economics (based on Bloomberg data)

Chart 3.3-d
Europe: trends in the LTV ratio for real estate investment trusts by country
(%)

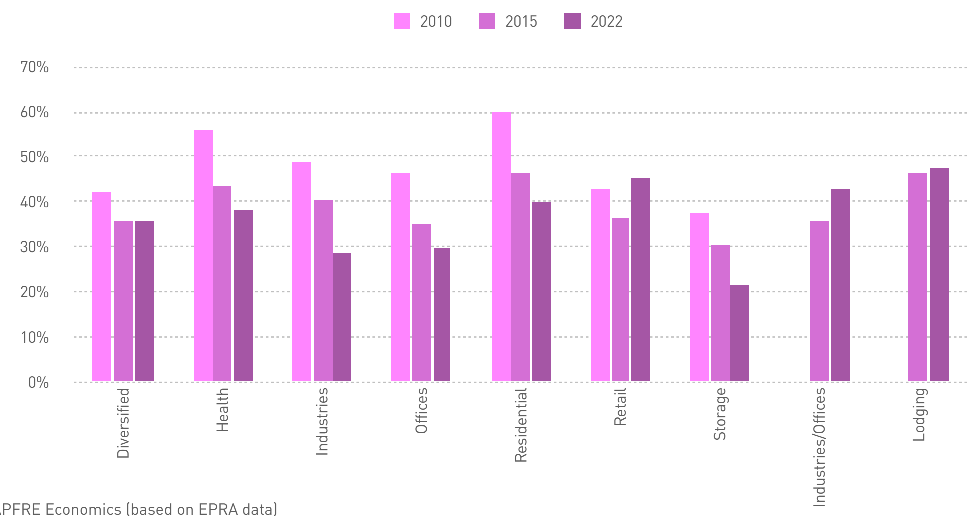


Source: MAPFRE Economics (based on EPRA data)

lowing them to participate in real estate projects, often with lower investment amounts than would be possible in a traditional real estate investment. These platforms allow developers to obtain crowdfunding through the Internet to purchase land, build projects or renovate or add value through loans (also known as "crowdlending") or equity crowdfunding, in which shares in the developer's company are acquired.

The United States was the first country to introduce regulation for this activity and its market is one of the most consolidated in the world. In this country, the law containing regulations on crowdfunding called the Jumpstart Our Business Startups Act (JOBS Act) was enacted in April 2012, but

Chart 3.3-e
Europe: trend in the LTV ratio for real estate investment trusts by sector



Source: MAPFRE Economics (based on EPRA data)

Table 3.3
Real estate crowdfunding breakdown

	2018	2019	2020
By countries/regions			
APAC	2.0%	5.0%	8.0%
China	71.0%	48.0%	1.0%
Europe	3.0%	7.0%	9.0%
Latin America	0.6%	3.0%	5.0%
MENA	0.3%	0.4%	0.5%
Asia Pacific	0.1%	0.6%	1.0%
United Kingdom	3.0%	6.0%	11.0%
United States and Canada	20.0%	30.0%	65.0%
By rate		**2019**	**2020**
P2P/Marketplace ConsP2P/ Marketplace		37.0%	31.0%
Balance Sheet Business Lending		21.0%	25.0%
Balance Sheet Consumer Lending		12.0%	11.0%
P2P/Marketplace Business Lending		8.0%	14.0%
P2P/Marketplace Property Lending		4.0%	3.0%
Balance Sheet Property Lending		4.0%	2.0%
Invoice Trading		4.0%	3.0%
Real estate Crowdfunding		3.0%	2.0%
Donation-based Crowdfunding		3.0%	6.0%
Equity-based Crowdfunding		1.0%	1.0%
Reward-based Crowdfunding		1.0%	1.0%
Consumer Purchase Finance/BNPL		1.0%	0.0%
Debt-based Securities		1.0%	0.0%
Crowd-led Microfinance		0.0%	0.0%
Revenue/Profit Sharing		0.0%	0.0%
Community Shares		0.0%	0.0%
Mini Bonds		0.0%	0.0%
Other		0.0%	0.0%

Source: MAPFRE Economics (based on data from The 2nd Global Alternative Finance, Market Benchmarking Report, Cambridge University)

did not come into force until May 2016. Other countries followed, such as Mexico, where the regulation of crowdfunding platforms is covered by the law regulating Financial Technology Institutions[122] (known as the Fintech Law) that came into force in 2018.

At the European level, equity finance providers are governed by Regulation (EU) 2020/1503 of October 7, 2020, which has been in force since November 2021. It establishes the information that equity finance providers must deliver to their investors, the method used to calculate credit ratings, the nature of the information used in the risk models, or the information related to the price of the loans. In the specific case of Spain, in accordance with Law 5/2015, in order to become a participatory financing platform, authorization must be obtained from the National Securities Market Commission (CNMV), following a mandatory report from the Bank of Spain.

Looking at the figures, according to Cambridge University estimates, the volume of lending through this mechanism, in 2020, reached US$114 billion (compared to US$176 billion in 2019). This volume, historically led by China until 2018 following the regulatory changes introduced in this regard, has been followed by the United States, the United Kingdom, some emerging countries and Europe. In terms of volumes by loan type, although European real estate crowdfunding is a growing investment vehicle, it remains residual in aggregate terms, representing between 2% and 3% of the total (see Table 3.3).

4. Relative measurement of the potential of real estate markets

Given the importance of real estate activity on the performance of the economy in general and on the insurance sector in particular, this chapter proposes an indicator intended to measure, firstly, the potential of real estate activity and, on this basis, its relevance for the insurance sector for a group of countries.

4.1 Methodological aspects

The analytical exercise carried out in this chapter is based on the construction of two indicators, which together aim to assess the potential for the insurance sector derived from the functioning of the real estate markets. These indicators have been prepared by MAPFRE Economics for a set of 43 countries for which the necessary information was available.

The first focuses on the *economic and demographic factors* that affect the performance of the real estate market, while the second incorporates the behavior of insurance demand in response to changes in personal disposable income, as a way of measuring the degree to which the potential of the real estate market can translate into an increase in premiums. Thus, the rationale on which the exercise has been built considers, on one hand, a higher weighting for those markets that have shown more dynamic *economic and demographic factors* related to their respective real estate markets in recent years and have better prospects in their projections for the next decade (as a way of estimating the potential of the real estate market), On the other hand, the degree of dynamism of their insurance markets, with a higher weighting for those markets that show a better *performance of insurance activity in the face of variations in the level of personal disposable income* (as a way of measuring the degree to which the insurance market would be able to materialize, in higher premium growth, the stimulus coming from the dynamism of the real estate market).

Thus, the result of the exercise takes the form, first, of an intermediate indicator that provides a relative measure of the potential of the real estate market itself, which has been called the *Real Estate Potential Indicator,* and then of an indicator that estimates the way in which the insurance sector might be able to translate this stimulus from the real estate market into positive variations in insurance demand (measured by its sensitivity to variations in personal disposable income), which has been called the *Real Estate Potential Indicator for the Insurance Sector* (see Chart 4.1-a).

Real Estate Potential Indicator (IRP)

First, in the construction of the aforementioned intermediate indicator, the *Real Estate Potential Indicator* (IRP), factors of an economic and demographic nature are considered, which are valued in the form of four indexes:

a) a *growth of personal disposable income index* (I_{DIG});

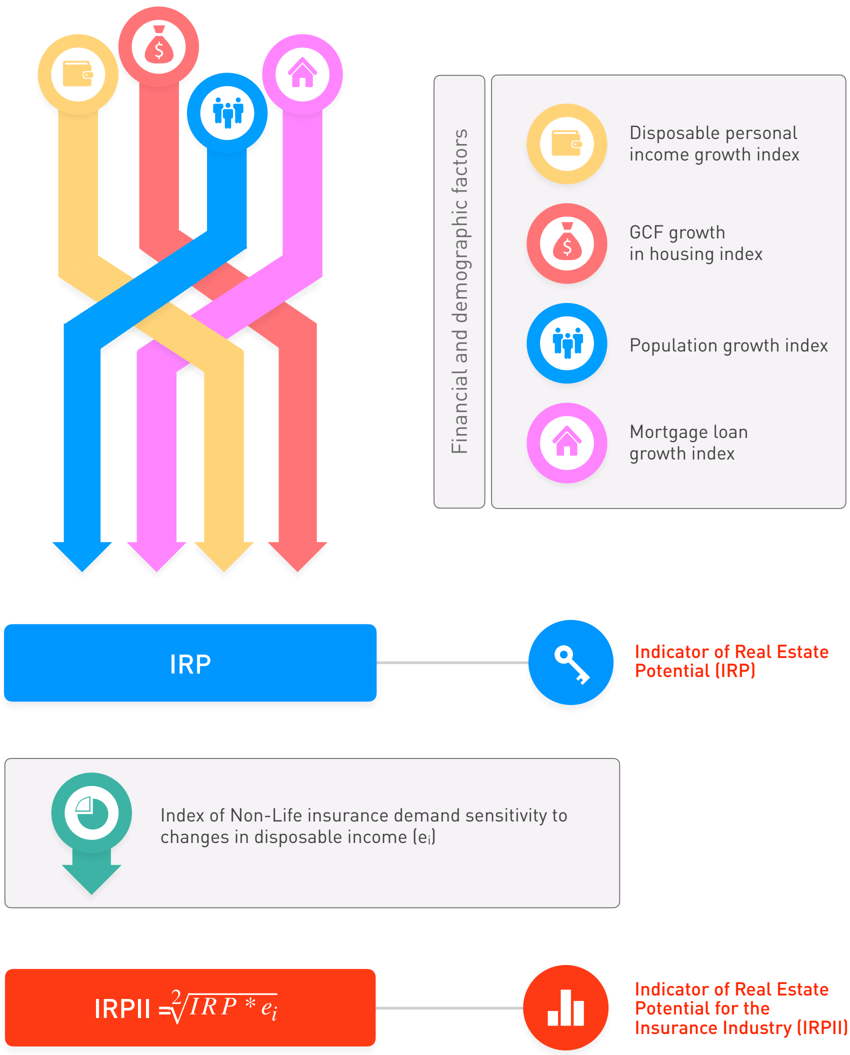
b) a *formation of gross capital formation in housing index* (I_{GIH});

c) a *population growth index* (I_{PG})[123], and

d) a *mortgage loan growth index* (I_{MLG}).

For each of the components that make up this intermediate indicator, we have considered both their variation over the last ten years and the projections of their expected development over the next decade, weighted by a factor of two to one, which implies giv-

Chart 4.1-a
Constructing the Indicator of Real Estate Potential for the Insurance Industry (IRPII)



Source: MAPFRE Economics

ing a lower weight to the forecasts (half), given the uncertainty associated with forecasts that cover an entire decade (it should be noted that, in the case of the *population growth index*, despite having long-term forecasts that extend to the end of the century, only the population growth forecasts for the next decade have been considered). All weights have been scaled to facilitate their comparison and integration, so that the best weighted receives a score of one hundred and the worst of zero, using as worst data a theoretical value below the last observed, in order to calculate a geometric mean in the sample that is used for the final integration.

Once the four indexes were obtained, they were integrated into the *Real Estate Potential Indicator,* as a weighted average according to the following:

$$IRP = \frac{(I_{DIG} * W_1) + (I_{GIH} * W_2) + (I_{PG} * W_3) + (I_{MLG} * W_4)}{W_1 + W_2 + W_3 + W_4}$$

Where:

IRP = Real Estate Potential Indicator

I_{DIG} = a growth of personal disposable income index

I_{GIH} = a formation of gross capital formation in housing index

I_{PG} = population growth index

I_{MLG} = mortgage loan growth index

W_i = weighting (in this case, equal weight has been given to the weighting factors of the four indexes).

Real Estate Potential Indicator for the Insurance Sector (IRPII)

Based on the intermediate indicator described above, the *Real Estate Potential Indicator for the Insurance Sector (IRPII)* is constructed by integrating the IRP with *an index of the sensitivity of insurance premiums to changes in personal disposable income* (e_i). In this case, the integration was performed using a geometric mean, which positively weights a better balance between the two components. That is:

$$IRPII = \sqrt[2]{IRP * e_i}$$

Where:

IRPII = Real Estate Potential Indicator for the Insurance Sector

IRP = Real Estate Potential Indicator

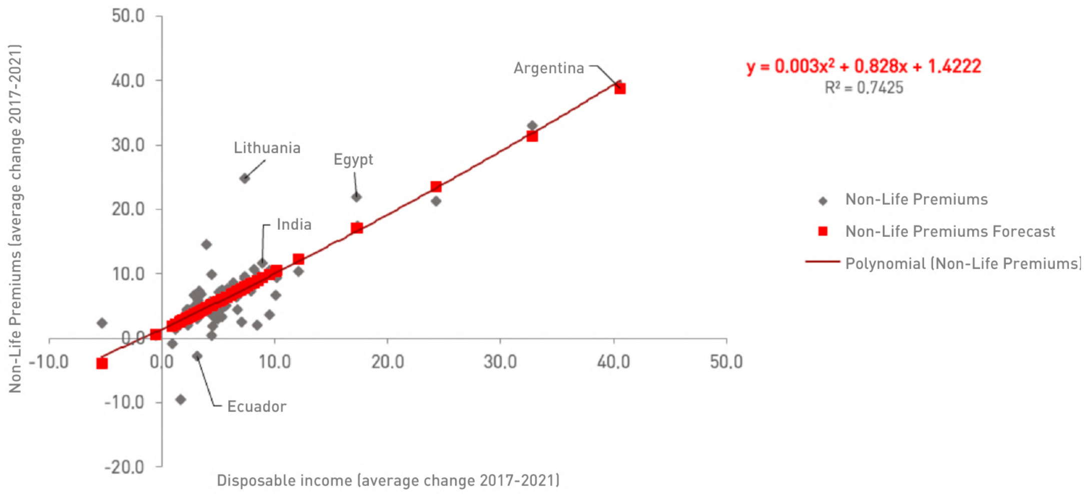
e_i = Non-life insurance demand sensitivity to variations in disposable income index

The purpose of the *Non-Life insurance demand sensitivity to variations in disposable income index* (e_i) is to weight the markets according to the degree of sensitivity of insurance demand to variations in personal disposable income; in other words, it is a proxy for the capacity of a given insurance market to transform the positive dynamics of the real estate markets into new insurance demand. Therefore, the regression function that best adjusts, in terms of the coefficient of determination, between changes in insurance premiums and changes in personal disposable income (in both cases using five-year average changes) has been calculated. This calculation was performed separately for the Non-Life and Life insurance segments, as well as for the total insurance business.

For the variation in Non-Life insurance premiums, the best fit is obtained with the polynomial function whose formula is shown in Chart 4.1-b, resulting in a coefficient of determination of 0.7425[124]. This means that, among the various factors that may have played a role in explaining the behavior of premiums in the Non-Life insurance segment in the 2017-2021 period, the variation in the level of personal disposable income would explain 74.2% of the variation in premiums, while the rest would be attributable to other factors. The high correlation found between the Non-Life insurance segment and personal disposable income, which translates into a high coefficient of determination, is noteworthy.

For the variation in Life insurance premiums, the best fit is obtained with the polynomial function whose formula is shown in Chart 4.1-c, resulting in a coefficient of determination of 0.4644. The foregoing implies that, among the various factors that may have played a role in explaining the variation in premiums in the Life insurance segment in the period analyzed, the variation in the level of personal disposable income would explain 46.4%, while the rest would be attributable to other factors. This is a relatively high correlation, although significantly lower than in the case of the Non-Life insurance segment, which is reasonable given that most of the premiums in the Life segment come from insurance linked to savings, for which demand is influenced by other financial factors (mainly the behavior of interest rates), and even of a legal and regulatory nature,

Chart 4.1-b
Disposable income vs. Non-Life premiums: fitted regression curve

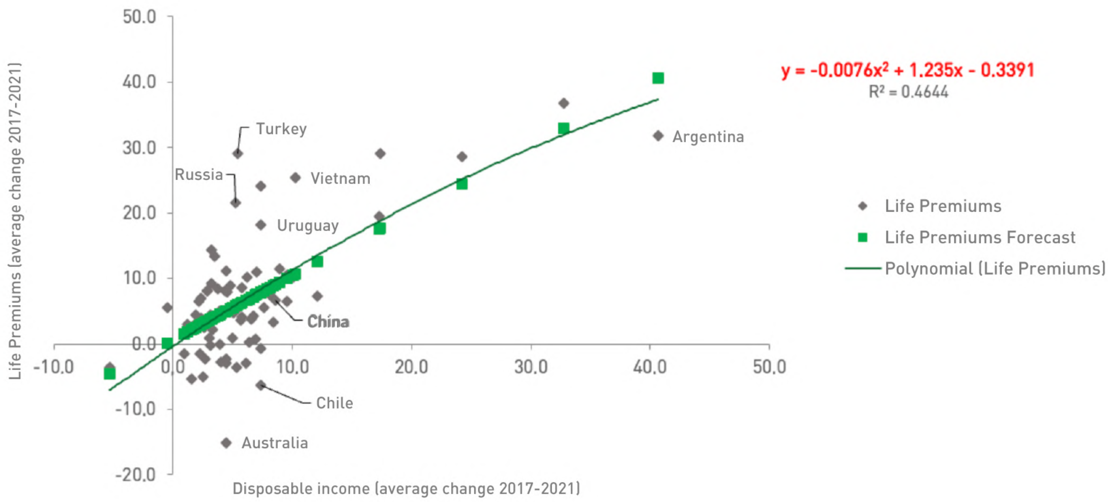


Source: MAPFRE Economics

which also exert a significant influence on insurance demand volume.

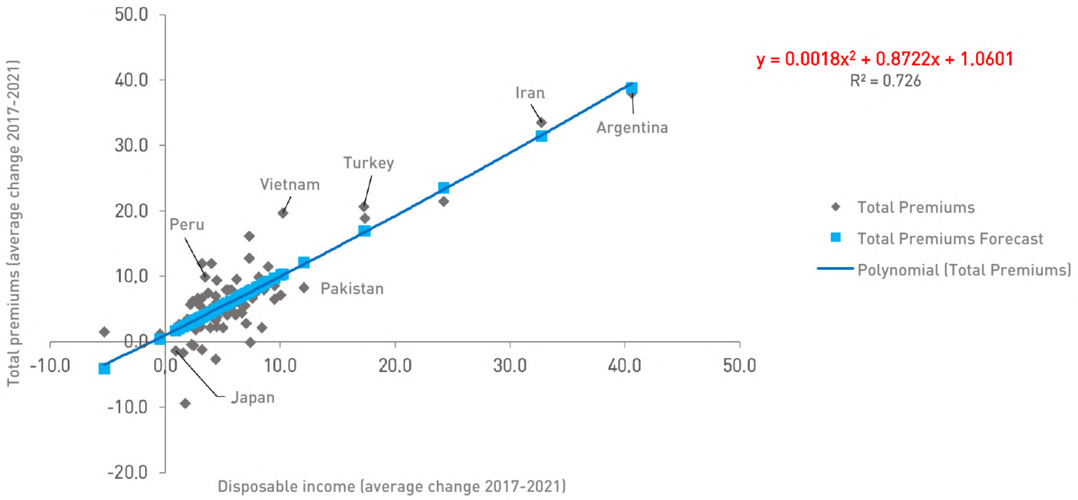
Finally, for the variation in total insurance premiums (which include the total of the Non-Life and Life segments), the best fit is obtained with the polynomial function whose formula is shown in Chart 4.1-d, resulting in a coefficient of determination of 0.726. This means that, among the various factors that may have played a role in explaining the variation in premiums in total insurance business in the period analyzed, the variation in the level of personal disposable income would explain 72.6%, while the rest would be attributable to other factors.

Chart 4.1-c
Disposable income vs. Life premiums: fitted regression curve



Source: MAPFRE Economics

Chart 4.1-d
Disposable income vs. total premiums: fitted regression curve



Source: MAPFRE Economics

It should be noted that, when calculating the weighting of the countries according to the sensitivity of their insurance business to variations in personal disposable income, the result of the regression corresponding to the Non-Life insurance segment has been taken as a reference, since it is considered the most relevant for the insurance business related to the residential real estate sector, as Life risk insurance, which is also relevant in this activity, follows a dynamic closer to that of the Non-Life segment than to that of Life savings.

Thus, a higher weighting has been attributed to those markets that lie above the regression curve; this weighting is greater the further away they are from the curve and vice versa, thus expressing their greater capacity to transform increases in personal disposable income levels into new insurance demand. Therefore, the polynomial function of the regression of Non-Life premiums has been used to calculate the expected growth and differences with respect to the actual growth observed, with a greater weighting for those countries that present higher positive deviations, indicative of a greater potential of their insurance markets due to the larger elasticity in the growth of their insurance business in response to variations in personal disposable income. Finally, the results have been scaled with the same methodology used for the rest of the partial indicators.

4.2 Ranking of the Real Estate Potential Indicator for the Insurance Sector

Based on the methodological elements presented, both the *Real Estate Potential Indicator for the Insurance Sector (IRPII)* and the intermediate indicator, the *Real Estate Potential Indicator (IRP)*, have been estimated. In the latter case, Table 4.2-a presents the results of the estimates made for 43 markets, also indicating the values corresponding to each of the four indexes that comprise it, in order to show which factors contribute to a greater or lesser extent to its final valuation.

Similarly, Table 4.2-b presents the results and ranking of the *Real Estate Potential Indicator for the Insurance Sector* (IRPII), which reflects the extent to which each of the countries analyzed might be able to leverage the potential of their real estate markets in the development of new insur-

Table 4.2-a
Indicator of Real Estate Potential (IRP)

	Country	Indexes used to construct the indicator				Indicator of Real Estate Potential (IRP)
		Disposable personal income growth index (I_{DIG})	GCF growth in housing index (I_{GIH})	Population growth index (I_{PG})	Mortgage loan growth index (I_{MLG})	
1	Philippines	76.3	100.0	100.0	81.6	89.5
2	China	100.0	61.7	39.9	98.3	75.0
3	India	90.0	52.3	76.8	83.6	75.7
4	Indonesia	75.9	50.9	72.8	68.5	67.0
5	Malaysia	70.4	44.3	82.0	68.9	66.4
6	New Zealand	55.7	63.8	72.3	60.9	63.1
8	Turkey	47.9	46.6	64.6	70.7	57.5
9	Australia	43.4	45.3	80.7	61.7	57.8
10	Slovakia	41.6	64.7	36.8	75.0	54.5
11	Sweden	34.7	59.6	64.8	61.1	55.0
12	Hungary	52.4	86.3	28.5	38.4	51.4
13	Canada	39.6	40.9	76.0	62.8	54.8
14	Chile	50.0	25.6	54.1	78.2	52.0
15	Ireland	40.0	83.4	67.4	8.7	49.9
16	Taiwan	35.9	58.4	46.3	60.0	50.2
17	Brazil	13.2	33.1	63.0	100.0	52.3
18	Czech Republic	36.5	64.3	44.9	53.0	49.7
19	United Kingdom	28.6	61.7	56.1	53.1	49.9
20	United States	33.3	53.0	64.1	47.1	49.4
21	Thailand	46.2	31.6	46.0	72.9	49.2
22	Bulgaria	40.2	89.7	7.4	47.8	46.3
23	Norway	32.2	32.2	71.9	62.1	49.6
24	Denmark	34.5	54.7	62.3	42.1	48.4
25	Croatia	44.8	67.7	21.3	50.1	46.0
26	South Africa	28.3	30.6	81.7	54.2	48.7
27	Mexico	37.9	22.8	70.3	61.7	48.2
28	Romania	64.4	50.4	28.6	33.2	44.1
29	Singapore	51.6	15.0	65.7	54.1	46.6
30	Netherlands	25.7	57.8	54.3	44.8	45.7
31	Poland	52.4	40.2	30.2	47.3	42.6
32	Austria	20.9	36.6	49.9	63.4	42.7
33	Belgium	24.3	32.7	53.2	60.6	42.7
34	Hong Kong	38.0	16.8	43.1	70.8	42.2
35	Switzerland	26.6	18.9	65.9	59.2	42.7
36	Germany	23.0	31.2	40.3	68.8	40.8
37	France	21.1	30.4	51.1	59.7	40.6
38	Portugal	21.6	49.7	33.9	45.1	37.6
39	Finland	19.4	32.3	46.1	52.5	37.6
40	Spain	21.4	43.6	38.9	37.0	35.2
41	Italy	10.4	27.8	31.3	54.3	30.9
42	Greece	24.6	8.0	28.4	47.4	27.1
43	Japan	7.8	21.2	21.8	58.8	27.4

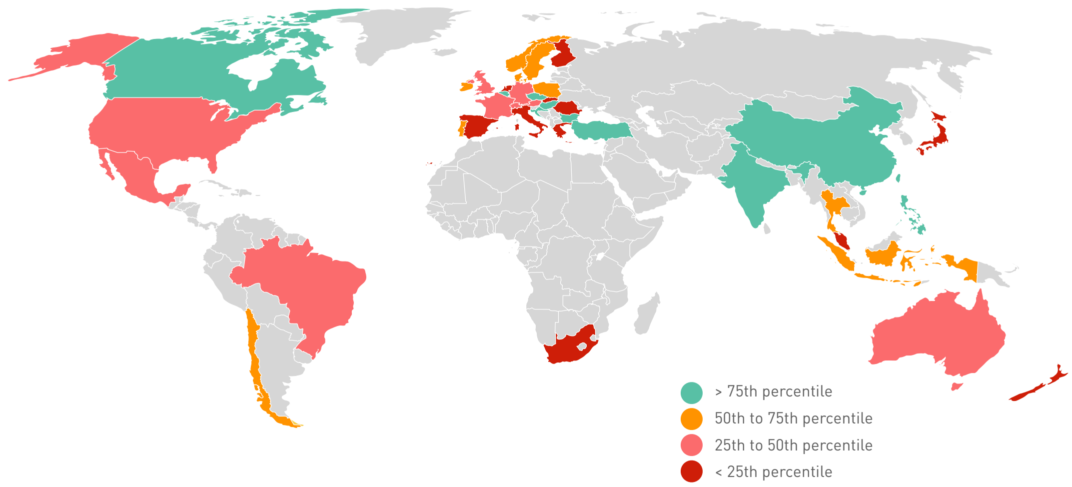
Source: MAPFRE Economics

Table 4.2-b
Indicator of Real Estate Potential for the Insurance Industry (IRPII)

	Country	Indexes used to construct the indicator		Indicator of Real Estate Potential for the Insurance Industry (IRPII = $\sqrt[2]{IRP * e_i}$)
		Indicator of Real Estate Potential (IRP)	Index of Non-Life insurance demand sensitivity to changes in disposable income (e_i)	
1	India	75.7	93.5	84.1
2	Philippines	89.5	72.6	80.6
3	China	75.0	78.0	76.5
4	Canada	54.8	83.0	67.5
5	Turkey	57.5	75.9	66.0
6	Belgium	42.7	100.0	65.4
8	Bulgaria	46.3	91.9	65.2
9	Indonesia	67.0	61.5	64.2
10	Czech Republic	49.7	81.4	63.6
11	Taiwan	50.2	80.5	63.5
12	Singapore	46.6	86.0	63.3
13	Hungary	51.4	77.9	63.3
14	Croatia	46.0	86.6	63.1
15	Thailand	49.2	80.7	63.0
16	Denmark	48.4	78.5	61.6
17	Sweden	55.0	68.1	61.2
18	Chile	52.0	71.8	61.1
19	Brazil	52.3	71.1	61.0
20	Norway	49.6	74.8	60.9
21	Ireland	49.9	73.5	60.5
22	Portugal	37.6	96.1	60.1
23	Australia	57.8	61.8	59.8
24	Poland	42.6	83.6	59.7
25	United Kingdom	49.9	69.4	58.8
26	United States	49.4	65.3	56.8
27	Germany	40.8	77.3	56.2
28	Hong Kong	42.2	72.5	55.3
29	Austria	42.7	70.8	55.0
30	France	40.6	71.7	54.0
31	Mexico	48.2	60.2	53.9
32	New Zealand	63.1	42.4	51.8
33	Switzerland	42.7	61.2	51.1
34	Netherlands	45.7	52.9	49.1
35	Spain	35.2	65.8	48.1
36	Malaysia	66.4	34.8	48.1
37	Slovakia	54.5	42.1	47.9
38	South Africa	48.7	43.1	45.8
39	Finland	37.6	55.4	45.6
40	Italy	30.9	58.2	42.4
41	Greece	27.1	65.1	42.0
42	Romania	44.1	34.3	38.9
43	Japan	27.4	38.3	32.4

Source: MAPFRE Economics

Chart 4.2
Map of the Indicator of Real Estate Potential for the Insurance Industry (IRPII)



Source: MAPFRE Economics

ance business. It is important to note that this presentation of the IRPII for the 43 countries analyzed is a relative measure of the real estate potential for the insurance sector, which, on an ordinal scale, shows the different levels of exploitation of this potential.

As this information shows, India has the highest level of potential, followed by the Philippines and China. In the case of India, the factor making the least contribution to its potential indicator is gross capital formation in housing investment, although the remaining economic and demographic factors improve its position, especially the good performance of its insurance sector in response to increases in personal disposable income. In the case of the Philippines, population growth rates and gross capital formation in housing raise it to the second position. In China, in turn, the demographic factor pushes it back somewhat, with the disposable income growth factor receiving the highest weighting. The cases of Canada and Turkey also stand out, above the 75th percentile of the IRPII distribution (green on the chart), where the positive elasticity of the insurance business to variations in disposable income improves their rating to fourth and fifth place, respectively. Belgium, Bulgaria, the Czech Republic, Indonesia, Taiwan and Singapore complete the list of markets above the 75th percentile of the IRPII distribution.

Japan stands out at the bottom of the ranking, below the 25th percentile of the IRPII distribution, with indicators typical of a very mature market and a shrinking population, thus obtaining weak scores in all the subindexes that influence the indicator. Romania, Greece, Italy, Finland, South Africa, Slovakia, Malaysia, Spain, the Netherlands and Switzerland complete this percentile distribution (red on the chart). Chart 4.2 illustrates this IRPII geography, classified by percentile, in which the levels of insurance potential levels derived from real estate activity can be observed in a regional perspective.

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2/ European Commission, Directorate-General for Climate Action, *Op. cit.*

3/ See: Swiss Re Institute (2023). *Natural catastrophes and inflation in 2022: a perfect storm*. Sigma 1/2023, at: https://www.swissre.com/institute/research/sigma-research/sigma-2023-01.html

4/ See: Swiss Re Institute, "More risk: the changing nature of P&C insurance opportunities to 2040."

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6/ This has been the case in the Spanish market since the entry into force of Law 5/2019 unless they are proven to bring a benefit to the customer and are authorized by the competent authority. In the linked practices authorized by the competent authority, lenders shall inform borrowers that they are taking out a linked product, advising them of the benefits and risks of losses involved and the impact of early repayment of the linked products on the overall cost of the loan.

7/ In Spain, the first study conducted by UNESPA in 2021 on rental insurance concludes that the greatest risk faced by a landlord who puts up a property for rent is non-payment since the average accumulated benefits for non-payment is one of the highest amounts. However, although damages and damage claims are, on average, less expensive, they can sometimes be large. According to the Spanish Rental Insurance Observatory (OESA), the taking out of this insurance doubled in the second half of 2020, and growth appeared to continue in 2021. Meanwhile, the State Plan for Access to Housing 2022–2025, published in the BOE on January 19, 2022, established an aid program for rent protection insurance aimed at both landlords and tenants. The aid amount is up to 5% of the annual rental payment, less the aid for annual rent granted to the tenant.

8/ Data from the National Reverse Mortgage Lenders Association.

9/ This study is part of an extensive collection of research conducted by MAPFRE Economics to examine the link between the insurance sector and a diverse set of economic and social activities. These studies can be found in the respective section of the MAPFRE Economics website. See: "Studies" section.

10/ In chapter four of this report, the *Indicator of Real Estate Potential for the Insurance Sector* (IRPII) is proposed. It is a synthetic index calculated by MAPFRE Economics for a group of 43 countries.

11/ In the analysis of the experience of selected markets, expanded in chapter two of this report, these indicators are used and analyzed in each case.

12/ Regarding population data and projections up to the end of the century, those provided by the United Nations were used.

13/ However, it should be noted that this level of disaggregation of public information is available in very few markets.

14/ This analysis was carried out using the information available in each case.

15/ In most cases, this series dates back to 1980 or, failing that, the most recent year for which information is available in each case.

16/ According to estimates for the Eurozone by the European Central Bank, a 1% increase in mortgage rates could lead to a fall in the average price of real estate of approximately 5% over a period of around two years. For housing investments, this 1% increase in mortgage rates could lead to a drop of around 8% in investment value over a period of around two years. See: https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202206_04~786da4a23a.en.html

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19/ See: Oxford/Haver Analytics (basis Jan23_2)

20/ Census estimates.

21/ See: *The State of the Nation's Housing 2022.* Joint Center for Housing Studies of Harvard University.

22/ Census data.

23/ Census data.

24/ AXCO data.

25/ Data from the National Association of Insurance Commissioners (NAIC), from the 2022 report "Dwelling Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owner's Insurance Report: Data for 2019."

26/ Federal Reserve data.

27/ See: https://www.mandtrealtycapital.com/public/files/FNMA-Insurance-Reqts-2016(1).pdf

28/ See: https://guide.freddiemac.com/app/guide/section/8202.1

29/ Based on NAIC data for 2019, premiums for Life protection insurance that exclusively covered the risk of death totaled 6.6 billion dollars, with total Life insurance premiums (excluding annuities) of 189.672 billion dollars that year.

30/ See: https://content.naic.org/sites/default/files/publication-cre-zb-credit-life-accident-health.pdf

31/ See: MAPFRE Economics (2022), *COVID-19: A Preliminary Analysis of Demographic and Insurance Industry Impacts*, Madrid, Fundación MAPFRE.

32/ Data from the NRMLA quarterly publication, *RiskSpan Reverse Mortgage Market Index*, at: https://www.nrmlaonline.org/about/press-releases/senior-home-equity-exceeds-record-11-81-trillion

33/ Data from the report "Mortgage-Backed Securities" (MBS) by the Federal Reserve Bank of New York, at: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr1001.pdf

34/ See: https://www.ginniemae.gov/issuers/issuer_training/Tools%20and%20Resources/ginniemae_basics_workbook.pdf

35/ Data from the report "Mortgage-Backed Securities" by the Federal Reserve Bank of New York.

36/ *The State of the Nation's Housing 2022.* Joint Center for Housing Studies of Harvard University.

37/ *The State of the Nation's Housing 2022.* Joint Center for Housing Studies of Harvard University.

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39/ United Nations estimates (World Population Prospects 2022)

40/ Oxford Economics estimates, based on INEGI data. *National Accounts System of Mexico. Capital Assets by State. 2013 basis. Homes.*

41/ Oxford Economics and Haver Analytics data.

42/ See: https://www.inegi.org.mx/app/saladeprensa/noticia.html?id=7741

43/ See: https://sniiv.sedatu.gob.mx/Oferta/Parque

44/ See: Press release. January 25, 2021, at: https://www.inegi.org.mx/app/saladeprensa/

45/ See: National Housing Survey-ENVI2020, at: https://www.inegi.org.mx/rnm/index.php/catalog/695 y https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2021/envi/ENVI2020.pdf

46/ See: http://portal.ruv.org.mx/index.php/cifras-basicas-ruv/

47/ See: https://www.gob.mx/profeco/documentos/seguros-para-casa-habitacion

48/ Home loan insurance transfers part of the credit risk (non-payment by the final borrower) from the company that originates the mortgage loan to a third party (the insurance company). One of its objectives is to insure loans for acquiring housing, preferably social housing, providing opportunities for the general population to access a mortgage loan. Regardless of the percentage the borrower must contribute as a down payment to purchase a home, the SCV coverage can range from 5% to 30% of the outstanding balance. See: https://aseguradora.shf.gob.mx/Sitepages/SobreSCV.aspx#:~:text=El%20Seguro%20de%20Cr%C3%A9dito%20a%20la%20Vivienda%20(SCV)%20es%20una,tercero%20(SCV%2DSHF), https://aseguradora.shf.gob.mx/SitePages/Aseguradora.aspx and https://aseguradora.shf.gob.mx/Sitepages/SobreSCV.aspx.

49/ These are Genworth Seguros de Crédito a la Vivienda (private company) and Seguros de Crédito a la Vivienda SHF (owned by the Mexican government). See: https://listainstituciones.cnsf.gob.mx/

50/ National Housing Survey-ENVI2020, at: https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2021/envi/ENVI2020.pdf

51/ See: https://www.gob.mx/shf/documentos/estado-actual-de-la-vivienda-en-mexico-eavm-2021?idiom=es and https://www.bbvaresearch.com/publicaciones/situacion-inmobiliaria-mexico-primer-semestre-2022/

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53/ See: https://portalmx.infonavit.org.mx/wps/wcm/connect/9da8594e-35f3-48f1-ab42-b6d9c2208958/Encuesta_Necesidades_Credito_Vivienda_3T2022.pdf?MOD=AJPERES

54/ For example, as the accident did not occur due to participation in risky competitions, the injuries sustained were not due to a fight provoked by the insured party, among others.

55/ See: https://comparador.banxico.org.mx/ComparadorCrediticio/terminos-credito-hipotecario.jsp, https://www.condusef.gob.mx/?p=contenido&idc=929&idcat=1, https://www.condusef.gob.mx/?p=contenido&idc=453&idcat=1, https://www.banorte.com/wps/portal/banorte/Home/seguros/seguros-credito-hipotecario and https://www.bbva.mx/personas/productos/seguros/vida/seguro-hipotecario-de-vida.html.

56/ See: https://hypo.org/app/uploads/sites/3/2022/08/ECBC-Fact-Book-2022.pdf

57/ See: https://www.gob.mx/shf/documentos/90727

58/ See: https://www.gob.mx/cms/uploads/attachment/file/802819/2022_IV_ZM.pdf

59/ National Housing Survey-ENVI2020, at: https://www.inegi.org.mx/rnm/index.php/catalog/695 y https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2021/envi/ENVI2020.pdf.

60/ Annual Housing Report 2022, Infonavit, at: https://portalmx.infonavit.org.mx/wps/wcm/connect/f49b5a3c-3eae-42fb-8557-b80a01e8416c/Reporte+Anual+de+Vivienda+2022.pdf?MOD=AJPERES

61/ Home_Loan_Needs_Survey, Q32022, at: https://portalmx.infonavit.org.mx/wps/portal/infonavit_agenda_investigacion/investigacion_analisis/reportes_estadisticos/!ut/p/z1/04_Sj9CPykssy0xPLMnMz0vMAfIjo8zizdwNDDycTQz93IO9LQ0CXfyDgoJM_Q2dPc30w8EKDHAARwP9KNz6_R1h-vEoiCLGfjwKovA7L1w_ipCSgtzQ0AiDdEUAFYV6EQ!!/dz/d5/L2dBISEvZ0FBIS9nQSEh/ y https://portalmx.infonavit.org.mx/wps/wcm/connect/9da8594e-35f3-48f1-ab42-b6d9c2208958/Encuesta_Necesidades_Credito_Vivienda_3T2022.pdf?MOD=AJPERES

62/ The former is a regulatory development agency, and the latter two are financial organizations owned by the government, the private sector, and the labor sector.

63/ See: Sociedad Hipotecaria Federal | Gobierno | gob.mx (www.gob.mx)

64/ United Nations, Population Division, *World Population Prospects* 2022.

65/ *Real Net Stock: Private Fixed Residential Assets.* Bureau of Economic Analysis, Haver Analytics.

66/ *Brazil: Financial Soundness Indicators*, Total Assets.

67/ The states that make up the regions can be viewed at the following link: https://es.wikipedia.org/wiki/Regiones_de_Brasil

68/ Until the possible approval of the cited laws, mortgages would be regulated by the Brazilian Civil Code (Chapter III. arts.1473 et seq.).

69/ Since 2007, construction companies, real estate developers, fintechs, and startups have also been directly mobilizing their resources from investors by issuing shares and bonds.

70/ The Brazilian registration system lacks uniformity, and there is no national unification despite progress. For this reason, a *proxy* for calculating the average price per square meter is the FipeZAP Index, which is calculated by the Fundação Instituto de Pesquisas Econômicas (FIPE) based on data from real estate ads (apartments, rooms, commercial premises of up to 200 square meters) for sales and rentals posted on the ZAP+ websites.

71/ United Nations estimates.

72/ Office for National Statistics and Haver Analytics. *UK: Net Capital Stock: Dwellings excluding Land* (Bil.Chn.2019.GBP)

73/ Office for National Statistics and Haver Analytics. UK: HHs/NPISH, *Net Financial Assets/Liabilities* (NSA)

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75/ FCA. (2021). *General insurance pricing practices market study Feedback to CP20/19 and final rules*.

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78/ Oxford Economics estimates, based on data from Fundación BBVA and the Valencian Institute for Economic Research (IVIE).

79/ Oxford Economics and Haver Analytics, *Statistical Office of the European Communities. Gross wealth of the household sector*; *Spain: Consolidated Assets: HH/NPISH: Fin Assets.*

80/ In addition, there is some regulatory uncertainty regarding the capital requirements to calculate the solvency ratio of insurance companies that venture into selling these types of products.

81/ See: https://www.bde.es/f/webbde/Secciones/Publicaciones/InformesBoletinesRevistas/RevistaEstabilidadFinanciera/08/May/Fic/IEF200814-5.pdf

82/ Simple, transparent, and standardized (STS) securitization. See: MAPFRE Economics (2022), *Global Savings After the Pandemic and Insurance Industry Investments* Madrid, Fundación MAPFRE.

83/ This increase could be justified by its use as collateral in the liquidity auctions of the European Central Bank.

84/ Data from the Ministry of Housing and Haver Analytics.

85/ United Nations, Population Division, *World Population Prospects 2022*.

86/ Oxford Economics estimates, based on data from Fundación BBVA and the Valencian Institute for Economic Research (IVIE).

87/ Deutsche Bundesbank and Haver Analytics, *Germany: Stock: HH: Assets* (EOP, NSA, Bil.EUR).

88/ Data from Statistiches Bundesamt.

89/ Added to these are different combinations with multiple modalities (pets, bicycle insurance, pipe cleaning, and pest control).

90/ See: Helbrecht and Geilenkeuser, 2012.

91/ See: https://www.refire-online.com/markets/german-home-ownership-rates-fall-yet-again/

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95/ United Nations, Population Division, *World Population Prospects 2022*.

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97/ Data from the Bank of Japan and Haver Analytics.

98/ See: https://www.realestate-tokyo.com/news/home-insurance-in-japan/

99/ See: https://www.realestate-tokyo.com/news/earthquake-insurance/

100/ See: https://www.usgs.gov/faqs/where-do-earthquakes-occur#:~:text=The%20world's%20-greatest%20earthquake%20belt,nickname%20%22Ring%20of%20Fire%22

101/ See: https://www.mof.go.jp/english/policy/financial_system/earthquake_insurance/out-line_of_earthquake_insurance.html

102/ The data presented in this section was collected from three different sources: the GIAJ (General Insurance Association of Japan), GIROJ (General Insurance Rating Organization of Japan), and AXCO (private insurance information agency). Both the GIAJ and AXCO report data on home insurance, including earthquake insurance, and have a series dating from before 1995, while GIROJ divides home insurance and earthquake insurance into separate lines.

103/ It is also offered by two other large banks: Bank of Tokyo-Mitsubishi UFJ and Mizuho Bank.

104/ Only Tokyo Star Bank accepts them in certain locations and subject to certain conditions.

105/ World Population Prospects 2022.

106/ See: *World Population Prospects 2022*

107/ Kim, Kyung-Hwan and Park, Miseon (2016). "Housing Policy in the Republic of Korea," *ADBI Working Papers* no. 570, Asian Development Bank Institute.

108/ Kim, Kyung-Hwan and Park, Miseon, *op. cit*.

109/ See: https://www.koreatimes.co.kr/www/nation/2022/09/356_334485.html

110/ Savings products with maturities between 5 and 15 years and health insurance to cover medical expenses.

111/ The market share of the four largest Non-Life insurers was 66.5%: Samsung Fire & Marine (22.4%), DB Insurance (16.6%), Hyundai Marine & Fire (15.3%), and KB Insurance (12.2%).

112/ According to the insurance information provider Axco.

113/ AXCO data.

114/ See: https://www.bok.or.kr/portal/bbs/B0000170/view.do?nttId=10072882&menuNo=200060&page-Index=1

115/ It should be noted that the insurance market in South Korea is dominated by two significant groups: the "chaebols" (originating from family-controlled industrial conglomerates such as Samsung, Hyundai, and LG) and the Korean bancassurance groups. In 2021, Samsung Life remained the South Korean life market leader with 22.4% of written premiums, followed by Kyobo Life and Hanwha Life with 13.3% and 12.4% market shares, respectively. Insurance companies may also conduct certain non-insurance business as long as it does not undermine the safety and soundness of insurance companies or harm policyholders. Concurrent businesses of insurance companies include custodial services for securitized assets, electronic money transfer services, foreign exchange services, and retirement pension funds.

116/ Kim, Kyung-Hwan and Park, Miseon, *op. cit*.

117/ See: Bank of Korea (2021). *Financial Stability Report: 2021*. 12, at: https://www.bok.or.kr/eng/bbs/E0000737/list.do?menuNo=400042

118/ Financial Services Commission (2021). *Government Announces Household Debt Management Plan for 2021-2023,* at: https://www.fsc.go.kr/eng/pr010101/75832?srchCtgry=&curPage=&srchKey=cn&srchText=LTV%20ratio&srchBeginDt=&srchEndDt=

119/ See: MAPFRE Economics (2022), *Global Savings After the Pandemic and Insurance Industry Investments* Madrid, Fundación MAPFRE.

120/ Based on data from the Association for Financial Markets in Europe (AFME).

121/ The Spanish version of this entity is the Listed Real Estate Investment Company (SOCIMI), whose regulation dates from 2009 (Law 11/2009, of October 26) and was subsequently improved (Law 16/2012, of December 27).

122/ See: https://www.diputados.gob.mx/LeyesBiblio/pdf/LRITF_200521.pdf

123/ Based on population databases and United Nations forecasts.

124/ The regression was carried out using data on insurance premiums in local currency pooled by Swiss RE, and nominal disposable personal income ("Income, personal disposable, nominal, LCU") from Oxford Economics/Haver Analytics, for a sample of 73 countries: South Africa, Argentina, Brazil, Canada, Chile, Mexico, United States, Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, Taiwan, Thailand, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom, Algeria, Angola, Bahrain, Botswana, Egypt, Iran, Israel, Kenya, Kuwait, Mauritius, Morocco, Namibia, Nigeria, Saudi Arabia, United Arab Emirates, Colombia, Ecuador, Peru, Uruguay, Pakistan, South Korea, Vietnam, Cyprus, Estonia, Latvia, Lithuania, Russia, Slovenia, Oman, and Qatar.

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