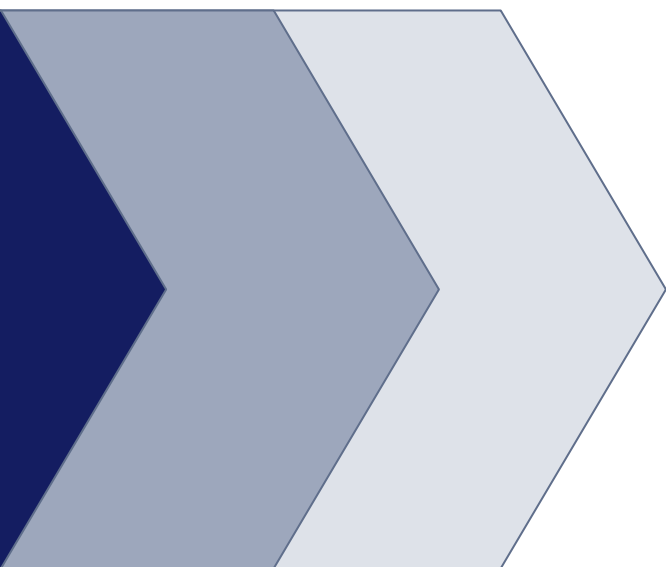


ROMANIA RESIDENTIAL Market Report



FEBRUARY 2023



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Introduction

Residential Real Estate Market Report

The report addresses the demand & supply fundamentals of the primary residential market (no secondary home considerations) in the major urban areas of Romania with an estimated population of at least circa 150,000 inhabitants, covering the main 14 metropolitan areas in the country (representing 30% of the country population, whose counties contribute up to 65% of Romania's GDP and 75% of dwellings transactions) – there is limited scope to discuss the residential market outside of these metropolitan areas due to their small size and poor prospects, making it unattractive for a developer or investor, which is already the case for some of the metropolitan areas assessed in the report.

The focus is on the buy-sell market (the build-to-sell model from a developer perspective), being the prevailing model in the country. The report aims to explain major trends observed in the last decade, assess the current state and make predictions about the market, covering demand, supply, pricing and transactions. The assessment focuses on the macro/aggregate state of the market with limited discussion on the different market segments.

The analysis is constructed via both quantitative and qualitative methods. The lack of proper data on real estate in Romania (and generally in Central and Eastern Europe) makes it difficult to create an analysis based on undisputed official records that follow the same consistent methodology across time and regions. Our market experience is built into reasoning without being backed by publicly available sources at times, but this is specified when the case. The alternative will be to completely neglect essential aspects where data is unavailable, leading to incomplete opinions.

We openly attempt to tackle all the main topics in a structured manner that follows the basic economic concepts, irrespective of data availability and quality, to create a more comprehensive picture of the local residential real estate market's past, current and future perspectives. In addition to the work already done on the subject, we are seeking to bring more structure, modelling and exploring some new causality relationships that have not been previously looked at in detail and deserve more attention. Substantial work remains to be done and look forward to improving our general understanding of the market in the future, together with other market players.

We hope this report will contribute to a better understanding of the market, bring higher engagement on subjects that matter and lead to a higher degree of professionalization of the local real estate market, which will ultimately benefit society. We look forward to meaningful discussions on the topic and improving our understanding, as an industry, of the residential market. We thank in advance other developers, investors, brokers, consultants, analysts or third parties that have been doing meaningful work and presenting their findings. This is work that we closely follow and inspire by, so we hope our effort will do you the same favour.

About Us – STC Partners

STC Partners is a local developer and investor in residential real estate in Romania. Our mission is to deliver high quality projects, focused on sustainability and with significant added value. Based on strategic objectives placed in time, a long-term vision and healthy organizational culture, the company aims to become a standard of professionalism in this area of activity. We are looking for new opportunities, investors and to expand our network of collaborators. Please feel free to get in touch.

Executive Summary

The global real estate market (including the residential sector) has been negatively impacted by the global macroeconomic outlook since the beginning of 2022. Factors include and are not limited to high inflation, rising interest rates, slower economic growth, supply chain disruptions, the war in Ukraine and socio-economic relationships being reshuffled. The high inflation and rising interest rates are expected to continue in the first half of 2023, while most forecasts indicate that the second half of the year will bring more stability.

Romania has experienced the fastest economic growth in the last two decades (2000-2022) across the European Union (EU). The purchasing power growth and wealth accumulation have also translated into strong residential demand, as people looked to purchase housing (first homes or upgrade from the existing dwellings). However, this growth has been disproportionate, with some metropolitan areas outperforming the rest, whereas most rural areas and smaller cities have been left behind. Despite some of the structural issues that the country's economy is facing and must address, such as large public deficits or sizeable current account deficits, which will act negatively on the economic performance in the medium term, economic growth and convergence with the EU are expected to continue with some of the main metropolitan areas in the front seat.

The primary residential market performance in the main metropolitan areas of Romania (top 14 metropolitan areas representing 30% of the country's population, contributing up to 65% of the country's GDP and 75% of dwellings transactions) is mixed, with some cities underpinned by good fundamentals and significant scope to continue the development of dynamic housing markets, while others have been left behind with limited scope to catch up unless significant positive socio-economic changes take place in the next decade. All the super-regional areas, meaning Bucuresti, Cluj, Timisoara, Iasi, among the regional ones Brasov, and from the local ones, Oradea and Sibiu, have good potential to continue the development of dynamic primary residential markets. There is scope for Craiova to accelerate from the current levels, which are low compared to its peer group, whereas Constanta, Ploiesti, Arad and Pitesti do not have much scope to go beyond their already attained levels and perform in future in line with average market performance. Galati and Braila are in clear decline to facilitate a dynamic housing market and are expected to be further left behind in the coming years, unless new significant private investments to revitalize the local economies, realize over the medium-term.

In the short-term, demand is negatively affected in all the cities due to loss in purchasing power as a result of inflation, lower earnings growth, re-direction of savings into other types of investments (time deposits, govt bonds, etc.), negative wealth effect as well as record high mortgage financing costs. The size of the negative factors will not cause general market-wide disruption, which is expected to be the case in some international highly developed markets, as there is plenty of cash still available for real estate transactions and the mortgage market is not a key demand driver in the market with up to 60% of the transactions being 100% cash based financed. The general need to update from the existing stock to new modern dwellings is a strong factor that will continue to play favourably for new developments in favour of old dwellings. The markets are not expected to be flooded by much new supply over the short term, with the number of new deliveries remaining relatively stable or less than in recent times. The prices are generally affordable, a comparison with European peers indicating very good affordability and a situation nothing like the 2008 housing bubble. Based on an investment thesis/ valuation perspective, residential properties in Bucuresti are fairly valued, whereas in Cluj these are over-valued by at least 20%. There is limited scope for general downward price corrections, except for Cluj, and if some corrections are to be experienced, this would be localized and driven by specific micro-specifics such as market segments, competition intensity or seller motives. The number of transactions could go down by up to 30% in 2023 vs 2022, following the 2021 boom and the slowdown already experienced in 2022, in the key metropolitan areas from Romania and return to pre-pandemic levels, as a result of the decrease in demand levels.

In the medium to long-term, the cities with good fundamentals have the potential to continue the development of dynamic and maturing primary housing markets. The local residential market will converge closer to the equilibrium balances (risk & return expectations, affordability ratios, transactions per capita, new deliveries per capita, etc.) observed in developed cities from Western Europe, which will put upward pressure on residential prices in the medium to long-term, considering the still very large existing imbalances between the developed markets and emerging market of Romania, even after accounting for the short-term corrections expected to realise in some of the developed markets.

Economic Outlook & Market Theory

Global Outlook

Central banks are expected to continue to raise interest rates in the first half of 2023 to combat inflation, which will add more pressure on real estate asset prices and residential demand, especially in those markets where debt has played a key role. Macroeconomists forecast the Eurozone interest rate to stabilize around 3.0% by mid 2023 with other more developed economies expected to have higher interest rate equilibriums. There are promising signs of inflation slowing down, but still a long way to go until reaching an equilibrium level close to the central bank's inflation targets and a prudent monetary policy will characterize the rest of 2023. Growth has slowed down with some of the major economies on the verge of recession, however, recent forecasts were pushed up across the EU at the end of 2022, including in the emerging markets, a status upgrade that Romania has enjoyed since 2020 as well.

Local Outlook

There has been a popular map running recently in the news and on social media platforms in Romania showing that the country experienced the fastest economic growth in the last two decades (2000-2022) from EU countries – close to 800% growth of GDP at current prices (see [map](#)). The country started from a very low base back in 2000s and it has indeed experienced much development and improved standard of living, which is also seen in other economic indicators. The purchasing power growth and wealth accumulation have also translated into strong residential demand, as people looked to purchase housing (first homes or upgrade from existing dwellings). However, this growth has been disproportionate, with some metropolitan areas outperforming the rest, whereas most of rural Romania and smaller cities have been left behind.

The economic growth is expected to slow down over the short term, which will translate into slower earnings growth, while inflation will continue to reduce purchasing power. Despite record-high earnings growth in the last decade, Romania's wage-adjusted labour productivity is the highest in the EU (see [study](#)), which will drive specific additional investment and support further economic development and earnings growth. Further integration within EU/ NATO as well as Eastern Europe (and implicitly Romania) representing good markets for business relocation and deglobalization in the context of the new socio-economic relationships being reshuffled, will continue to support the economy's growth. Despite some of the structural issues that the country's economy is facing, such as large public deficits or sizeable current account deficits, which will act negatively on the economic performance in the medium term, economic growth and convergence with the EU are expected to continue with some of the main metropolitan areas in the front seat.

Economic Theory - Markets

The framework used in the analysis is 'Demand & Supply', the standard economic model describing the interaction between the buyers and sellers of a resource in a market economy, which in this case is housing. The interaction between demand and supply determines an equilibrium price and quantity. Without going into much theory about different market structures, relationships and external factors, in essence, this report will detail the demand, supply, pricing and quantity of the residential real estate market in Romania across the main metropolitan areas and assess for different equilibrium conditions by making comparisons between those metropolitan areas as well as referencing other countries or cities from EU. It's worth noting some characteristics of the local residential market:

- **Many Buyers:** retail clients, limited institutional players, large-scale investors or professional investors
- **Many Sellers:** re-sellers, developers, brokers and other third-parties
- **Fragmented Market:** highly fragmented market with many buyers and sellers; very low concentration ratio with no dominant player(s) on neither side of demand nor supply
- **Product Differentiation:** high degree of product heterogeneity - there are no two identical products, because there cannot co-exist exact two locations; this is a unique and key feature of the residential product, unlike other products
- **Imperfect Information:** lack of data availability or data is unstructured or inconsistent; shortage of appropriate information and knowledge among buyers and sellers; high information asymmetry present on the market

It's essential to realize the uniqueness of the residential real estate market. In such a report one attempts to analyse a general market, at an aggregate level, which by definition is highly location and micro-specific, so conclusions must be treated from a general perspective and remain aware that significant differences exist across individual situations.

Demand

DEMAND

Primary residential demand, either in the form of purchase or rent, is driven by the following factors:

1. Population
2. Purchasing Power
3. Credit Market
4. Cultural Factors

1. Population

Romanian cities suffer from adequate population statistics, as the resident population is reported yearly only at the county level and not the city level - this is the case for most of the other statistics, which distort the possibility of creating a clear view of the metropolitan areas (in general, the main metropolitan areas subject to analysis in the report represent the hub of the specific county with no main secondary cities present, so any distortions will be relatively systematic across the key metropolitan cities; however, some relevant particularities exist that complicate the analysis, but those are specified when needed). The latest available Census data at city level is from 2011 and new preliminary census results for 2021, conducted during 2022, were published at the beginning of 2023 with final results expected in summer 2023. However, in our view, the preliminary Census 2021 results are highly misleading and do not accurately represent the dynamics in the key metropolitan areas. As a result, we've estimated the population of the main cities via a different methodology (see further Annex 1).

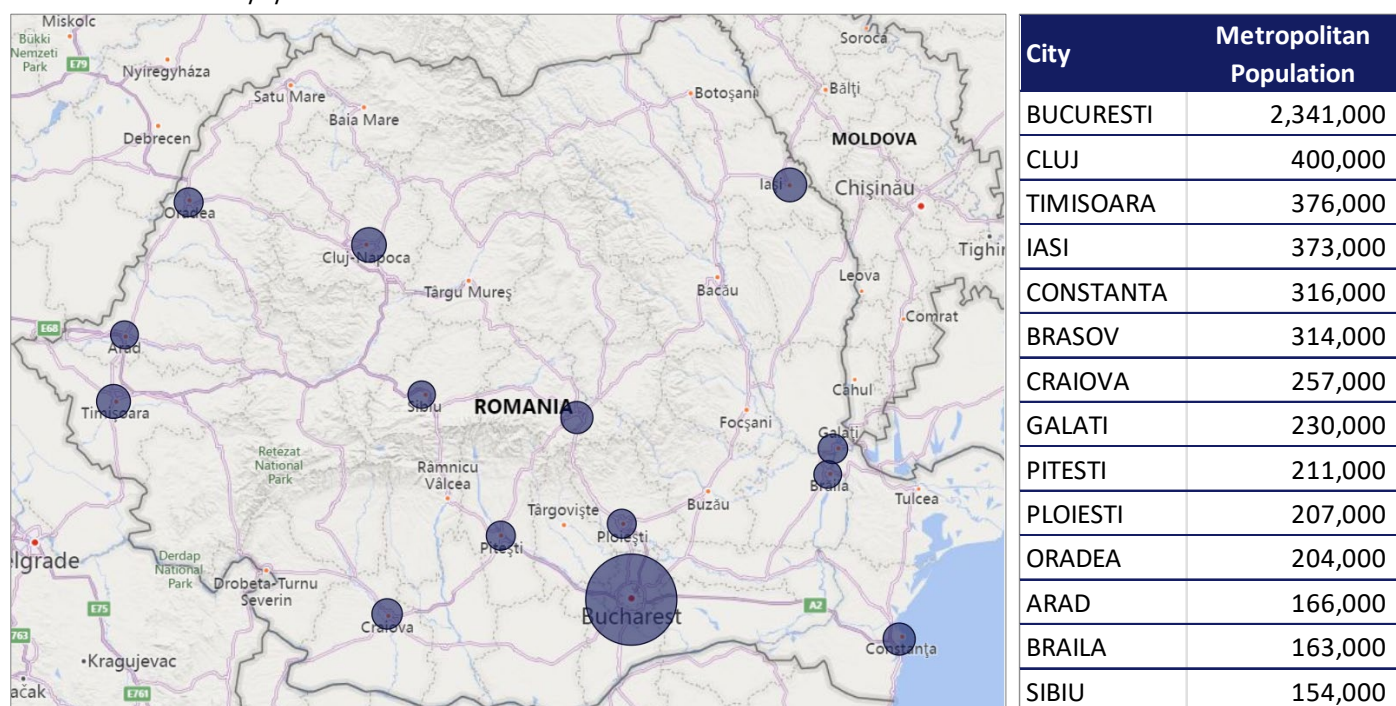
The number of inhabitants and growth levels influence housing demand - the more people are in an area and the population trend is positive, the more housing demand is created, as these people require a place to live.

»»» Number of inhabitants and population growth drive housing demand.

Capital Bucuresti is the largest city in the country by far with a metropolitan population over 2.3 million inhabitants. The next cities are Cluj, Timisoara and Iasi (around or close to 400k) followed by a few other cities at over 300k (Constanta, Brasov), 250k (Craiova), slightly over 200k (Pitesti, Ploiesti, Oradea), while the others drop well below 200k (Arad, Braila, Sibiu). As expected, the most transactions and new housing deliveries are in Bucuresti (circa x6 times higher population than the next group of cities), while Cluj, Timisoara, Iasi, Constanta and Brasov have benefitted from dynamic housing markets as well, whereas the rest of the areas have been traditionally neglected by any analysis.

Estimated Metropolitan Population

bubble size: estimated population size



Source: Census 2011, 2021; INS; STC Partners Analysis

Demand

The impact of population growth on housing demand significantly depends on the nature of those changes:

1. Births-Deaths Balance

- Births: create indirect demand due to the larger household size
- Deaths: reduce demand directly, as it decreases the household size

2. Domestic Migration (within the country)

- Urban-to-urban: larger cities/ regional poles attracting people from smaller urban areas
- Rural-to-urban: cities attract population from rural areas
- Urban-to-rural: small in scope and with most people relocating towards wider metropolitan areas

3. External Migration (outside the country)

- People moving away from the country: reduce demand directly
- People moving into the country: increase demand directly

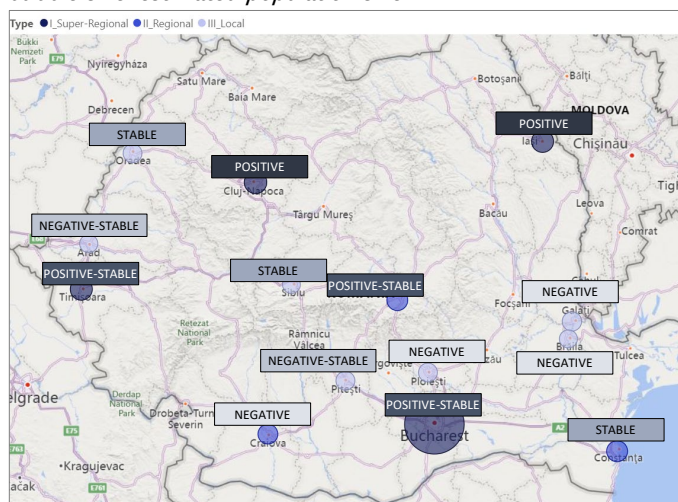
Medium to long-term impact of domestic and external migration depends on the nature of the movement, whether people stay or return. In case of domestic migration, this tends to be rather permanent, whereas external migration is not always the case. Market transactions highlight that external migration led to additional housing demand back in the country, as people accumulate wealth in richer countries and return to Romania.

Despite negative population growth country-wide due to unfavourable births-death equilibrium, which continues deteriorating, and negative external migration (more people move away from the country than new ones coming in the country), although some areas see an improvement in the recent past as fewer people leave the country and more are coming in, some of the main cities continue to have positive population growth due to migration (mostly domestic migration, but external migration accelerated in the recent past and expected to continue), which directly translates to new housing needs. The cities are clustered in three broad categories in terms of their attractiveness for migration (and also consolidation of purchasing power/ wealth) that are essential to consider for residential demand. The categories represent a qualitative assessment considering economic opportunities, regional cultural preferences, geographical distance and accessibility between cities.

- **Super-Regional:** cities attracting population and purchasing power from the wider region (even country-wide) and therefore having a higher natural level of residential demand - these cities benefit from the best universities in the country and most dynamic economies. Bucuresti, as the capital and by far the largest city in the country, is the obvious candidate and most dominant one. Cluj, Timisoara and Iasi act as super-regional areas as well.
- **Regional:** cities attracting population and purchasing power from the region (but rarely beyond). Their attractiveness is shadowed by the super-regional cities, but they still benefit from a mix of good universities and dynamic economies. This category is represented by Constanta, Brasov and Craiova.
- **Local:** cities attract population and purchasing power from the immediate area, but do not act as regional poles in their area, because they are shadowed by regional/ super-regional cities. The remaining cities, Galati, Ploiesti, Oradea, Braila, Arad, Pitesti and Sibiu, are in this category.

Pole of Attraction, Population Growth Assessment & Yearly Housing Demand

bubble size: estimated population size



City	Type	Pop Growth Assessment	Pop Growth CAGR	Yearly Housing Demand
BUCURESTI	Super-Regional	POSITIVE-STABLE	0.3%	7,000
CLUJ	Super-Regional	POSITIVE	0.5%	2,000
TIMISOARA	Super-Regional	POSITIVE-STABLE	0.3%	1,100
IASI	Super-Regional	POSITIVE	0.8%	3,000
CONSTANTA	Regional	STABLE	0.0%	0
BRASOV	Regional	POSITIVE-STABLE	0.1%	300
CRAIOVA	Regional	NEGATIVE	-0.6%	(1,500)
GALATI	Local	NEGATIVE	-0.8%	(1,800)
PITESTI	Local	NEGATIVE-STABLE	-0.4%	(800)
PLOIESTI	Local	NEGATIVE	-0.6%	(1,200)
ORADEA	Local	STABLE	0.0%	0
ARAD	Local	NEGATIVE-STABLE	-0.2%	(300)
BRAILA	Local	NEGATIVE	-1.0%	(1,600)
SIBIU	Local	STABLE	0.0%	0

Source: Census 2011, 2021; INS; STC Partners Analysis

Demand

The estimates indicate that around 7k new units are required yearly in Bucuresti metropolitan area to address the increase in population. Cluj, Timisoara, Iasi and Brasov are the other areas for which there is a clear positive population trend (and therefore require additional yearly housing with an important mention that Iasi attracts population from across the border as well and as a result benefits from the largest population growth across the metropolitan areas), while some of the local areas (Braila, Galati, Ploiesti and Craiova) lose population yearly and require less housing according to this metric alone. However, there is scope for some of those cities to overturn this negative trend over the medium term, with new significant private investments announced in recent months, which have the potential to revitalize the local economies and improve the migration balance. There is no groundbreaking conclusion in this sense, such large disparities between cities exist anywhere in the world and similar differences exist within other Central Eastern European (CEE) countries. However, the implication of such disparities for residential demand and the market potential is essential.

Metropolitan areas have different degrees of attractiveness, which influence migration trends and population growth with a direct impact on housing demand levels.

The structure of the specific population plays a major role in determining housing demand levels. An elderly and already-settled population creates limited new primary housing demand, whereas a young, active and upward mobile population creates higher housing demand. A general breakdown is considered below:

- **0-9 & 10-19: indirect demand** - person lives at home with parents (no direct demand); it creates indirect demand, as it pushes parents to look for new housing to better suit their needs due to the larger household size;
- **20-29: high demand** - person usually leaves home to i) attend university ii) enter the workforce, both requiring a new living place. People tend to rent in this age category (at least at some point), as they need time, clarity and higher incomes before purchasing a dwelling;
- **30-39: high demand** - person tends to i) improve income levels ii) experience larger household (marriage/ kids);
- **40-49: moderate demand** - person is either i) a late buyer ii) looking to upgrade;
- **50-59: moderate-low demand** - person tends to be already settled (primary housing demand is opportunistic);
- **60+: low demand** - person is already settled with situational specific movements (e.g., be closer to grandkids);

The structure of the population influences housing demand levels: the younger population is significantly more mobile by comparison to the already-settled elderly population.

Population Structure & Yearly Housing Demand

mobility factor		0.0	0.0	0.75	0.75	0.25	0.17	0.1	2.0	Yearly Housing Demand
people changing dwelling		none	none	3 out of 4	3 out of 4	1 out of 4	1 out of 6	1 out of 10	Dwelling Change	
City	Type	INDIRECT 0-9	INDIRECT 10-19	HIGH 20-29	HIGH 30-39	MODERATE 40-49	MOD-LOW 50-59	LOW 60+	Dwelling Change	Yearly Housing Demand
BUCURESTI	Super-Regional	9.5%	7.9%	16.2%	18.0%	14.2%	14.2%	20.1%	0.34	10,200
CLUJ	Super-Regional	7.9%	9.3%	22.8%	15.3%	12.9%	13.9%	17.9%	0.36	1,500
TIMISOARA	Super-Regional	7.2%	8.1%	22.3%	16.9%	13.9%	14.4%	17.1%	0.37	1,400
IASI	Super-Regional	9.5%	9.4%	20.7%	16.1%	12.4%	13.9%	18.0%	0.35	1,300
CONSTANTA	Regional	8.8%	7.9%	14.1%	15.8%	14.2%	16.2%	23.0%	0.31	1,300
BRASOV	Regional	8.0%	7.4%	15.3%	15.8%	13.9%	17.8%	21.7%	0.32	1,100
CRAIOVA	Regional	9.0%	9.6%	15.9%	16.9%	15.8%	15.7%	17.2%	0.33	1,200
GALATI	Local	8.8%	9.2%	13.2%	16.2%	16.0%	16.8%	19.7%	0.31	1,100
PITESTI	Local	9.3%	9.3%	13.8%	18.5%	16.0%	15.6%	17.6%	0.33	700
PLOIESTI	Local	9.1%	8.4%	13.2%	15.2%	15.9%	15.8%	22.3%	0.30	900
ORADEA	Local	9.2%	9.4%	16.0%	17.1%	14.9%	15.3%	18.0%	0.33	900
ARAD	Local	9.1%	8.7%	13.6%	16.7%	15.1%	15.5%	21.3%	0.31	700
BRAILA	Local	8.8%	8.5%	11.0%	15.4%	15.6%	17.4%	23.3%	0.29	800
SIBIU	Local	9.1%	8.5%	16.3%	16.1%	13.6%	16.0%	20.5%	0.32	700
Source: Census 2011;		7.2%	7.4%	11.0%	15.2%	12.4%	13.9%	17.1%	0.29	min
STC Partners Analysis		9.0%	8.6%	15.6%	16.1%	14.6%	15.6%	19.9%	0.32	median
		9.5%	9.6%	22.8%	18.5%	16.0%	17.8%	23.3%	0.37	max

Demand

Studies, mostly in the form of surveys, show the number of times a person changes dwelling during their lifetime. In CEE, on average, this lies between 2.0-3.0, whereas in advanced economies this goes up to 4.0. For modelling purposes and understanding what it means from a numbers perspective, considering a mobility factor of 2.0 in the Romanian metropolitan areas (i.e. someone changes 2 times the dwelling during their lifetime, excluding the ones driven by migration, rather conservative), assumptions on when the change is most likely to occur across age brackets and life expectancy of 75 years old, one can obtain indicative numbers of housing demand caused by population size & structure.

Starting from an equilibrium point in terms of dwellings occupancy and crowding levels, this translates into new housing supply needed to satisfy the move, in addition to the positive/ negative population growth impact. The “dwelling change factor” scores most positively in the super-regional areas, whereas Braila stands out again as a negative example. These observations on population structure offer some preliminary insights into the general market dynamics in the last decade:

- Super-regional areas (Bucuresti, Cluj, Timisoara, Iasi) had the best demographics for residential demand
- Cluj had the highest share of population in 20-29 age group, which in the last decade, made the transition to the 30-39 age group; Cluj is the market that absorbed the most new units during this time and enjoyed one of the highest numbers of transactions on a per capita basis
- Relatively good fundamentals in Craiova, Brasov, Oradea and Sibiu markets with Brasov, Oradea and Sibiu having already taken off in the last decade, while potentially Craiova did not receive the attention it deserves yet
- Some local areas, like Braila, Ploiesti and Galati showed some of the least favourable demographics to facilitate dynamic housing markets, which has been seen in the limited number of developments and transactions, when reported to the population levels

The results should be interpreted cautiously, but it offers a starting point for thinking about population impact. It's also important to realize that these demand variables are not isolated, despite the analysis going one by one, which is the only way to progress given limited data availability, as otherwise, one will seek to establish tested causality relationships, as these interact with each other in the real world and have an influence upon each other (e.g., growing purchasing power is associated with more mobility). Population is essential, but represents only one side of the demand.

The discussion so far has been about a so-called “natural level” of residential demand, which is demand purely driven by population changes and not linked to any financial factors such as purchasing power, credit conditions, cultural preference or housing affordability. This distinction between “natural” and “market” levels is a distinction made often in economic and market theory with the main message that there can exist significant imbalances between the two, as ultimately, even if the natural factors are positive but housing is unaffordable and economic prospects are gloomy, people will postpone buying or movement decisions until the market reaches an equilibrium level.

»»» Natural demand levels can be established by understanding the population changes, but financial factors interplay with the scale of those natural demand levels and how these translate to actual transactions.

2. Purchasing Power

Purchasing power represents the financial ability to buy products and services, in this context referring to residential housing. One's financial ability and sources of income (realized or to be realized) can be split as such:

- A. Recurring earnings (salaries, dividend income, passive income): salaries represent the vast majority of recurring income for most people, while distributions or passive income is a source for those owning businesses or investments that produce recurring income; considering the report's focus is on the aggregate residential market, without considering in detail market segments, the analysis will concentrate on salaries;
- B. Savings: available cash that has been accumulated/ saved and is available to be used;
- C. Holdings: net assets value that carry a market value and therefore add to the net worth of the individual;

»»» Earnings, savings & net worth (via the wealth effect) drive housing demand.

Demand

A. Recurring Earnings

Average earnings (EUR equivalent) have more than doubled in the decade prior to the onset of the pandemic (2010-2019) in all the key cities from Romania with the growth continuing since the pandemic start, albeit at a slower pace in some areas. It's interesting to note that earnings growth in some areas, since the start of the pandemic, outpaced the growth in the prior decade of the most dynamic metropolitan areas, but this is the result of the local economies having a high public sector exposure that benefitted from inflation index linked salaries, while the private sector could not follow suit, and by no means an indication of a change in the economic landscape – the country has the highest yearly spending on public sector salaries (expressed as a share of government revenue) since 2018 in the EU.

Average Salaries*, EUR

City	2010	2019	2020	2021	2022	2019 vs 2010 Increase	2019 vs 2010 CAGR	2022 vs 2019 CAGR
BUCURESTI	469	857	911	966	1,063	83%	6.9%	7.4%
CLUJ	330	727	774	822	972	120%	9.2%	10.2%
TIMISOARA	335	698	731	781	879	108%	8.5%	8.0%
IASI	314	659	688	723	793	110%	8.6%	6.4%
CONSTANTA	288	551	584	600	685	91%	7.5%	7.5%
BRASOV	310	615	643	675	761	98%	7.9%	7.4%
CRAIOVA	301	583	613	631	699	93%	7.6%	6.3%
GALATI	301	548	581	599	710	82%	6.9%	9.0%
PITESTI	341	613	629	655	714	80%	6.7%	5.2%
PLOIESTI	330	593	625	652	741	80%	6.7%	7.7%
ORADEA	255	503	538	562	659	97%	7.8%	9.4%
ARAD	296	550	571	604	697	86%	7.1%	8.2%
BRAILA	269	512	539	547	666	90%	7.4%	9.2%
SIBIU	319	627	654	700	842	97%	7.8%	10.3%
						75%	6.4%	6.4%
						100%	8.0%	8.0%

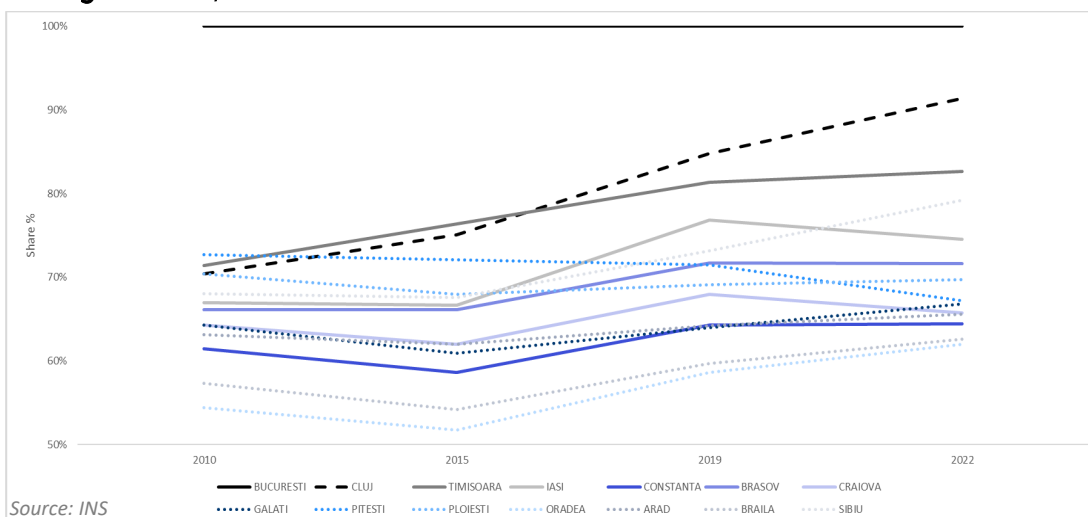
Source: INS

*Average e/r for the year used for conversion; 2022 estimation

»»» Average earnings (EUR equivalent) have more than doubled in Romania in the last decade.

Cluj exhibited the fastest earnings growth, followed by Iasi, Timisoara, Brasov, Oradea and Sibiu. Bucuresti enjoyed robust growth levels as well, but the starting base in 2010 was at least circa 30% higher than the rest. Ploiesti, Pitesti & Galati showed some of the slowest growth during the period. Specifically, Ploiesti & Pitesti started from a high base back in 2010 (similar levels with Cluj & Timisoara), as the two economies, in the prior years, benefitted from investments in production/ distribution/ manufacturing type of businesses. Growth in those cities did not take off, remaining at similar convergence levels with Bucuresti in 2022 as it was the case in 2010. The economies did not succeed in making the transition to a better-paid service-based economy, which is the case of Cluj or Timisoara. Both Ploiesti & Pitesti do not benefit from solid university centres to attract highly skilled students and are also geographically close to Bucuresti, which brings some advantages as well as disadvantages – limited scope to attract or upskill the workforce to be suited for service-based jobs.

Average Salaries, shown as share of Bucuresti



»»» Gap between Bucuresti and the rest is closing - some cities have taken off while others show their limits.

Demand

The source of the earnings growth offers some valuable insights as well - mapping GDP, workforce sectors or businesses performance during the same period offers an indication of the sustainability of the earnings growth and future prospects of the metropolitan areas. Earnings in some areas have grown on the back of new economic value being created, while others largely rely on redistribution of taxes and public sector growth, which is deemed sub-optimal for developing long-term dynamic and healthy housing markets.

B. Savings

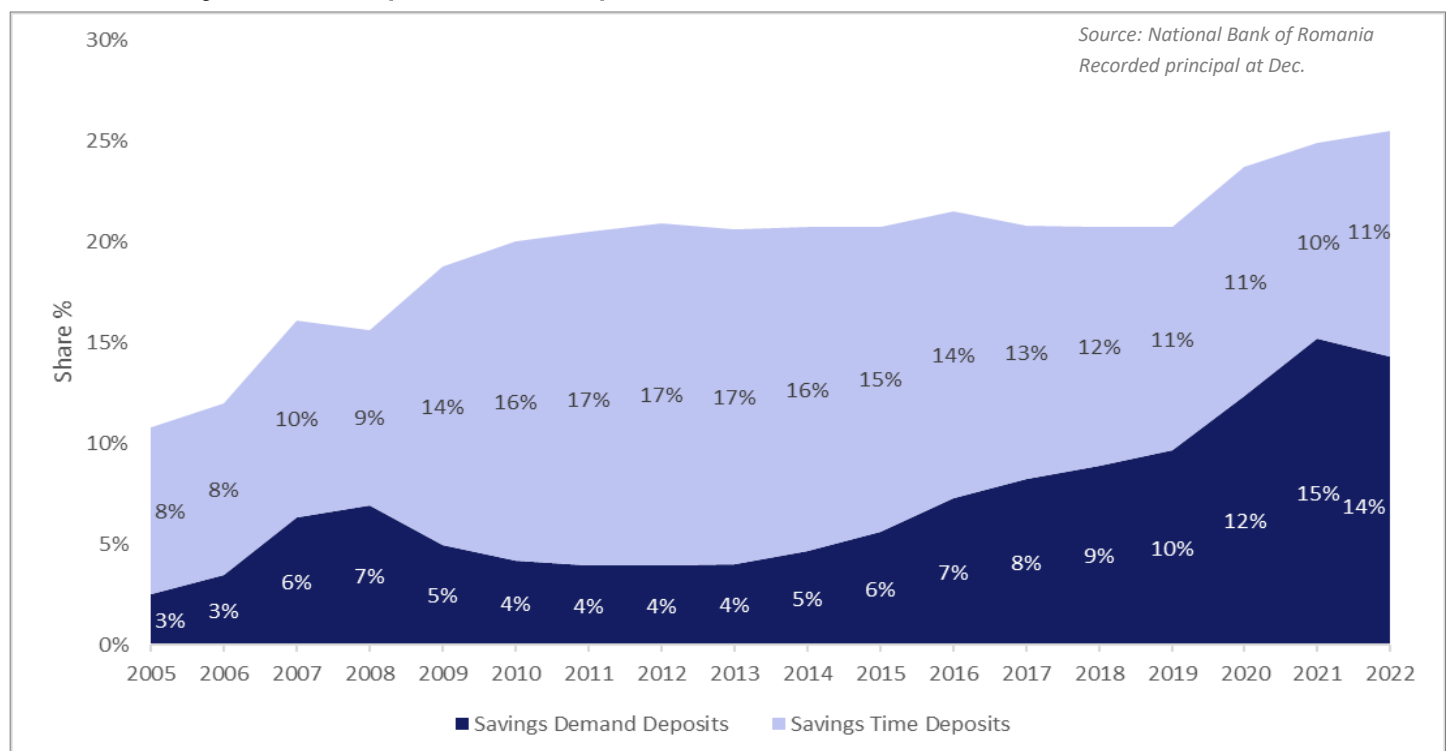
Considering that housing acquisition is one of the highest expenditures an individual usually makes during their lifetime, savings play an essential role in doing such a transaction and therefore significantly influence housing demand levels. The minimum cash contribution advance required by banks is 15%, with some government schemes requiring 5%, but these schemes are rather limited in scope to have a wide market impact. However, as it would be detailed later, up to 60% of the transactions in Romania are cash-backed, so savings play a major role.

Is there cash in the market?

Bank deposits offer a good indication of cash availability in the market. While not all available cash is placed in bank deposits, especially in Romania which has a lousy history with Ponzi schemes and still a large informal economy, it represents a good starting point. National Bank of Romania published between 2005-2021, monthly data in respect of demand deposits and time deposits of households, the recorded principal, with the distribution by county based on the territory the credit institution's units belong to (and continued to publish countrywide data since 2022).

Savings deposits are at an all-time high in Romania, following robust growth levels in the last 7 years, both from an absolute as well as a share of GDP perspective, which indicates that there is available cash in the market, actually plenty of it. Demand deposits (funds that account holders can access right away) hit an all-time high at the end of 2021, whereas time deposits (funds locked for a certain period/ with maturity) hit an all-time low as share of GDP at the end of 2021, given the low interest rates and limited incentive to block the cash – this has changed during 2022, demand deposits decreased by circa 2% and time deposits increased by 20%, so there is clear evidence of people moving money into time-deposits as expected, which will continue during 2023. This is an indication of less available cash present in the market for real estate transactions in 2023, but the starting base is very high to represent a severe risk on the demand side.

Romania, Savings: Demand Deposits & Time Deposits as share of Nominal GDP



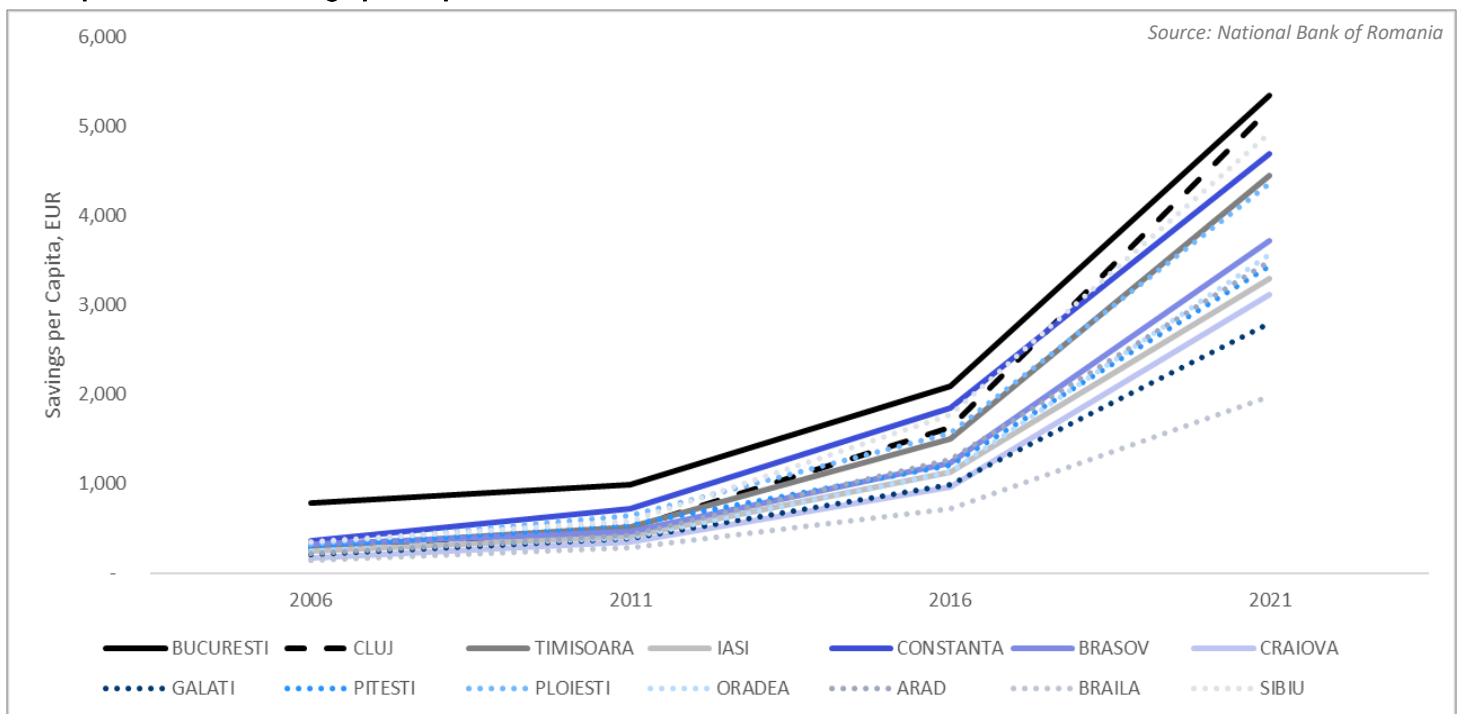
Demand

►►► **Plenty of cash is in the market, and although the money will continue flowing in 2023 into time deposits/ govt bonds/ other-type of investments that have become more attractive, the existing cash base will remain high.**

Similar story prevails if one looks in detail at the individual counties data, with the clear distinction that the more advanced and wealthier the area, the more savings accumulate: it's easier to save 10%-20% of a higher income than 10%-20% of a small income.

On a per capita basis, in 2006 savings demand deposits were under 1,000 EUR (only with Bucuresti close to 800 EUR, while other areas well under 400 EUR), while at the end of 2021 this is over 5,000 EUR in richer metropolitan areas, with only Braila as clear outlier under 2,500 EUR and Galati, Iasi, Craiova at just slightly over 3,000 EUR, with some of this stark differences being explained by some of the counties having a large share of rural areas and the data is not fully representative of the situation in the metropolitan area.

Metropolitan Areas, Savings per Capita, EUR



This particular data is very insightful when discussing the residential market and comparing different time points regarding residential housing affordability, purchasing power levels and growth. As per the statement earlier, it is easier to save 10%-20% of a higher income than a small income, this is best seen by looking at the growth of average earnings and savings per capita since 2006/2010 (prior and post the housing crisis) and 2021. As pointed out earlier, average earnings have more than doubled since 2010, whereas savings per capita are even up to 10 times or more vs levels registered during 2006-2010. This has a lot to do with income inequality growth and other factors during the period as well and averages are not always the best representation of data, but the snapshot remains very powerful. Studies have shown that the marginal propensity to save increases with higher incomes, allowing for more accumulation of savings/ wealth and as a result leading to the observed cash in the market for real estate transactions performed by individuals.

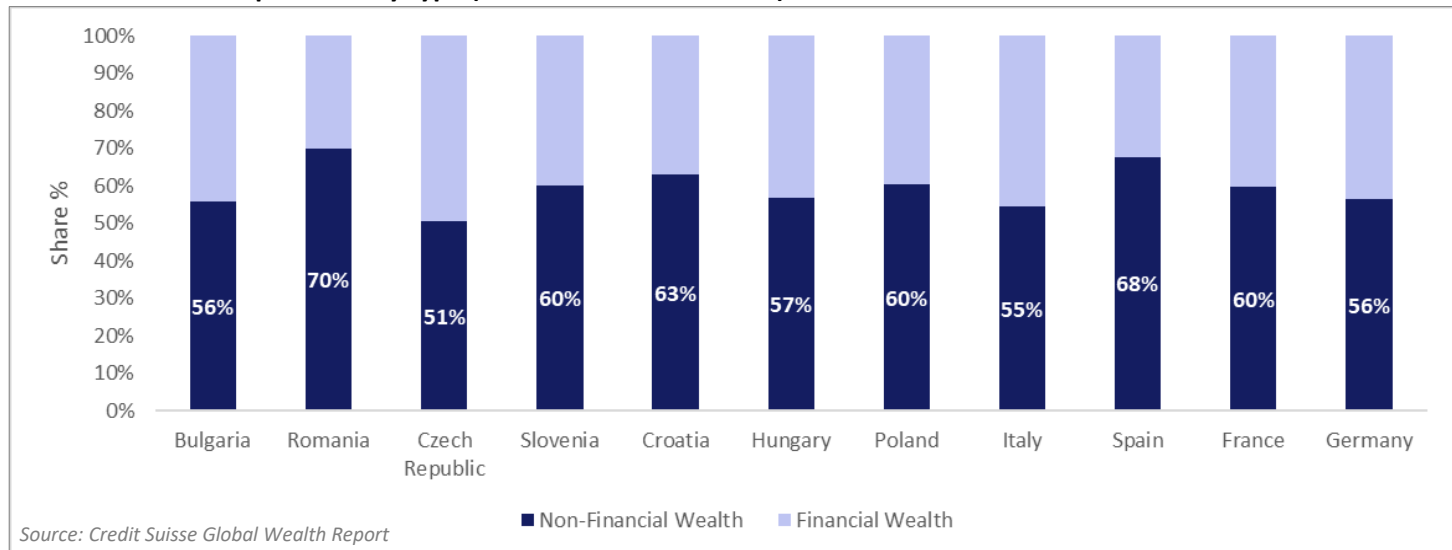
►►► **Savings per capita increased exponentially in the last decade, which has sustained robust housing demand levels (especially since 2015/2016); widening gap between over & less performing metropolitan economies.**

Demand

C. Wealth Effect

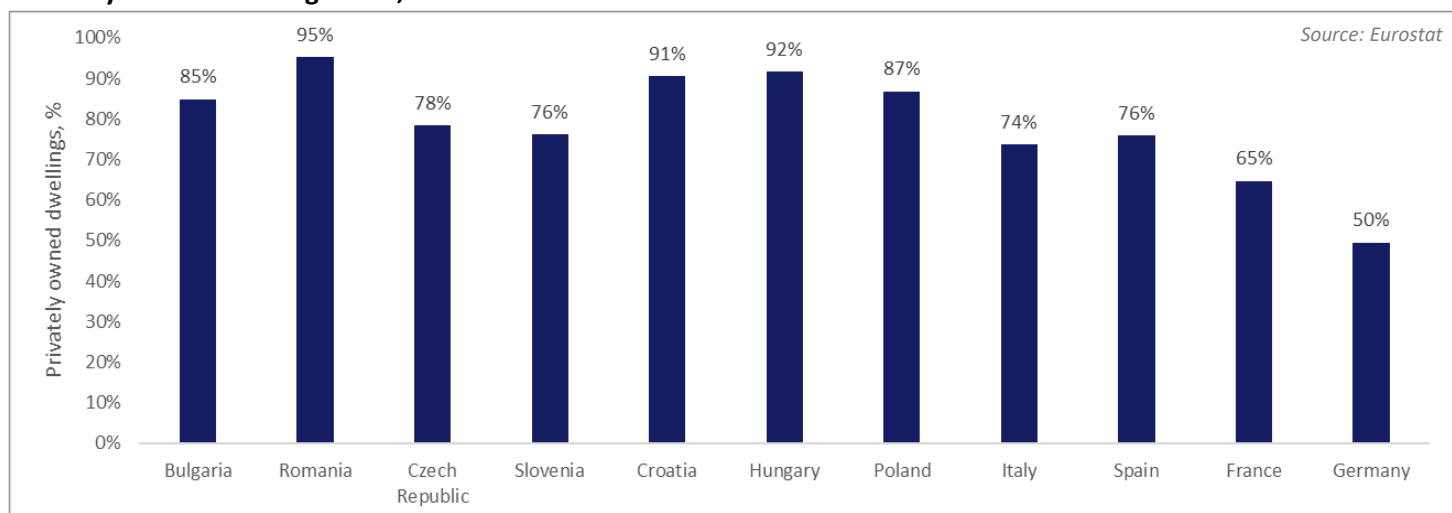
Credit Suisse publishes an annual global wealth report, which since 2016 includes aggregate data/ estimations for Romania as well. The wealth in the country, circa 70%, is concentrated in non-financial holdings (represented mainly by real estate or land – therefore housing), which is significantly more than the rest of the European countries.

Wealth distribution per adult by type (non-financial & financial) 2021



This result is no surprise, considering that Romania has the highest housing ownership in the world, with 95% of the housing stock being privately owned. This is predominantly due to the immediate period following the fall of communism, during the early 1990s, when the state used to owe 70% of the apartments and started to sell all those units and people who were already living in the apartments bought them, often at very advantageous prices – the devaluation of the currency and growing inflation made purchasing easy; anecdotally, the price of an apartment in 1991 was the price of a colour TV in 1994.

Privately owned dwellings 2021, %



Therefore, the wealth effect depends mainly on the state & expectations of the residential real estate sector. Considering the less optimistic views being built up in the market on the residential real estate sector in 2023, the wealth effect will act negatively on demand as a result of those expectations.



People's wealth is concentrated in real estate, as a result of government policies during early 1990s. The weaker market expectations about the residential sector will act as a negative demand factor in 2023.

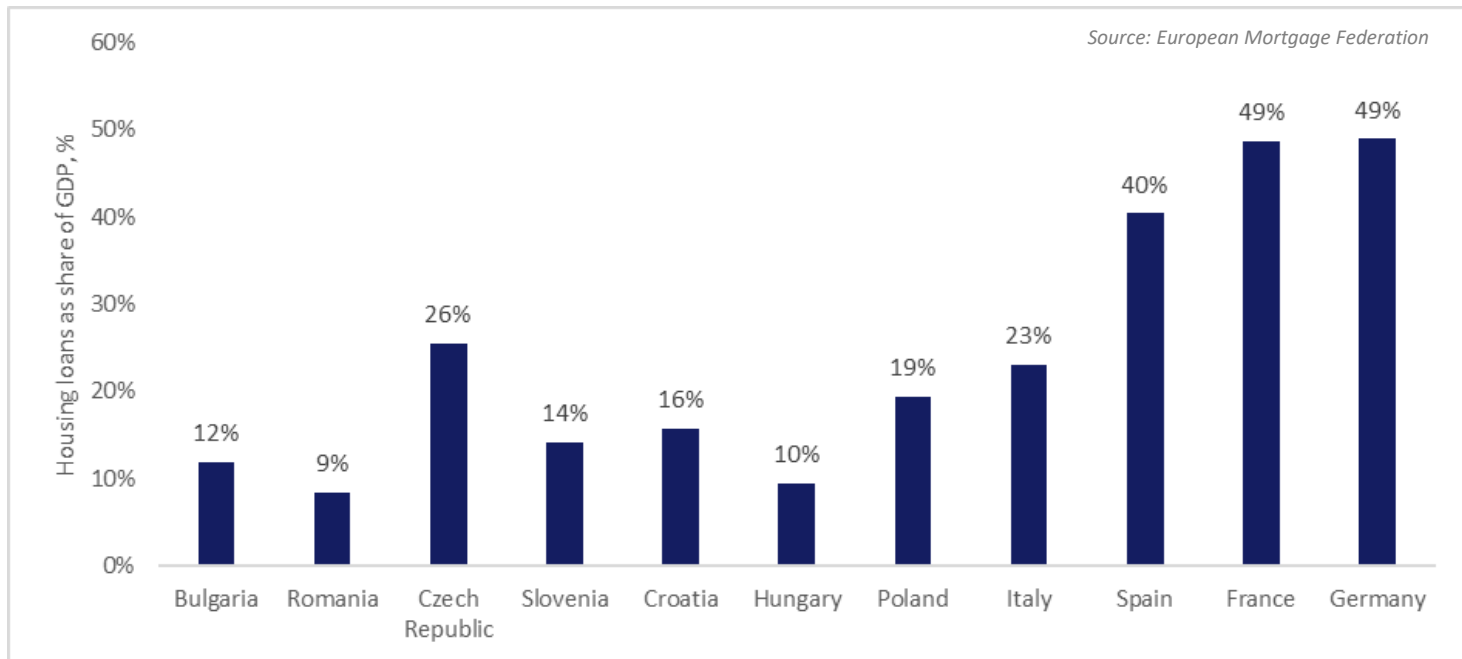
Demand

3. Credit Market

The available mortgage market data allows for meaningful comparisons between countries, as the European Mortgage Federation (EMF) collects data from individual countries and prepares every year a detailed report, the last report published in September 2022, covering information up to the end of 2021.

Among all the EU countries, some of which are presented below, Romania has the lowest share of housing loans as a share of GDP (<9.0% or close to x6 times lower than Poland in absolute terms), being the housing market least exposed to credit conditions and driven by those credit conditions in the first place. Most of the EU countries experienced a drop in housing loans as a share of GDP post the financial crisis, until around 2013-2015, picking up again and growing slightly faster than GDP in the last at least 5 years. By contrast, Romania is one of the very few countries where housing loans have increased as a share of GDP since 2010 at a steady rate, which highlights again how under-developed the mortgage market is in the country and how little it contributes to the demand side by comparison to all the other EU countries. Once interest rates will stabilize and a new normality is defined from this point of view, the mortgage market in Romania has significant scope for further growth in the main metropolitan areas.

Housing loans as share of GDP 2021, %



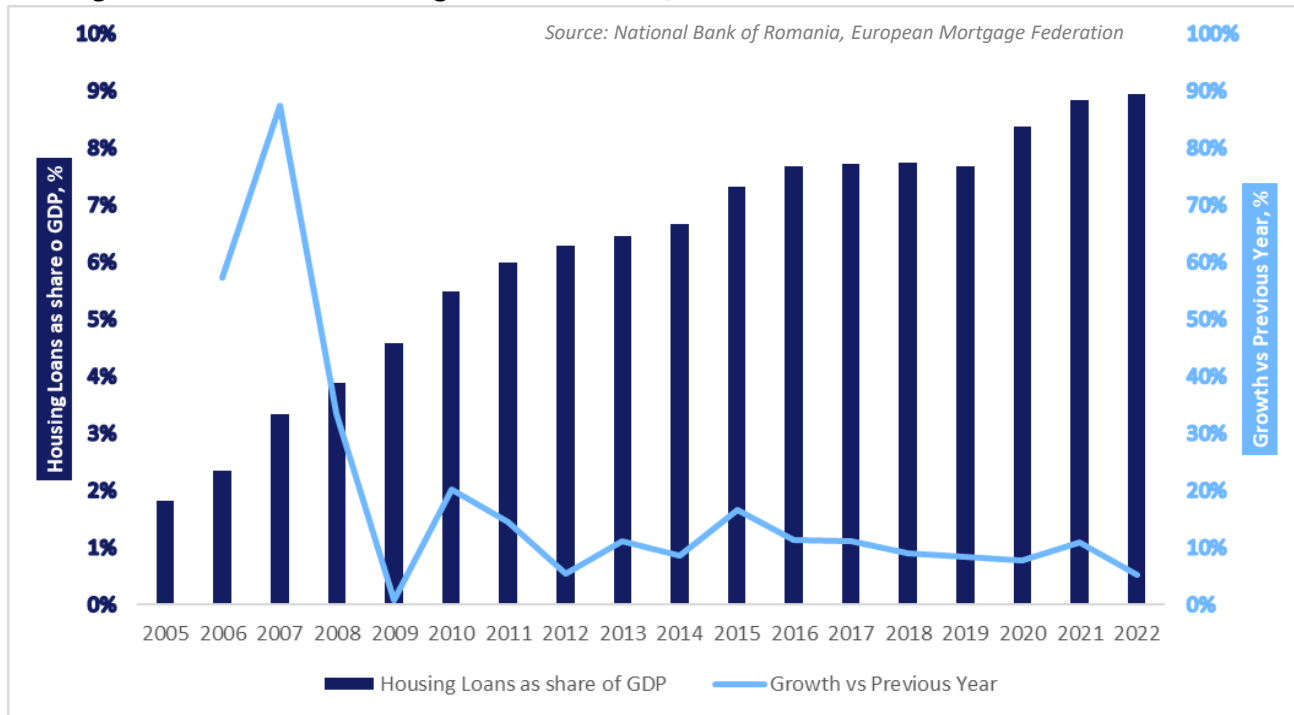
➤➤➤ **Romania has the lowest share of housing loans expressed as % of GDP across the EU countries, being the residential market least exposed and driven by mortgage credit in the first place.**

The mortgage market size expressed only as a share of GDP can be misleading, when comparing across markets, as more developed markets naturally can take on higher credit (e.g., less restrictive credit conditions, more households are bankable, etc.). EMF provides data in respect of total outstanding residential loans per capita, reported to the population over 18 years, and Romania remains by far the lowest across the EU countries, even slightly lower than Bulgaria and circa 3 times lower than Poland, while the comparisons with Western Europe are not even worth mentioning.

Demand

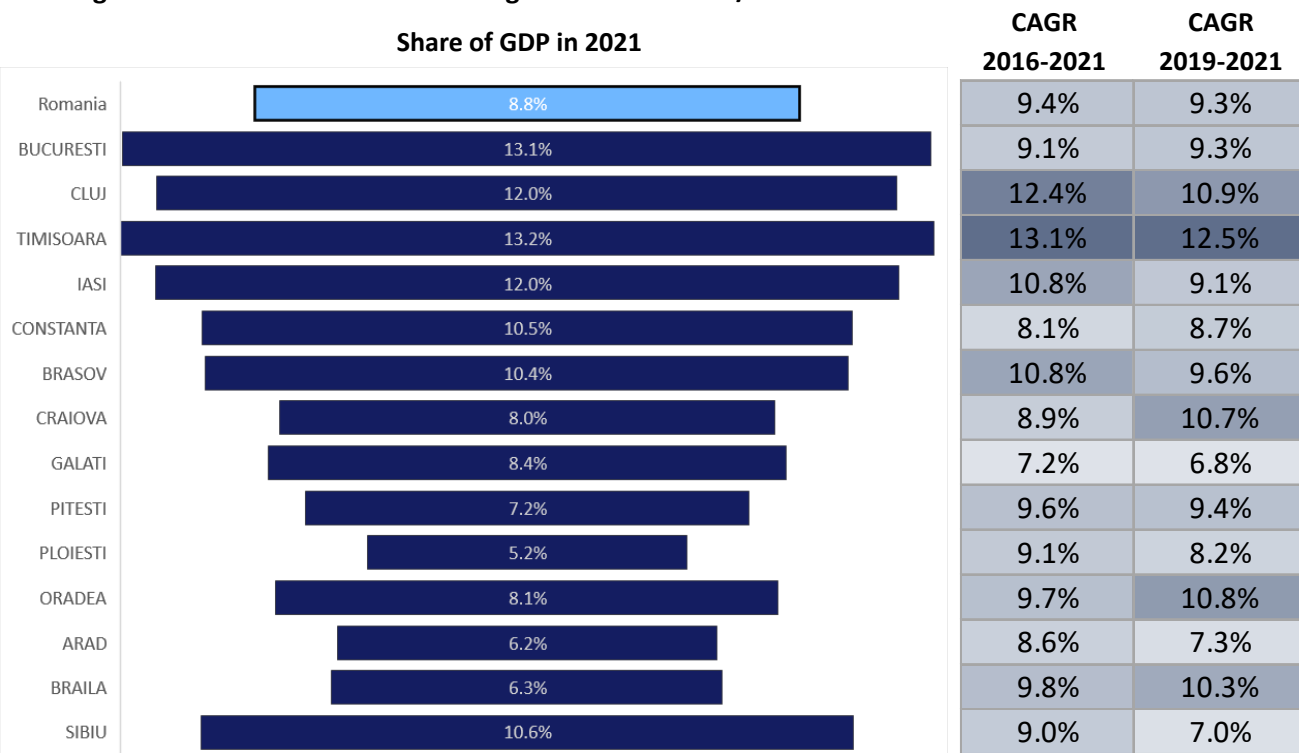
Housing loans as a share of GDP hit an all-time high in 2022 (close to 9.0%), but the growth in loans has been smooth in the last decade, nothing unlike the times preceding the housing bubble of 2008 when housing loans balance grew by more than 50% every year in the preceding years to the crisis. A growth slow-down was already observed in 2022 vs 2021, which is expected to continue in 2023.

Housing loans as share of GDP and growth in Romania, 2005-2022



The more economically dynamic cities have a higher mortgage market in relation to their economic activity and have also expected higher growth in the last couple of years. Surprisingly, one would expect to see Cluj as the clear upfront runner in this race, but Timisoara is ahead in both relative market size and growth. Timisoara, Bucuresti, Cluj, Iasi, Constanta, Brasov and Sibiu are the markets with a larger mortgage market size.

Housing loans as share of GDP in 2021 & growth 2016-2021 / 2019-2021



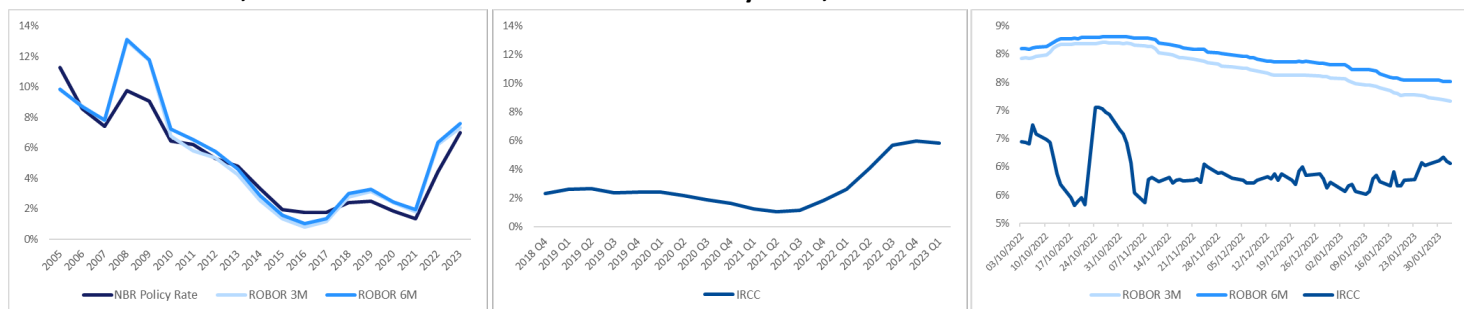
Source: National Bank of Romania

Demand

➤➤➤ The larger & dynamic economies experience a higher & more active mortgage market. Among the metropolitan areas, Timisoara seems to be the market most driven by credit in recent past.

Mortgage credits on the Romanian market are characterized by variable rates (over 70% of the balance) and RON-denominated (over 80% of the balance), therefore, the mortgage market, even if relatively small in size by comparison to EU-peers, has been heavily impacted by the increase in the policy rate, making it difficult to access credit and very costly, considering the rapid increase in NBR policy rate since the beginning of 2021. Up to the summer of 2019, variable retail mortgage credits were linked to “ROBOR”, following new legislation, all new variable retail credits, including mortgages, have as a benchmark the “IRCC” index.

RON Interest Rates, 2005-2023 and November 2022-February 2023, %



Source: National Bank of Romania; STC Partners Analysis;

Notes: IRCC Q4 2022 computed based on available daily data; IRCC Q1 2023 computed for daily data available up to February 2023

The rate spike has been a real burden on those with variable mortgages and those making plans to access mortgage credit. In the last few months, there has been a downward tendency for ROBOR as well as IRCC, indicating that perhaps the worst is behind us – regardless, the year 2023 will remain a costly one for those looking to access credit and will have a negative impact on the demand side.

➤➤➤ Rapid interest rates increases in the last year, making it a real burden for those with variable mortgages or ones looking to access a mortgage – 2023 will be similar, acting as a negative factor on the demand side.

4. Cultural Factors

In Romanian culture, there is a strong preference for housing ownership and the country benefits from the highest housing ownership in the world, as mentioned previously. Romania has a lousy history with Ponzi schemes during the 1990s and early 2000s, significantly reducing people’s trust in financial investments. This has changed with the new generations who have not experienced such times, but the older generations remain reluctant regarding financial investments, preferring real estate, which is more tangible and easier to relate to. This positively contributes to the housing demand side.

➤➤➤ Strong preference for real estate investments in the country, following bad experiences in the 1990s and early 2000s with Ponzi schemes, which positively contributes to the demand levels.

Supply

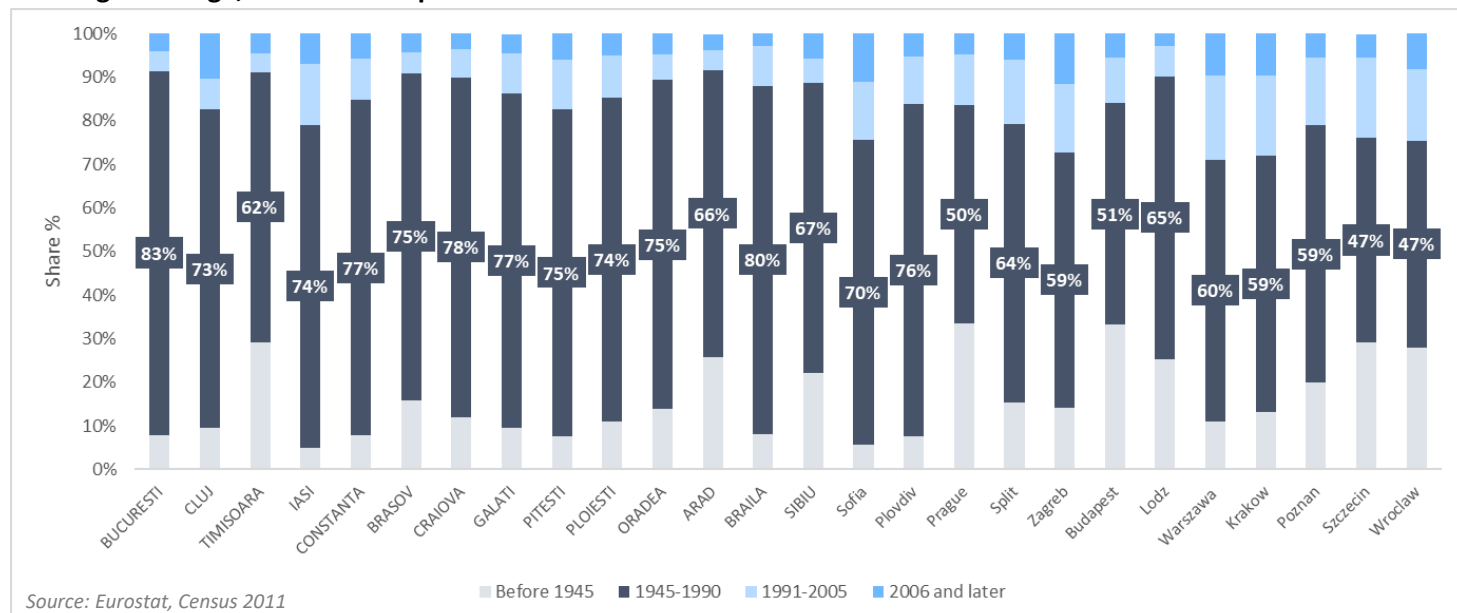
SUPPLY

Housing supply is defined as the existing stock measured at a given time. The stock quality can be defined by various characteristics, for some of which there is available data, across EU, like housing age and size that makes comparisons convenient. The quantity (and quality) of the stock changes over time depending on how many housing outflows (existing stock getting out of use) and inflows (new housing deliveries or buildings rehabilitations) occur during the defined period.

Housing Quality

Among CEE, Romanian cities have one of the highest shares of communist stock (built during 1945-1990). This difference is especially clear if one looks by comparison at major Polish cities, which have benefitted from significantly more new home deliveries in the last two decades. In Romania, the cities closer to the Western border (Timisoara and Arad) benefit from a significantly higher share of stock built before 1945 – with the right rehabilitation strategy, such stock can remain livable and improve the quality of life.

Housing Stock Age, Selected European Cities



Overall, 70-80% of the housing stock back in 2011 (except for Timisoara and Arad) was built during the 1945-1990 period. If one accounts for the deliveries in the last decade (2012-2022) in the major cities from Romania, the % drop by up to maximum 10.0% in Bucuresti, Cluj, Timisoara and Constanta, while for the rest of the metropolitan areas this is under 5.0%. Despite the new deliveries, the stock remains old in comparison to other cities in the region and new deliveries are not sufficient to cover the expected loss of stock over the long term. Even when accounting for highly pessimistic population projections in the long term, consisting of significant depopulation in all the major metropolitan areas, the current rate of deliveries is insufficient to ensure a sustainable level of dwellings over the long term.

»»» Housing stock is old with a very high share still represented by the stock built during the communist period.

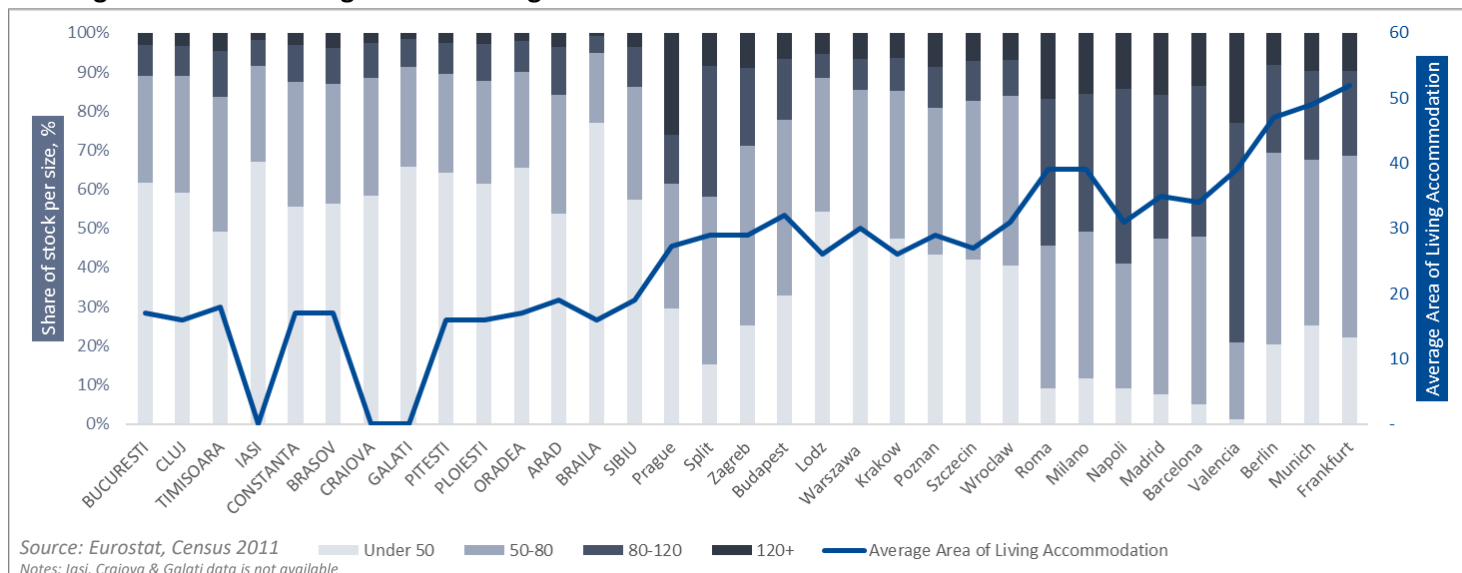
Supply

Housing Size

Cities in Romania have the smallest dwellings in Europe with 50%-80% of the stock under <50 sqm and an average area of living accommodation per person around 20 sqm, which is incomparable to the standard found in other cities in CEE and especially WE. As expected, the slight exception from this rule is Timisoara and Arad due to the higher share of stock built before 1945, which is larger in size.

Among the main deficiencies of the stock built during 1945-1990 is that the apartments built during their time are under-sized – it was suitable at the time when the cities were going through an industrialization process and rapid urbanization, under a central planning regime, and it was important for workers to be close to the industrial platforms and move in the cities, but as the cities migrate towards a service-based economy and industrial type of jobs are relocated towards the outskirts of the cities, under a free market system, the living needs and space requirements change. Nevertheless, new deliveries on the market have not addressed the need for larger space, as the taxation regimes and government support schemes did not encourage for such development, and actually, it pushed for the development of similar small-size apartments.

Housing Stock Size & Average Area of Living Accommodation



»»» Housing stock is under-sized and no longer fit for modern needs.

It is worth noting that the stock does not last forever, as some of it is lost due to ageing & degradation. The average lifespan of any concrete structure is somewhere between 75-100 years (although different studies indicate a lower lifespan for the communist stock, 70-80 years due to low construction quality), with reinforcement works needing to be considered after around 50 years since in use as the structural resistance of the buildings is getting out of the warranty period. Such works are costly, need to be approved by the owners association and will require significant private-public coordination to be feasible. There is limited scope for country-wide coordination in the long term to rehabilitate and keep the entire existing stock, both from the required effort of such an exercise as well as value-added perspective.

Significant new housing is required to be built to address the future loss of stock – however, this issue is not addressed or widely spoken about, with serious social implications, but this will have to change in the years to come. In Bucuresti, the expected housing stock changes over time (with some general assumptions about the lifetime of stock, 70 years, time to remove from use afterwards, 15-20 years, and a linear removal rate) it shows that existing stock losses or required rate of replacement to maintain the same number of dwellings is relatively low today (<0.5% or <3,000 units yearly), but significant pressure will add in the coming years. Starting with 2030 the stock built during 1961-1970 (representing 20%-25% of the housing stock in Bucuresti) will gradually reach 70 years old and pressure will add on replacing those apartment buildings. In 2040 the stock built during 1971-1980 (representing 25%-30% of the housing stock in Bucuresti) will reach 70 years old as well. This will take time of course (decades from the moment the building is a serious hazard to being replaced), but Bucuresti will start to feel the pressure from losing a relatively insignificant number of dwellings yearly (<0.5% or <3,000 units) to close to -3.0% or close to 20,000 units yearly by the end of 2050.

Supply

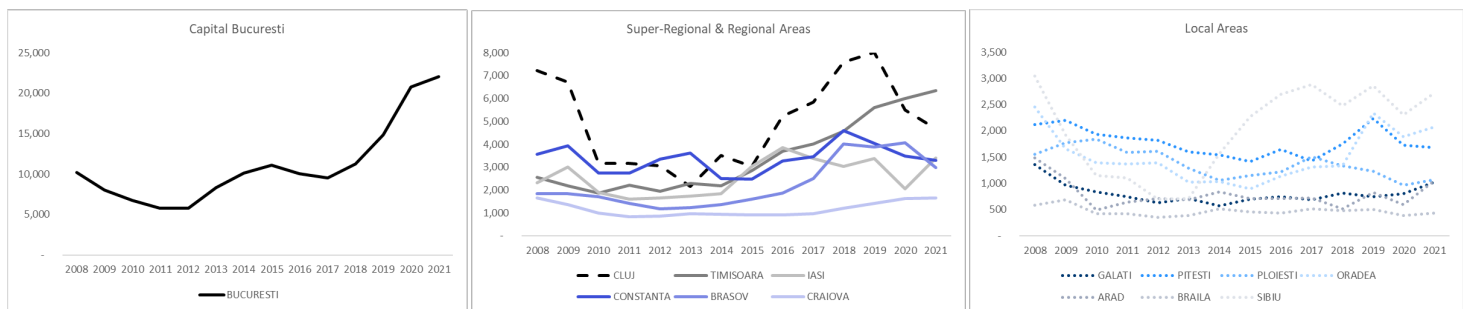
This is a typical situation in Romanian cities – plenty of stock (over 70% in some cases) was built during the prime communist times (1961-1980) and is soon getting out of use, with some cities feeling this pressure even sooner due to a high share of stock built during 1946-1960. Romania is not a particular situation, this is a general case in the wider region.

➤➤➤ **New housing is needed, as the existing stock is getting out of use.**

New Deliveries – To Date

Following a 2008 peak of housing deliveries, this went down to a minimum of new deliveries around 2010-2012, as no new projects were started following the financial crisis, and it started to pick up again in 2013-2015 and, in general, it has been going on an upward trend in most of the metropolitan areas except a few.

New deliveries 2008-2021



Source: INS

Brasov, Timisoara, Cluj, Oradea and Bucuresti have grown the fastest during this period (post-crisis period to recent times), while other areas like Braila or Ploiesti have been decreasing/ stable in terms of new deliveries coming into the market. On a per capita basis, given the estimated metropolitan populations, Sibiu, Brasov, Timisoara and Cluj experienced the most new deliveries per capita, whereas Braila, Galati and Craiova the least. The differences are not small, Sibiu has recently experienced 6 times more deliveries per capita vs Braila and this is not a one-off situation, there are significant differences among similar profile metropolitan areas. Part of the large differences between cities are explainable, as we highlight later, but others show how inefficient the residential real estate market remains and how prolonged periods of disequilibrium can persist in the market. It also shows that there is a need for new modern supply in some areas to 'awake demand', which otherwise demand does not exist.

New deliveries growth & per capita comparisons

City	Deliveries 2013-2015 to 2019-2021			Deliveries 2019-2021			Population/ Deliveries 2019-2021		
	Average 2013-2015	Average 2019-2021	% Increase	Min	Median	Max	Min	Median	Max
BUCURESTI	9,800	19,200	96%	14,800	20,800	22,000	158	113	106
CLUJ	2,900	6,100	110%	4,700	5,500	8,000	85	73	50
TIMISOARA	2,400	6,000	150%	5,600	6,000	6,300	67	63	60
IASI	2,200	2,900	32%	2,000	3,400	3,400	187	110	110
CONSTANTA	2,900	3,600	24%	3,300	3,500	4,000	96	90	79
BRASOV	1,400	3,600	157%	3,000	3,900	4,100	105	81	77
CRAIOVA	900	1,600	78%	1,400	1,600	1,600	184	161	161
GALATI	700	900	29%	700	800	1,000	329	288	230
PITESTI	1,500	1,900	27%	1,700	1,700	2,200	124	124	96
PLOIESTI	1,200	1,100	-8%	1,000	1,100	1,200	207	188	173
ORADEA	1,000	2,100	110%	1,900	2,100	2,300	107	97	89
ARAD	700	800	14%	600	800	1,000	277	208	166
BRAILA	500	400	-20%	400	400	500	408	408	326
SIBIU	1,500	2,600	73%	2,300	2,700	2,900	67	57	53

0%	no change
50%	50% more
100%	double

50	x1 delivery per 50 residents
100	x1 delivery per 100 residents
200	x1 delivery per 200 residents

Source: INS

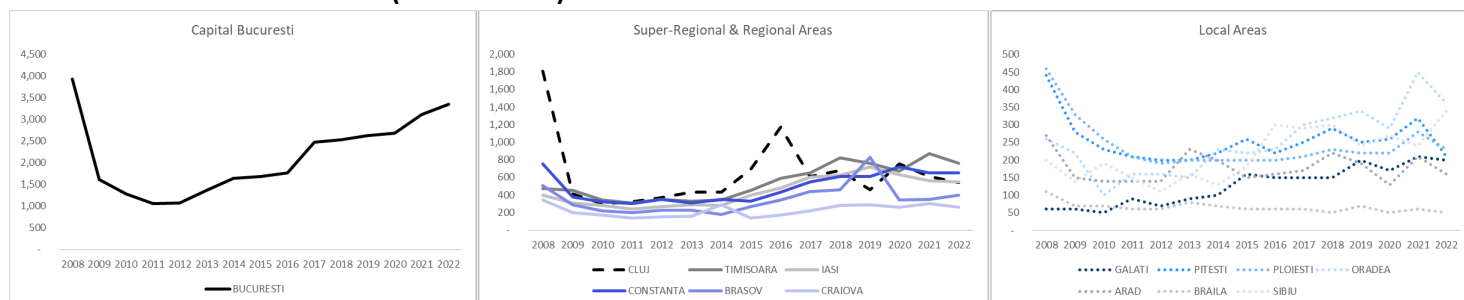
➤➤➤ **Significant differences exist between the major cities in terms of new deliveries growth in the last decade and observed equilibrium levels on a per capita basis in the recent past.**

Supply

New Deliveries – Future

Bucuresti net authorised residential area has increased steadily since 2011 – despite the first half year of 2022 when new building permits were not being issued, this has caught up in the second half of the year and the year closes slightly higher than 2021. However, some of the building permits have been contested, so the situation is not as clear as presented by the data. Cluj has been cooling off from a 2016 net authorized area peak, which has been seen in the record number of new deliveries during 2018 and 2019 (but it’s been going up again recently), while the other super-regional & regional areas behaviour has been more stable. Among the local areas, Oradea (and to a lesser extent Sibiu) are in a construction boom with many new projects being authorized, while the rest of the local areas have been less dynamic, with Braila again being the prime negative example.

Net authorized residential area (in thousands)



Source: INS

One should be able to anticipate the future housing supply over 1-3 years by assessing the data regarding the net authorized residential area. Given some general assumptions, the two series (net authorised residential area and finalised dwellings) should be positively correlated with a lag of 1-3 years assuming an average time to build the dwellings from when the building permit was issued. Trialing out positive correlation tests for the available yearly data, including & excluding the 2008 housing bubble, the following results are obtained:

Correlation Test, Net Authorised Residential Area & Finalised Dwellings

City	INCLUDES 2008 housing bubble			EXCLUDES 2008 housing bubble					
	17 year 2005 CD & 2004 BP	17 year 2005 CD & 2003 BP	17 year 2005 CD & 2002 BP	10 year 2012 CD & 2011 BP	10 year 2012 CD & 2010 BP	10 year 2012 CD & 2009 BP	7 year 2015 CD & 2014 BP	7 year 2015 CD & 2013 BP	7 year 2015 CD & 2012 BP
BUCURESTI	48%	38%	23%	85%	88%	83%	80%	89%	91%
CLUJ	64%	39%	26%	55%	79%	81%	23%	67%	75%
TIMISOARA	89%	85%	76%	94%	94%	83%	88%	96%	93%
IASI	63%	55%	41%	41%	35%	17%	-48%	-36%	-47%
CONSTANTA	63%	38%	17%	49%	34%	9%	45%	32%	-7%
BRASOV	80%	61%	53%	83%	58%	61%	80%	43%	58%
CRAIOVA	56%	27%	-5%	72%	65%	40%	60%	54%	35%
GALATI	-22%	-2%	17%	65%	83%	67%	46%	72%	61%
PITESTI	57%	57%	57%	67%	31%	27%	93%	25%	15%
PLOIESTI	71%	79%	64%	-24%	33%	53%	-46%	-78%	-45%
ORADEA	68%	71%	63%	74%	80%	78%	79%	91%	74%
ARAD	79%	42%	5%	-4%	-2%	38%	-32%	0%	49%
BRAILA	58%	-9%	-37%	10%	-9%	-25%	-46%	7%	11%
SIBIU	78%	53%	34%	76%	40%	32%	60%	-12%	15%

100%	strong positive correlation
50%	limited positive correlation
0%	no relationship (below 0 implying a negative correlation)

Source: INS

The highest positive correlation is noted in Bucuresti, Cluj & Timisoara when assessing the last 10 or 7 years with the strongest one shown when considering a 2-year gap (followed by 3-year gap) between the net authorized residential area and finalised dwellings. The other cities do not exhibit strong positive correlations except 1-2 (like Oradea or Brasov) – the small size of the markets in terms of unit deliveries makes it hard to do sensible forecasts in this sense.

➤➤➤ **Larger markets exhibit a positive relationship between net authorized residential area & finalised dwellings with a 2-3 year gap.**

Supply

There is no relationship observed when including the 2008 housing bubble, showing that new residential supply (at least the early stages before starting construction) is elastic and developers respond very quickly to market conditions. Similarly, despite the high number of permits being issued in 2022 in some markets, new development has slowed down, with some developers choosing a wait & see approach in the last 12 months, which is expected to continue in 2023. Besides the economic outlook and uncertainty that has pushed back some of the developers, rising construction costs, development financing access and new construction standards (nZEB standard is mandatory for any new residential constructions since the beginning of 2021 in EU) have contributed to this as well. Therefore, it's expected to see perhaps less deliveries in the current market conditions in 2023 & 2024 than otherwise it would have been the case under normal conditions and as indicated by the volume of authorized residential area.

Bucuresti, Cluj, Constanta, Galati, Ploiesti and Oradea show the potential to be the markets with a higher number of new dwelling deliveries in the next 2 years, while most other markets are expected to be similar or less than the previous years. From the key markets, Iasi & Brasov appear to lack new projects coming into the market (yet, the market size it's not that large, which means it's sufficient for 2-3 large new projects to receive authorization and lead to a higher number of deliveries). However, considering the wait & see approach, there is good scope in both Bucuresti and Cluj to see a relatively stable number of units delivered in 2023 & 2024, in line with the previous years. Oradea has the potential to reach a new record number of deliveries over the short-term as well as Constanta, but the data is distorted by secondary homes/ new sea-side projects being authorized, which is not representative of the primary market. Galati experienced some up-site in the last three years, which could lead to a higher number of units in the short-term, but the existing market is very small.

Net authorized residential area & new deliveries 2023/2024

City	2016	2017	2018	2019	2020	2021	2022	2016-2022 Sparklines	2020-2022 vs 2017-2019	2021 vs 2019	2022 vs 2019	2023 & 2024 DELIVERIES NORMAL CONDITIONS	2023 & 2024 DELIVERIES MARKET CONDITIONS	2023 & 2024 DELIVERIES RANGE OF UNITS	AVG DELIVERED UNITS 2019-2021	MAX DELIVERED UNITS 2019-2021
BUCURESTI	1,770	2,470	2,530	2,620	2,680	3,110	3,350		20%	19%	28%	More	Stable	Aprox. 20,000	15,600	22,000
CLUJ	1,170	610	680	460	750	610	540		9%	33%	17%	More	Stable	7,000-8,000	7,000	8,000
TIMISOARA	590	650	820	760	670	870	760		3%	14%	0%	Stable	Stable	4,000-6,000	5,400	6,300
IASI	480	600	620	720	630	560	550		-10%	-22%	-24%	Less	Less	2,000-3,000	2,800	3,400
CONSTANTA	430	550	610	610	720	650	650		14%	7%	7%	More	More	Aprox. 4,000	4,000	4,000
BRASOV	340	440	460	830	340	350	400		-37%	-58%	-52%	Less	Less	2,000-3,000	4,000	4,100
CRAIOVA	170	220	280	290	260	300	260		4%	3%	-10%	Stable	Stable	Aprox 1000	1,400	1,600
GALATI	150	150	150	200	170	210	200		16%	5%	0%	More	More	Aprox 1000	800	1,000
PITESTI	220	250	290	250	260	320	210		0%	28%	-16%	Stable	Stable	Aprox 2000	1,900	2,200
PLOIESTI	200	210	230	220	220	280	230		11%	27%	5%	More	Stable	Aprox 1,000	1,200	1,200
ORADEA	230	300	320	340	290	450	360		15%	32%	6%	More	More	2,000+	1,900	2,300
ARAD	160	170	220	190	130	210	160		-14%	11%	-16%	Less	Less	<1,000	600	1,000
BRAILA	60	60	50	70	50	60	50		-11%	-14%	-29%	Less	Less	<500	500	500
SIBIU	300	290	300	240	270	240	340		2%	0%	42%	Stable	Stable	2,000-3,000	2,500	2,900

Source: INS

-20%	Less
0%	Stable
20%	More



Some developers choose a wait & see approach that will lead to a lower number of units delivered than otherwise expected in "normal conditions" in most of the metropolitan areas.

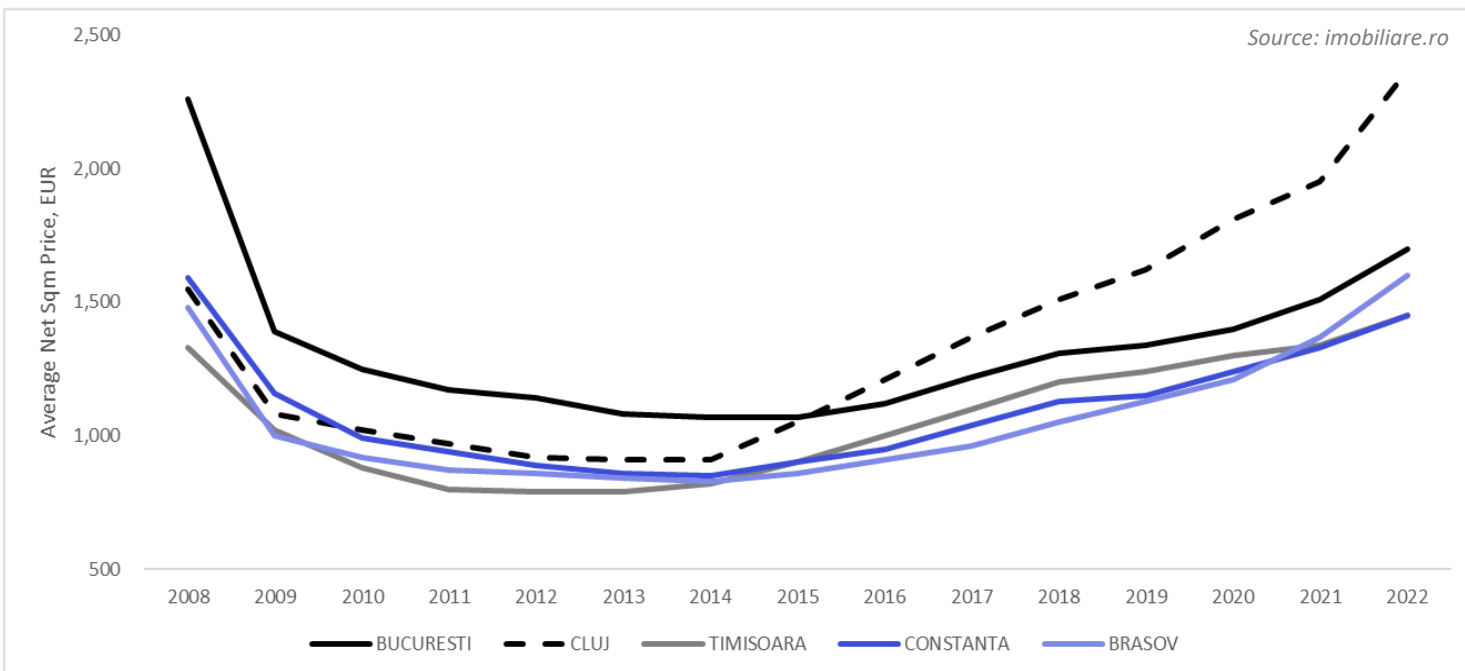
Pricing

The demand and supply balance determines equilibrium levels for pricing and transactions.

PRICING

Imobiliare.ro, the largest online marketplace/ platform for dwellings offers in Romania, publishes a monthly average EUR requested sales price per net sqm for some of the key cities in Romania (note: the requested sales price is representative of the actual transaction prices, according to the research conducted by the platform, with under 5% price deviations in most of the cases). The data goes back to 2008 when the housing market was at it's peak.

Average Net Sqm Price, Key Cities in Romania, EUR



Back in 2008 Bucuresti had by some margin the highest residential prices on the local market (close to 2,300 EUR per sqm), while the other cities were clustered around 1,300-1,600 EUR per sqm. The crisis followed and prices dropped for the next 2-3 years, hitting a plateau for another 2-3 years and moving up again since 2015, around the same time with the observed rapid increase in savings. This time, Cluj has taken off and outpaced the growth in all the other cities, including the capital Bucuresti. Prices in Cluj are 50% more vs what they used to be at the peak of 2008, while Timisoara, Constanta, Brasov are in the range of plus or minus 10%, whereas Bucuresti is 25% less. There is no publicly available monthly index for the other cities, but from our experience, the rest of the cities have experienced a similar trajectory like the group of Timisoara, Constanta, Brasov and Bucuresti in some cases, but no similar example to Cluj.

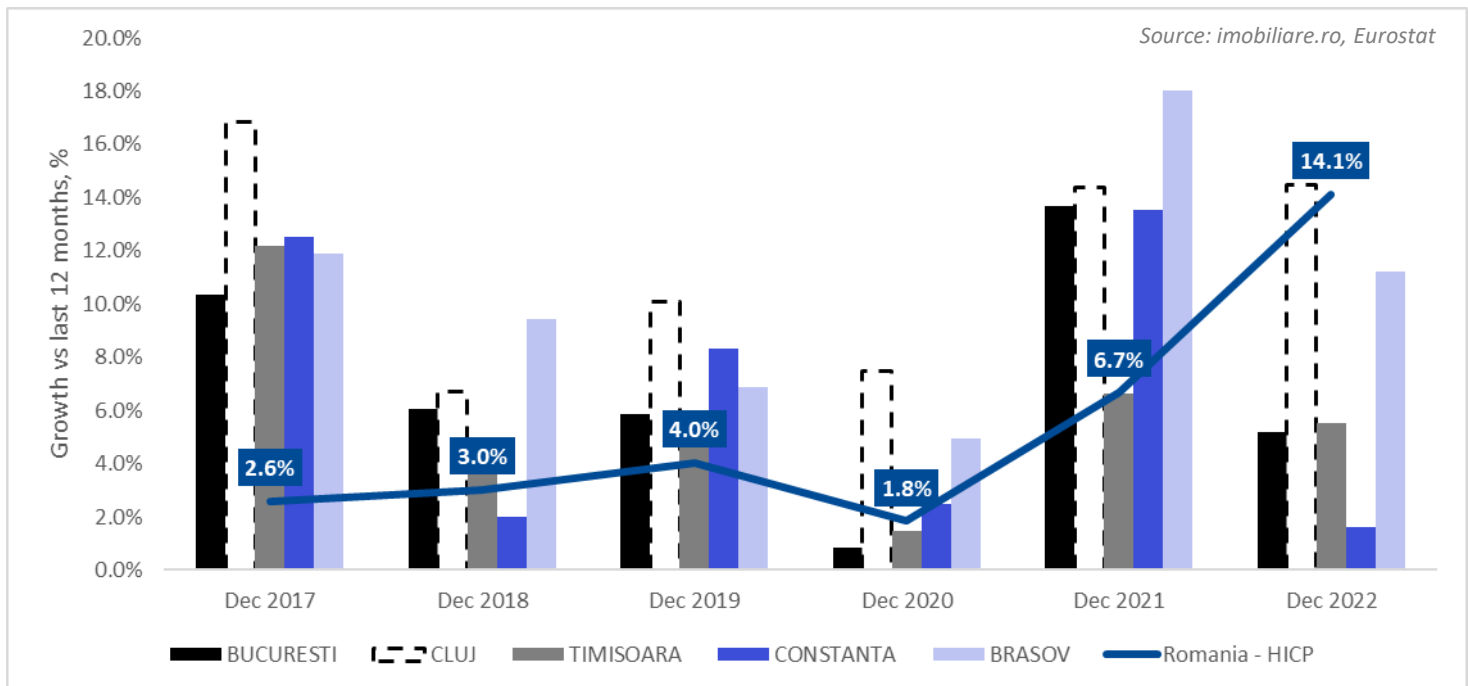


Cluj experienced the fastest growth in prices (50% more vs 2008 peak), while Timisoara, Constanta and Brasov are close to where they used to be in 2008, whereas Bucuresti is circa 25% lower than the 2008 peak.

Pricing

Housing prices growth outperformed inflation growth in the last couple of years. This positive real growth in residential prices turned around in 2022 in all the key metropolitan areas, except for Cluj, which has slightly outperformed the inflation growth and Brasov being relatively close to inflation. Bucuresti, Timisoara and Constanta residential prices growth has been well under the inflation growth. In real terms, housing in those cities is cheaper by some margin at the end of 2022 vs the end of 2021 - this trend will most likely remain during 2023.

Housing prices & Romania HICP growth vs previous 12 months, Dec 2017-Dec 2022, %

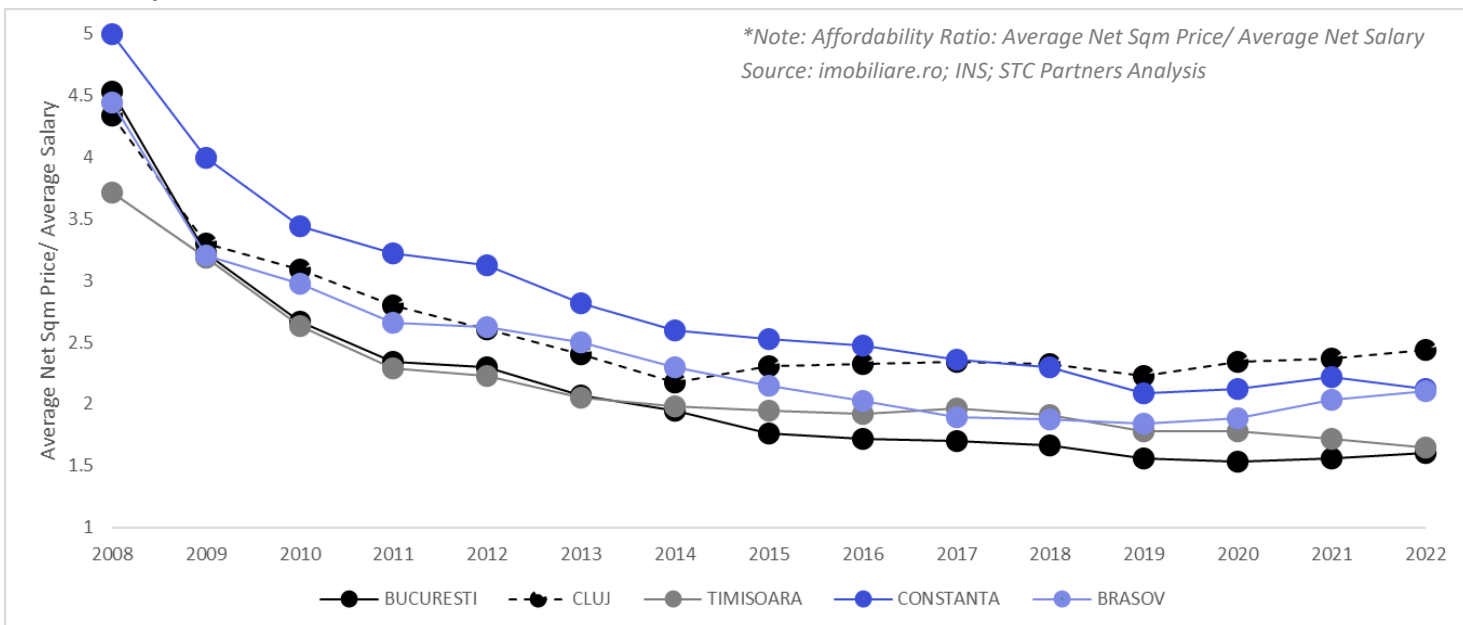


»» Housing prices did not keep up the pace with inflation in 2022, except for Cluj and to a lesser extent Brasov.

The normal question to come to mind is whether these prices are sustainable and what is indeed sustainable in the first place. As discussed previously, recurring earnings/ salaries are one of the main sources of purchasing power for most prospective buyers, therefore it's normal to compare earnings to residential prices across time and locations to have a perspective of housing affordability.

Pricing, Affordability

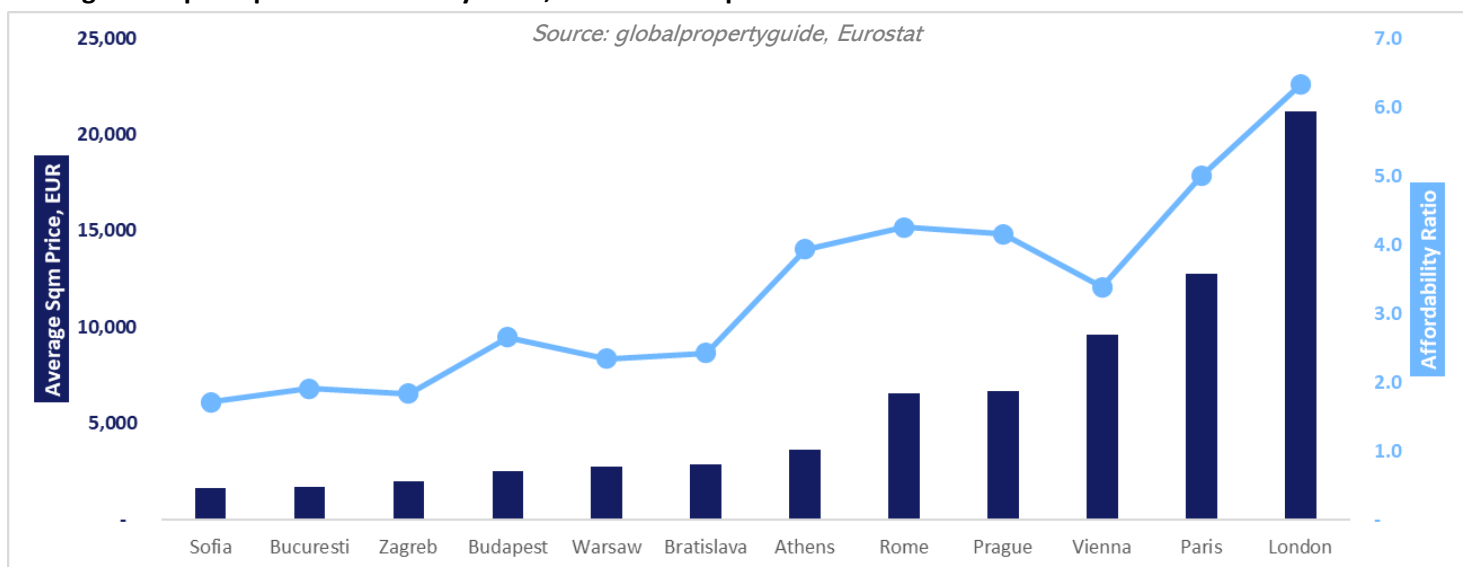
Affordability Ratio*



Back in 2008, the affordability ratio was more than 4.0 in all the major cities. In Bucuresti, the average price per net sqm for an apartment was close to 2,300 EUR, but the average salary was only 500 EUR. Today, the average price in Bucuresti is 1,700 EUR sqm, but the earnings have more than doubled in the meantime with average salary slightly over 1,000 EUR (i.e. affordability ratio of close to 1.7). Bucuresti & Timisoara are the cities with an affordability ratio lower than 2.0 (both at 1.7), Constanta & Brasov around 2.0 and Cluj close to 2.5. It is worth noting that both Constanta & Brasov observed pricing is skewed by secondary homes and investment type of deals, given the touristic nature of the areas, so the data is not fully representative of the primary residential market. By comparison to other metropolitan areas in Europe, the capital Bucuresti scores very well in this respect.

➤➤➤ **Affordability ratio is significantly lower than the 2008 peak, with Cluj ahead of the pack, followed by Constanta and Brasov, while Bucuresti and Timisoara have the most affordable dwellings.**

Average Price per Sqm & Affordability Ratio, Selected European Cities



The data from “globalpropertyguide.com” was used where the average price is defined by the source as ‘average price per sqm of 120 sqm apartments located in the centre of the most important city of each country’. Another data source for residential prices in European cities is ‘Deloitte Property Index’, leading to similar conclusions as well.

➤➤➤ **Bucuresti has a very good affordability ratio by comparison to European peers.**

Pricing, Affordability

As shown on the previous graph, Bucuresti (<2.0 affordability ratio) scores well by comparison to neighbouring CEE capitals that are in the range of 2.0-3.0 except Sofia and Zagreb, which are similar to Bucuresti. The more one goes towards Western Europe, the higher the ratio with London being a clear outlier. The story is not as simple, as there are some fundamentals behind on why the prices will be so much higher in the developed world (e.g., international hubs/cities consolidating global demand, institutional players, higher income inequality, lower risk investments impacting expected returns and therefore valuation, better financing conditions, etc.), but, regardless, what it does tell is that if one looks outside the country, it'll realize Romania has some of the most affordable housing market, even when looking at the immediate neighbours, whose economic situation and stage of development is similar to Romania.

By now it has been figured out that prices today in the major cities in Romania are nothing like the 2008 housing bubble, some differences exist among cities in terms of affordability, but the cities appear to score fairly well in terms of affordability by comparison to CEE neighbours and rest of Europe (except for Cluj). However, the question of what is sustainable has not been addressed yet – it may well be the case that what it's even today on the market in terms of affordability is not sustainable. Before addressing this question, one should wonder whether affordability is the only factor that matters. Despite the affordability ratio being an easy to compute calculation and it plays favourably for Romania, we know for a fact that other more developed markets experienced affordability ratios in excess of 3.0 or more for many years, so clearly, affordability is not the only factor.

Affordability Ratio

Starting from the affordability ratio, let us consider some simulation of what this ratio implies for someone looking to purchase a standard 2-room apartment. Considering an average net salary of circa 1,000 EUR / month, we run some standard simulations on what it means for a person buying a standard 2 room apartment (50 net sqm) for different affordability ratios/ residential price per sqm and scenarios on purchase type: cash only transaction and cash + credit transaction. The calculation is expressed in EUR, but the mortgage credit & interest rate is assumed under the local currency (RON) conditions for a 30-year period, being the prevailing model locally.

Average Earning Person Buys Average Priced House, General Simulation

Average Earning Person Buys Average Priced House - General Simulation											
		RO CITIES AFFORDABILITY RATIO									
Price per SQM		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000		
Monthly Salary		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000		
Affordability Ratio		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0		
Apartment Price - 50 SQM		25,000	50,000	75,000	100,000	125,000	150,000	175,000	200,000		
CASH Transaction											
No of years needed (20% saving ratio)		10	21	31	42	52	63	73	83		
CASH + CREDIT Transaction											
CASH - 25%		6,250	12,500	18,750	25,000	31,250	37,500	43,750	50,000		
No of years needed (20% saving ratio)		3	5	8	10	13	16	18	21		
CREDIT - 75%		18,750	37,500	56,250	75,000	93,750	112,500	131,250	150,000		
Monthly mortgage payment	Monthly Mortgage - 10.0% i/r	(170)	(330)	(500)	(660)	(830)	(990)	(1,160)	(1,330)		
	Monthly Mortgage - 9.0% i/r	(150)	(300)	(460)	(610)	(760)	(910)	(1,060)	(1,220)		
	Monthly Mortgage - 8.0% i/r	(140)	(280)	(420)	(560)	(690)	(830)	(970)	(1,110)		
	Monthly Mortgage - 7.0% i/r	(130)	(250)	(380)	(500)	(630)	(760)	(880)	(1,010)		
	Monthly Mortgage - 6.0% i/r	(110)	(230)	(340)	(450)	(570)	(680)	(790)	(910)		
Monthly mortgage payment as share of income	Monthly Mortgage share of salary - 10.0% i/r	17%	33%	50%	66%	83%	99%	116%	133%	RO BANKS i/r	
	Monthly Mortgage share of salary - 9.0% i/r	15%	30%	46%	61%	76%	91%	106%	122%		
	Monthly Mortgage share of salary - 8.0% i/r	14%	28%	42%	56%	69%	83%	97%	111%		
	Monthly Mortgage share of salary - 7.0% i/r	13%	25%	38%	50%	63%	76%	88%	101%		
	Monthly Mortgage share of salary - 6.0% i/r	11%	23%	34%	45%	57%	68%	79%	91%		
		20%	very good								
		30%	sustainable (eligible for bank financing)								
		40%	unsustainable (in excess of 40% is not eligible for bank financing)								

Source: STC Partners Analysis

Note: i/r – interest rate

Pricing, Affordability

Given a 20% savings ratio, it will take the average earnings person 30-50 years to save the entire cash needed to buy an apartment (30 for 1.5 affordability ratio and 50 for 2.5 affordability ratio), clearly this is not working, but still the market has never been well below a 1.5 affordability ratio in the main metropolitan areas. Also, transactions in Romania are predominantly cash-based with all the main markets exhibiting at least 50%+ cash-only transactions with the premium/higher end of the market going up to 80%+ cash-only transactions. In the cash & credit scenario, things get somehow better, as based on the current market interest rates and cash contribution requirements (assumed at 25%, but can be lower), an average earning person can buy (but yet struggles) even in the 'cash + credit' situation when the affordability ratio is 2.0 or higher, while for a 1.5 affordability ratio it becomes more feasible, meaning that the client needs to save under <10 years for the advance and pay out of his/ her income no more than 40% towards mortgage payments in a cash + credit transaction. Still, market data shows that transactions are mostly cash-based.

How is this possible?

In this simulation, it has been assumed that the average earning person purchases an average priced housing, but in the real world and clearly shown by the above numbers, this is not the case, unless the buyer has other sources of income/ wealth. The least-earning income earners do not afford a house based on their recurring earnings (even if the cheapest housing) – this income group tends to live in overcrowded apartments, rent or in the best case inherit some property. At the same time, wealthy individuals do not own only one property, they tend to hold multiple properties as investments and change housing more often. The affordability ratio as defined earlier it's a proxy for affordability, an easy-to-calculate metric to allow for comparisons, but it does not reflect real-world transactions. It's a simple idea if one thinks about it, but with important implications.

»» The average income earner does not buy an average-priced house.

In this respect, studies have shown that both income and housing prices distributions are positively skewed with the size of skewness increasing as incomes are higher. There is limited work available on the distribution of incomes in Romanian cities, but from much more developed economies, we learnt about the skewness of the income distribution. A rough estimation indicates that the average is circa 20% higher than the median and 80th/90th/95th percentiles have 2/3/4 times higher incomes than the average. Basically, this means that if the average salary is 1,000 EUR then 20% of the people earn 2,000 EUR+, 10% of the people earn 3,000 EUR+ and 5% of the people earn 4,000 EUR+. The higher the income, the larger becomes the gap between the top 20%/10%/5% and the rest. To get a perspective of numbers, let's consider that metropolitan areas in Romania follow such an income distribution.

When do prices go too high up and there are just not too many people left to buy?

The earlier simulation indicates that real-world transaction (either cash or cash & credit) have an affordability ratio of 0.5 (lower limit) to 1.0 (upper limit) in the case of cash only and 1.0 (lower limit) to 1.5 (upper limit) in the case of cash & credit, excluding the availability of any other financial or non-financial holdings. The person earning 1,000 EUR per month will rather look to purchase a dwelling with a price between a minimum of 500 EUR to a maximum of 1,500 EUR per sqm depending on the transaction type – it's worth mentioning that 500 EUR per sqm priced dwellings do not really exist in the metropolitan areas, therefore making it very difficult for the average income earner to do a cash-based only transaction based on savings from recurring earnings, making this client segment more dependent on the credit conditions.

Testing in this basic model those two types of transactions, based on an income distribution with the above characteristics, one can get a proxy of the number of income earners who can actually purchase at the average price. The average transaction price (plus or minus 30% range) is quite a good indication of where most of the transactions take place in a market (around half of the transactions for the modelling purpose). The simulation is run for Bucuresti and Cluj, given the contrast in affordability ratios between the two.

Pricing, Affordability

Affordability Ratio, Income Distribution, Transactions and No of People Affording Acquisition

			Bucuresti			Cluj		
CASH Transaction								
Affordability Ratio	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Req. Earnings To Make It Affordable Upper Limit: 1.0 affordability ratio	500	1000	1500	2000	2500	3000	3500	4000
Req. Earnings To Make It Affordable Lower Limit: 0.5 affordability ratio	1000	2000	3000	4000	5000	6000	7000	8000
Deviation from 1,000 EUR Mean Upper Limit: 1.0 affordability ratio	-50%	0%	50%	100%	150%	200%	250%	300%
Deviation from 1,000 EUR Mean Lower Limit: 0.5 affordability ratio	0%	100%	200%	300%	400%	500%	600%	700%
xx% of income earning population Upper Limit: 1.0 affordability ratio	Over 50%	40%	30%	20%	10%	10%	5%	5%
xx% of income earning population Lower Limit: 0.5 affordability ratio	40%	20%	10%	5%	5%	5%	5%	5%
TARGET CLIENTS								
Upper Limit: 1.0 affordability ratio			456,000		26,000			
TARGET CLIENTS								
Lower Limit: 0.5 affordability ratio			152,000		13,000			
CASH + CREDIT Transaction								
Affordability Ratio	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Req. Earnings To Make It Affordable Upper Limit: 1.5 affordability ratio	400	700	1000	1400	1700	2000	2400	2700
Req. Earnings To Make It Affordable Lower Limit: 1.0 affordability ratio	500	1000	1500	2000	2500	3000	3500	4000
Deviation from 1,000 EUR Mean Upper Limit: 1.5 affordability ratio	-60%	-30%	0%	40%	70%	100%	140%	170%
Deviation from 1,000 EUR Mean Lower Limit: 1.0 affordability ratio	-50%	0%	50%	100%	150%	200%	250%	300%
xx% of income earning population Upper Limit: 1.5 affordability ratio	Over 50%	Over 50%	40%	30%	20%	20%	20%	10%
xx% of income earning population Lower Limit: 1.0 affordability ratio	Over 50%	40%	30%	20%	10%	10%	5%	5%
TARGET CLIENTS								
Upper Limit: 1.5 affordability ratio			609,000		52,000			
TARGET CLIENTS								
Lower Limit: 1.0 affordability ratio			456,000		26,000			
Transactions 2021 - total			59,500		12,100			
Transactions 2022 - total			64,700		10,000			
Transactions 2021 - @ average price			29,750		6,050			
Transactions 2022 - @ average price			32,350		5,000			
Max People Affording			609,000		52,000			
Transaction every xx YEARS			20		9			

The simulation indicates that up to 600k people in Bucuresti and 50k people in Cluj afford (either as cash or cash + credit) to purchase a dwelling at the average price, given the affordability ratio of close to 1.5 in Bucuresti and 2.5 in Cluj. Considering the observed number of dwellings transactions in the last two years, to sustain such a level, it'll mean that this pool of people in Bucuresti needs to buy a house every 20 years, while in Cluj every 9 years. Given the mobility factors discussed earlier, every 20 years is a rather sustainable level, whereas every less than 10 years it's a clear indication of an unaffordable and unsustainable market.



There are not too many people left to afford existing housing prices in Cluj and maintain such a relationship of prices to earnings. Bucuresti prices remain affordable and sustainable from this point of view.

Pricing, Affordability

Are there some particularities of Cluj that can explain the observed affordability ratio?

Our model assumed similar housing and income price distributions between Bucuresti and Cluj.

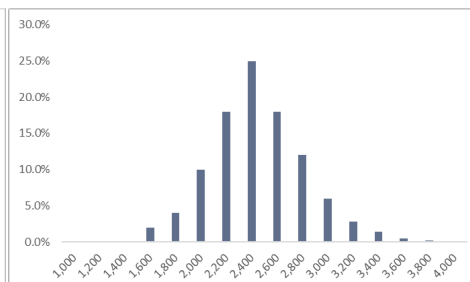
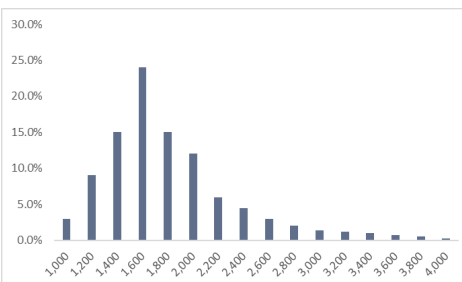
Housing Price Distribution

Average Prices Per City Location
Imobiliare Q4 2022 Residential Report

Distribution of Housing Prices in BUCURESTI
EUR price per net sqm, estimation

Distribution of Housing Prices in CLUJ
EUR price per net sqm, estimation

Category		Bucuresti	Cluj
Average Price	General Market	1,716	2,409
	Central	2,527	2,648
	Semi-central	1,750	2,548
	Periphery	1,495	2,201
Delta to Average	Central	47%	10%
	Semi-central	2%	6%
	Periphery	-13%	-9%



Source: imobiliare.ro; STC Partners Analysis

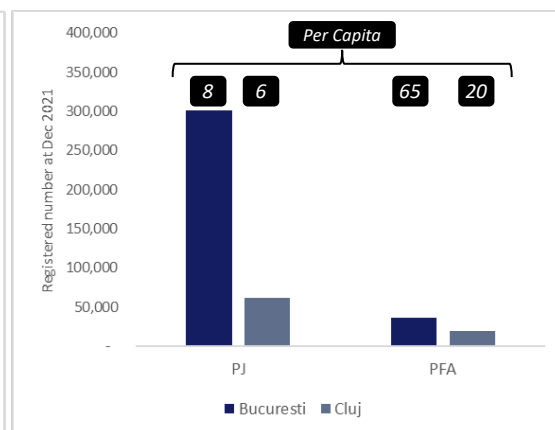
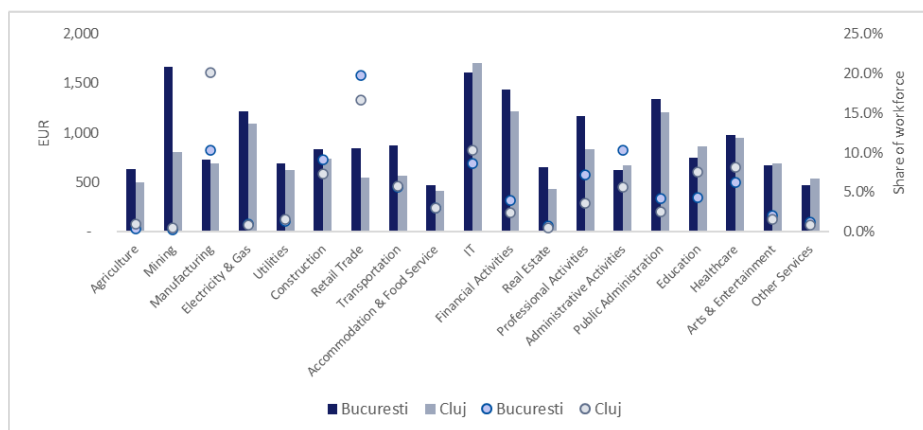
The prices in Bucuresti follow a positively skewed distribution with 50%-60% of the prices positioned in a +- 25% interval from the average price of 1,700 EUR per sqm, with some presence of low-priced units as well as a premium segment going well in excess of 2,500 EUR per sqm. By contrast, Cluj prices are clustered more around the average with up to 80% of the prices in the +- 25% interval away from circa 2,400 EUR per sqm, a closer mimic of a normal distribution with a low standard deviation, as a result of the limited price differences between areas in the city. This could indicate an overheated market across all segments, different demand factors, specifically an income distribution supporting the generally high price levels, or limited housing supply. The limited supply is easy to cancel out as an argument, despite the city being surrounded by areas with hills, leading to less suitable land, the city experienced the highest number of new deliveries on a per capita basis in the last decade as well as the existing housing stock per capita is in line with rest of the cities.

Incomes Distribution

Sector workforce analysis highlights a higher share of IT workers (circa 10-20% more) earning an average salary by circa 10% more in Cluj than in Bucuresti, but this is one of the few categories where salaries in Cluj are ahead of Bucuresti. The financial sector, the next best-paying private sector, it's considerably more developed in Bucuresti than Cluj. Cluj business sector (PJ-legal entities) is slightly in favour of Cluj, while the self-employed sector (PFA-self employed) is more than three times higher in Cluj than in Bucuresti, compared on a per capita basis. There were circa 20k self-employed entities in Cluj, most of them working in IT and earning high salaries. In essence, there is a higher pool of people in Cluj vs Bucuresti earning a higher salary than indicated by the earlier income distribution assumption and this rapidly expanding sector of well-paid IT professionals pushed residential prices across the market in the last couple of years. Even when accounting for this additional pool of high-income earners, and neglecting the high concentration of transactions around the average, the results still indicate a disequilibrium in the market between current levels and what is sustainable affordable. Given the general recent layoffs and slow down of growth in the IT sector, which are expected to continue in 2023, this might just represent the missing puzzle piece needed for a price correction in Cluj.

Average Salaries (EUR) & Share of Workforce (%) per NACE Codes, 2021

PJ and PFA Total and Per Capita



Source: INS, ONRC; Notes: PJ – Legal Entity; PFA – Self Employed

Even after accounting for the particularities of the housing prices and income distributions in Cluj, the results do not support the observed affordability ratio. The prices seem to be too high in relation to earnings in Cluj.

Pricing, Valuation

The earlier simulation assumed recurring earnings, savings & credit with no consideration of other types of wealth or family support. While simplistic in nature, it demonstrated the existing large differences between Bucuresti and Cluj.

Family/ relatives are important in bringing additional cash to the transaction. It's the typical financial help the children receive from their family/ relatives in the Romanian culture where the family can afford this. There are several good reasons why the family might afford to do this:

- The family already owns a house (the country ranks first in the world for private home ownership, as discussed earlier), which allows the family to pass on wealth to children/ grandchildren and save money easier;
- The family has been working for much longer and benefitted from good incomes for a more extended period of time;
- Strong culture towards housing ownership (especially among the family/ parents, as discussed earlier);

Affordability is not everything, there are developed markets that have shown the ability to sustain an affordability ratio in excess of 3.0 or more over a prolonged period of time. How is this possible? The answer lies in the nature and higher maturity of those specific markets, the investment thesis being one of the core drivers in the mature markets.

Residential Property – Investment Thesis

From an investment perspective, one should think of residential property purchase as an investment product and compare it with other investment alternatives. Such comparisons will bring some light on whether the residential property is over-valued or under-valued.

Theory – Short Introduction

The return on investment is given by the net cash flows the asset is expected to produce. In the case of housing, the net cash flows are given by the rent (subtracting the operational and capital expenses) and an expected exit value/ re-sell price in the future - standard valuation methodology calculates an exit value in year 10. To be able to value the asset today, these future net cash flows must be discounted by some rate of expected return ("discount rate") considering the assumed risk, representing how much one should be satisfied to make yearly, to determine the present value of those future cash flows. This discount rate should make the investor indifferent between other types of investments, as it's a very good / "perfect" reflection of the pursued risk: higher the risk, higher the return. The safest form of investment is to buy a government bond issued by a strong government, it is a "risk free" investment, as it's unlikely that such a government will default on its debt and the investor loses the money. The next safest investment will be to buy a corporate bond from a solid sizeable international corporation, which is still very safe, as it's unlikely that such a corporation will fail, but yet less likely than the government doing it, so the investors request a higher rate of return. The examples can continue, but in essence, analysts, among other things, spend much time in complex mathematical & financial models to determine discount rates and compare risks between different types of investments to correctly price investments, including housing acquisition. In our calculation, we consider a simple model to assess the residential pricing in Bucuresti and Cluj from an investment perspective. The model follows the standard methodology of Discounted Cash Flow (DCF) valuation.



Residential property is one of the many investment alternatives available. Pricing the risk correctly and therefore the required rate of return, residential prices can be assessed from a valuation perspective.

Pricing, Valuation

Assumptions

Market average rents and prices are based on publicly available data via sources like “imobiliare” or real estate consultancy companies. Operating expenses & capital expenditures, expressed as % of gross rent, are based on international benchmarks, listed residential players and internal know-how. Determining suitable risk (“discount factor”), the easiest way to estimate the risk associated with a property purchase is to look at some comparable already existing, but there is no listed company owning significant residential property in Romania, the renting model at large scale being inexistent, so there does not exist such external valuations publicly available for residential property, which is the case for other real estate asset classes like office, retail or industrial – one can use the differentials in discount rates from the other real estate asset classes and international benchmarks of risks assessments between real estate asset classes to get an approximation. As a preliminary conclusion, residential property is one of the safest real estate asset classes.

However, residential discount factors exist in Western Europe where the residential renting market is present at large scale, in some cases even representing 50% of the housing stock. We looked at the “discount rates” and “growth rates” used by external valuers for Vonovia, the largest residential property owner in Germany, at the latest reporting date (Dec 2021). The discount rate (pre-tax) used for main German cities lays between 4.0%-4.5% and growth rates in range of 1.0%-1.8%, in line with the inflation prior to the rapid increase experienced with beginning of 2022. It’s worth noting that discount rates and short-term growth rates used at Dec 2022 by external valuers should increase in line with the risk free rates and inflation impact on rentals, but the component of residential risk should remain fairly stable, which is around 4.0%-4.5% given the 0.0% risk free rate for Germany back in December 2021.

Different countries carry different risks in terms of political, sovereign debt, public deficits, administrative, legislative, etc., so investors request additional return to compensate them for the higher risk associated with investment in a specific country. New York University publishes such risk premia calculations, with the latest one published in January 2023, assessing such risks of different countries. Adding the country risk for Romania (3.8%) to the 4.0%-4.5% residential risk ends to a residential property risk assessment of 7.8%-8.3% for the main metropolitan areas in Romania. Depending on the risk perception of the investor, this might be further updated to account for other risks such as additional residential local specific risk, liquidity risk, property risk, etc. In our results (see Annex 2) general results range for “discount rates” from 7.9% to 8.5%. Rental growth rates are higher in Romania, given the ongoing purchasing power growth and convergence with the more developed European cities, as already seen historically in the earnings and average rentals growth. In the short-term, 2023 and 2024 some faster increase in rentals is expected as a result of inflation and increasing rental demand at the expense of buying (rental increases already experienced in 2022), whereas over the long-term, the perpetual growth rates assumed are in range 2.7%-3.3%. Significant differences are expected to exist across the metropolitan areas, with the key ones that benefit from good socio-economic dynamics (e.g., Bucuresti, Cluj, Timisoara, Iasi) benefitting from more favourable risk premia as well as rental growth whereas other metropolitan areas are out of the presented ranges. These discount rates and rental growth rates are deemed suitable for a general assessment of the Bucuresti and Cluj markets. The calculation focuses on these two markets, as a result of the key differences in affordability ratio and their representativity as the leading local residential markets in Romania.

Results

The conclusion (see Annex 2) is that while Bucuresti property prices are fairly valued with limited risk for general corrections, the properties in Cluj are by at least 20% overvalued. Based on an investment thesis, average prices in Cluj should be at least 20% lower.

»» Bucuresti residential prices are fairly valued, whereas Cluj residential prices are overvalued by at least 20%.

Theory vs Real World

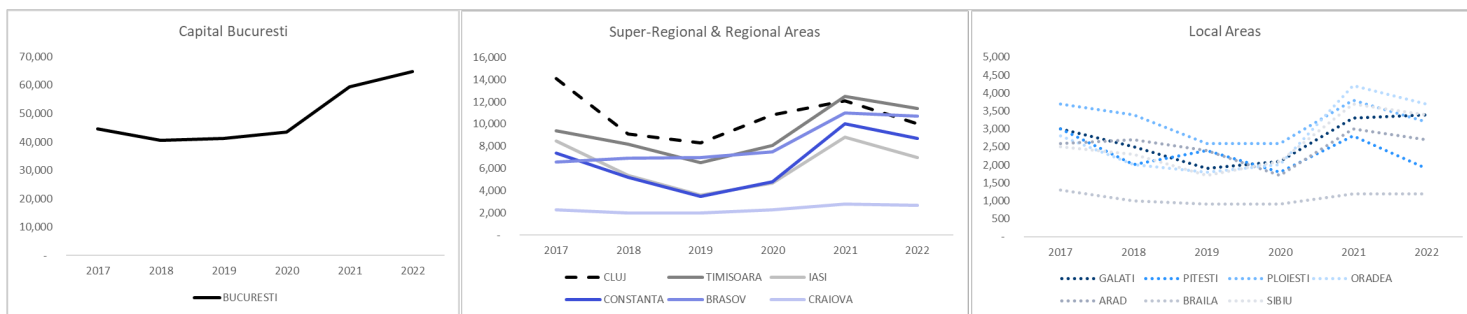
Markets can be highly inefficient, especially the residential one in Romania. We’ve done a general property investment analysis in Bucuresti and Cluj, but there is no professionalized residential investment market present in the country, having therefore a rather limited impact on how things play out from this perspective. The market equilibrium (pricing and transactions) results from many individual buyers and sellers, whose decisions are driven by many factors, among which the perception of risk & return do not follow investment theory.

Transactions

TRANSACTIONS

ANCPPI, the national land registry agency in Romania, records all closed transactions, and provides monthly data about the number of individual units transacted. As expected, Bucuresti metropolitan area records by far the most transactions in a given year (up to 6 times more than the next cities). The year 2021 represented a record on the number of transactions in most geographies, with all the markets pulling back in 2022. Bucuresti was the only market increasing, while Galati, Craiova, Brasov & Braila were stable – however, Galati, Craiova & Braila have very small markets compared to their peers.

Number of individual dwellings transactions, 2017-2022



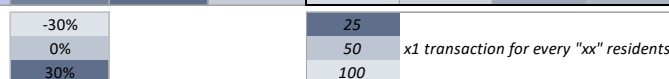
Source: ANCPPI

On a per capita basis, Brasov has the most transactions, followed by Constanta, Timisoara, Cluj, Bucuresti and Sibiu, whereas Braila, Craiova & Galati show the least number of transactions. Similar profile cities tend to be closer together than previously compared with the number of new deliveries, which in our view represents an indication of the desire to make transactions and the interest of prospective clients in new dwellings, but still in some of the markets the new product is missing. It's worth noting that both Brasov and Constanta stand out in the statistics in terms of number of transactions or new deliveries when compared on a per capita basis. In this respect, Brasov county is the main mountain area in Romania, while Constanta county, with the opening at the seaside, represents the main summer area in Romania, so transactions/ deliveries figures are pushed up by secondary homes or investment type deals, which have little to do with the primary residential market in the area. To some extent, this is also applicable for Sibiu, being an important touristic area as well.

Transactions 2017-2022 and per capita comparisons

City	2017	2018	2019	2020	2021	2022	2017-2022 Sparklines	2020 vs 2019	2021 vs 2020	2022 vs 2021	Population/ Transactions			
											2019	2020	2021	2022
BUCURESTI	44,600	40,600	41,300	43,500	59,500	64,700		5%	37%	9%	57	54	39	36
CLUJ	14,100	9,100	8,300	10,800	12,100	10,000		30%	12%	-17%	48	37	33	40
TIMISOARA	9,400	8,200	6,500	8,100	12,500	11,400		25%	54%	-9%	58	46	30	33
IASI	8,500	5,400	3,600	4,700	8,800	7,000		31%	87%	-20%	104	79	42	53
CONSTANTA	7,400	5,200	3,500	4,800	10,000	8,700		37%	108%	-13%	90	66	32	36
BRASOV	6,600	6,900	7,000	7,500	11,000	10,700		7%	47%	-3%	45	42	29	29
CRAIOVA	2,300	2,000	2,000	2,300	2,800	2,700		15%	22%	-4%	129	112	92	95
GALATI	3,000	2,500	1,900	2,100	3,300	3,400		11%	57%	3%	121	110	70	68
PITESTI	3,000	2,000	2,400	1,800	2,800	1,900		-25%	56%	-32%	88	117	75	111
PLOIESTI	3,700	3,400	2,600	2,600	3,800	3,200		0%	46%	-16%	80	80	54	65
ORADEA	2,800	2,000	1,800	2,000	4,200	3,700		11%	110%	-12%	113	102	49	55
ARAD	2,600	2,700	2,400	1,700	3,000	2,700		-29%	76%	-10%	69	98	55	61
BRAILA	1,300	1,000	900	900	1,200	1,200		0%	33%	0%	181	181	136	136
SIBIU	2,500	2,300	1,700	2,100	3,700	3,400		24%	76%	-8%	91	73	42	45

Source: ANCPPI; STC Partners Analysis

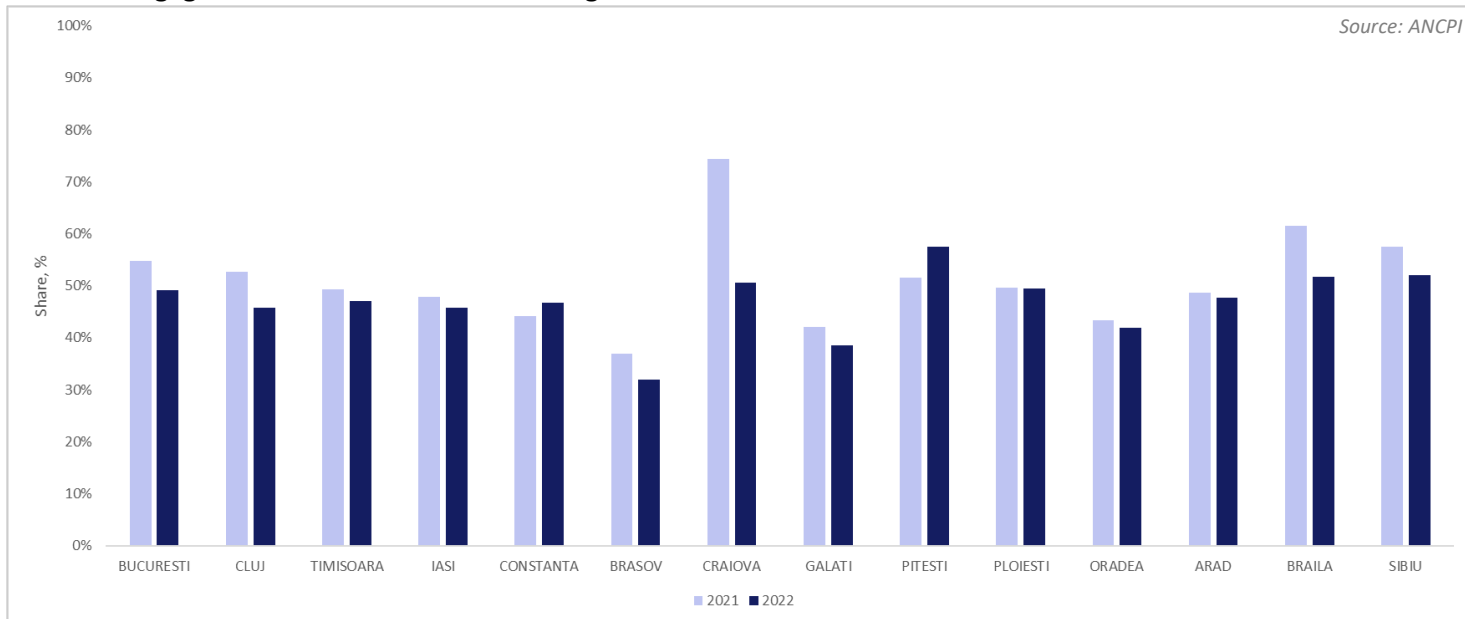


Transactions

»» On a per capita basis, number of transactions are more closely linked together in similar-profile metropolitan areas; however, some key differences remain between the metropolitan areas.

There is a general decrease in the number of new active mortgages as share of total transactions in 2022 vs 2021, representing circa 50% (give or take) in most markets. This trend is expected to accelerate in 2023, as a result of the high financing costs. However, the ANPCI data in this respect must be treated cautiously (see disclaimer).

Active mortgages as share of individual dwellings transactions



Disclaimer: data set from ANPCI shows inconsistent results (e.g., in some counties data recorded in 2017-2020 suggests that the share of new active mortgages was higher than the actual number of transactions, the share of the mortgage market in 2021 or 2022 in Craiova or Braila is higher than in the leading cities, Bucuresti April 2020-Dec 2022 no single mortgage was cancelled and such inconsistent examples could continue...)

Hands-on experience on the market as well as other studies completed by local market players show that in the recent past, on average, up to 60% of transactions in the key metropolitan areas are cash-based with key differences among the market segments. The premium segment can benefit from up to 80% cash-based transactions, whereas the low-middle segment is more dependent on credit-type transactions and also government programmes targeted at first-time buyers.

The share of cash-based transactions will increase further in 2023, at the expense of the costly credit transactions, which would lead to lower transactional volumes following the record year 2021 with a pushback already observed in 2022. The decrease in overall transactions could go down by up to 30% in 2023 vs 2022, getting back to the pre-pandemic levels.

»» Up to 60% of transactions in the main metropolitan areas are cash-based; the share of cash-based transactions will further increase in 2023, at expense of the costly credit, leading to lower transactional volumes.

Transactions

There is not much evidence in the market of finished developments, which did not sell out in the 6-12 months post-completion with the well-positioned projects being sold-out quicker post-completion. Some projects have this characteristic, but it's more the result of the strategy choice of the developer not to start selling prior to completion.

Share of new deliveries from total market transactions

City	New Deliveries					Transactions					Share of new deliviers from transactions				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
BUCURESTI	9,500	11,300	14,800	20,800	22,000	44,600	40,600	41,300	43,500	59,500	21%	28%	36%	48%	37%
CLUJ	5,800	7,600	8,000	5,500	4,700	14,100	9,100	8,300	10,800	12,100	41%	84%	96%	51%	39%
TIMISOARA	4,000	4,600	5,600	6,000	6,300	9,400	8,200	6,500	8,100	12,500	43%	56%	86%	74%	50%
IASI	3,400	3,000	3,400	2,000	3,400	8,500	5,400	3,600	4,700	8,800	40%	56%	94%	43%	39%
CONSTANTA	3,500	4,600	4,000	3,500	3,300	7,400	5,200	3,500	4,800	10,000	47%	88%	114%	73%	33%
BRASOV	2,500	4,000	3,900	4,100	3,000	6,600	6,900	7,000	7,500	11,000	38%	58%	56%	55%	27%
CRAIOVA	1,000	1,200	1,400	1,600	1,600	2,300	2,000	2,000	2,300	2,800	43%	60%	70%	70%	57%
GALATI	700	800	700	800	1,000	3,000	2,500	1,900	2,100	3,300	23%	32%	37%	38%	30%
PITESTI	1,400	1,700	2,200	1,700	1,700	3,000	2,000	2,400	1,800	2,800	47%	85%	92%	94%	61%
PLOIESTI	1,500	1,300	1,200	1,000	1,100	3,700	3,400	2,600	2,600	3,800	41%	38%	46%	38%	29%
ORADEA	1,300	1,300	2,300	1,900	2,100	2,800	2,000	1,800	2,000	4,200	46%	65%	128%	95%	50%
ARAD	700	500	800	600	1,000	2,600	2,700	2,400	1,700	3,000	27%	19%	33%	35%	33%
BRAILA	500	500	500	400	400	1,300	1,000	900	900	1,200	38%	50%	56%	44%	33%
SIBIU	2,900	2,500	2,900	2,300	2,700	2,500	2,300	1,700	2,100	3,700	116%	109%	171%	110%	73%

Source: INS, ANCP, STC Partners Analysis

25%	xx% share of new deliveries from transactions
50%	
100%	

The significant differences in terms of share of new deliveries from total transactions performed in the individual markets (<25% in some and over 100% in others) highlight the lack of new suitable products in some of the markets again, but still the desire of prospective clients to have access to new dwellings. It is indeed a case of supply creating demand in some markets, which are currently unexploited at their potential.

➤➤➤ **Supply creates demand, lack of suitable products in some of the markets, with significant differences across metropolitan areas in terms of how much the new deliveries represent from total transactions.**

Conclusion

The residential market in the main metropolitan areas of Romania is mixed, with some cities underpinned by good fundamentals and significant scope to continue the development of dynamic housing markets over the next years, while others have been left behind with limited scope to catch up unless significant positive socio-economic changes take place in the next decade. All the super-regional areas (meaning Bucuresti, Cluj, Timisoara, Iasi), Brasov among the regional ones and Oradea & Sibiu from the local ones have good potential to continue the development of dynamic primary residential markets. There is scope for Craiova to accelerate from the current levels, which are very low compared to its peers, whereas Constanta, Ploiesti, Arad and Pitesti do not have much scope to go beyond their current levels/ grow in line with the average market performance. Despite some of the data indicating good performance in Constanta, this is heavily influenced by secondary homes/ investment types of deals, which are not part of the primary market. Galati and Braila (especially Braila) are in clear decline to facilitate a dynamic housing market and are expected to be further left behind in the years to come, unless new private investments are directed into the areas, giving them a chance to catch up and reach similar equilibrium levels in line with Ploiesti or Pitesti.

In the short-term, demand is negatively affected in all the cities due to loss in purchasing power as a result of inflation, lower earnings growth, re-direction of savings into other types of investments (time deposits, govt bonds, etc.), negative wealth effect as well as record high mortgage financing costs (with Timisoara and Cluj registering the most dynamic mortgage markets in recent times). The size of the negative factors will not cause general market-wide disruption, as is expected to be the case in some international highly developed markets, as there is plenty of cash still available for real-estate transactions (record high savings at the end of 2021) and the mortgage market is not a general key demand driver with up to 60% of transactions being cash-based and mortgage market being one of the least developed in EU. The general need to upgrade from the existing stock to new modern dwellings is a strong factor that will play favourably for new developments in favour of old dwellings. The markets are not expected to be flooded by much new supply, relatively stable or less than observed in recent times, in the next two years, except for Oradea. The prices are generally affordable, a comparison with European capitals indicating very good affordability in Bucuresti and a situation nothing like the 2008 housing bubble, this being the case for all the cities. From a valuation perspective, residential properties in Bucuresti are fairly valued whereas in Cluj are over-valued by at least 20%. Therefore, there is limited scope for general downward price corrections, except for Cluj particularly and 2-3 other markets where the affordability ratio is more than 2.0 (but this being the case, besides Cluj, only in Brasov and Constanta where the secondary homes transactions distort the primary residential market), whereas in Bucuresti and most of the metropolitan areas there is limited scope for general price corrections and if experienced, this would be rather localized and driven by specific micro-specifics such as market segments, competition or seller motives. The total number of transactions is expected to push back up to 30% in 2023 in the key metropolitan areas from Romania and return to pre-pandemic levels, following the boom in 2021 and slowdown already experienced in 2022 in most of the markets.

In the medium to long-term, the cities with good fundamentals have the potential to continue the development of dynamic housing markets, given favourable population & demographics, purchasing power growth, highly under-developed mortgage market, aged housing stock & pressure of significant housing stock losses, the potential for more new deliveries better suited to modern needs as well as good affordability levels and investment opportunities for international players to enter the market (such examples already seen in the main cities of Poland, Hungary, Czech Republic, etc.). The local residential market will converge closer to the equilibrium balances (risk & return expectations, affordability ratios, transactions per capita, new deliveries per capita, etc.) observed in developed cities from Western Europe, which will put upward pressure on residential prices and rental levels. It's difficult to imagine what this new equilibrium will be as the developed world has been going through a prolonged period of record low-interest rates (and therefore low expected returns required for residential property, which led to high valuations), a process that has been recently reversed, with many quoting "the era of low-interest rates ending", which will lead to painful but necessary adjustments in some developed markets.

As a final remark, from our perspective as a residential developer, there remain significant differences among micro-locations, market segments and individual projects in terms of performance vs what the aggregate market figures and this feature will remain, so one can under-perform in a strong market or over-perform in a declining market.

We thank you for reaching out this far out and hope you enjoyed the reading and found insightful information about the residential market in Romania. We surely did improve our understanding further by completing this report.

STC Partners – About Us

About Us

STC Partners was founded to deliver high quality and value-add real estate projects to the Romanian real estate market. We are a long-term thinking organisation aiming to establish an excellent reputation on the market. We seek to bring our contribution to creating a more professional approach to the real estate industry in the country.

We take a holistic view of the real estate market because each opportunity is unique considering the specific macro and micro peculiarities at a particular time. Our team has vast experience in screening investments, optimising the capital structure, managing the execution of the opportunities, and ensuring the projects' overall success.

Residential Projects

Quartier Gramont

- Address: **Constantin Bosianu 25, Bucuresti**
- Apartments: **44**
- Start Construction: **July 2019**
- End Construction: **May 2021**
- Description: Located in the heart of Bucuresti, Quartier Gramont is a residential complex, where the cultural heritage and comfort of residents are at the forefront. In just a few minutes, one can reach Carol Park, Palace of Parliament, Flower Market or Unirea Store. The brick façade of the former perfume factory was preserved and restored, making the exterior of the apartment complex look spectacular and unique on the local market.



Quartier Azuga

- Address: **Street Azuga 32, Bucuresti**
- Apartments: **208**
- Start Construction: **Nov 2022**
- End Construction: **April 2024**
- Description: Located near Plumbuita/ Tei parks in Bucuresti, on the shore of the lake, Quartier Azuga offers excellent connectivity to the main points of interest in Bucuresti (incl. Aviatiei/ Pipera main office area). The project was designed to represent a lifestyle, not just the place where one sleeps, eats or works. Residents will benefit from many resident-shared facilities (inc. a modern fully fit-out Clubhouse) and high energy efficiency.



Your contact

Are you interested in discussing some more about the residential market in Romania? We are looking for new opportunities, investors and to expand our network of collaborators. Get in touch.

Andrei Stefan, Partner

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Annex 1, Preliminary Results Census 2021 (1/2)



Preliminary 2021 Census Data presents some anomalies, which cannot be explained or sustained by proxy variables that are measurable and have a close link with population numbers. The following key anomalies are resulting from the 2021 Census Data:

- All the super-regional cities (Bucuresti, Cluj, Iasi, Timisoara), not accounting for the wider metropolitan area, have been depopulated at a faster rate than the country average in the last 10 years – despite the expansion of the metropolitan area, which it is in line with our observations, it remains difficult to comprehend that the main four and largest cities of the country lost population faster than the entire country (45% of Romania is still rural with many people migrating to urban areas or outside the country in search of improved living standards)
- Timisoara, one of the four dynamic super-regional cities, not accounting for the wider metropolitan area, has lost over 20% of the population, significantly more than any city in top 15 and even more than many small cities with large socio-economic problems (the local municipality in Timisoara contested the results)
- In case of Timis, Brasov, Dolj, Galati, Prahova, Arad, Braila, the main city metropolitan area has lost population faster than the county-level – in some of the instances this might be explainable by rural-urban migration outside of the county, but in most instances, this is clearly erroneous, the economic pole has not depopulated at a faster rate than the wider region, which includes many sub-performing socio-economic rural areas
- The regional and local metropolitan areas, covering the top 5-14 cities in the country, (slightly over 11% of the population) depopulated at a faster rate than the country average (regional: -6.2%; local: -8.0% vs country average: -5.3%), while the super-regional cities (circa 17.5% of the population) depopulated by -0.2%. To reach the average country-wide result, this means the rest of 71% of the country depopulated at only -5.0%. No solid grounds and observations are supporting this result. Going into detail in this 71%, it'll highlight some average or below average socio-economic performing areas that benefitted from population growth or stable populations. Some of which, but very limited, could be explained by factors such as touristic development, while others do not have any ground to exhibit better performance than some of the other key cities in the country.

Potential reasons:

- People migrating to larger cities do not change their domicile; despite the census surveys requesting the specify where they are residents, some people overlook this detail and put down still their domicile
- The census methodology involved two stages for collecting the data 1) online self-review up to May 2022 and 2) physical reviewers starting with May 2022 – there exist large differences between the two stages in terms of performance at the city level with the areas exhibiting anomalies either scoring very low in per capita figures (by comparison to other counties) in online self-reviews or completion of the physical reviews

Using some alternative proxy variables that are measurable and have a close link with the population size, indicates conclusions closer to the ones we put forward. One proxy variable for Bucuresti is the number of trips taken via the subway during the same period (2012-2019 – excl. Pandemic impact). Considering the higher purchasing power (switching from public transport to car travel) as well as the development of alternative methods of transport (ride-sharing apps) during this period, which act as strong substitutes for subway travel (the cheapest and most common form of travel in the capital and therefore not positively correlated with purchasing power), together the population decline in the city by close to -9.0% according to the Census results, this will lead to a significant drop in the number of trips by subway. However, the trips have been stable/ slightly grown (close to 4%) during this time. Even when excluding the growth impact of new subway stations opened during this time and the development of office hubs close to specific subway stations (this is possible to do as there is available data for specific metro lines), the number of trips remains stable.

Therefore, in our population estimations, we use the yearly data published by INS at the county level for the population drivers changes (births, deaths, internal migration, external migration) – such a calculation reconciles well with the published census across the country, but large differences exist between the individual counties. In general, the better economic-performing counties (and implicitly metropolitan areas) benefitted from more positive population growth whereas less performing ones from less positive population growth figures vs the Census comparison (2011 vs 2021). The data sets were used to estimate the population changes during 2011 vs 2021 (using as based the 2011 Census) in the metropolitan areas and short-term population growth assessment figures are put forward. This is not decisive to our residential analysis, one being able to reach relatively similar conclusions on the Census 2021 data, except for the population growth assessment, which is a key factor to residential demand.

Annex 1, Preliminary Results Census 2021 (2/2)

Population Analysis & Estimates – Key Metropolitan Cities in Romania

Region	Metropolitan Area Type	Census				Census & Movements 2011-2021				2011 Census + Movements = Pop. 2021			Est. Population 2021 & Short-Term Growth		
		2011 Census	2021 Census	Δ Abs	Δ %	10 Year Change @ Census	10 Year Change @ Movements	Δ Abs	Δ %	2021 Population Census 2011 + Movements	Δ %	2021-2011 CAGR %	2011-2021 CAGR % estimated	2021 Est. Population	Population Growth Assessment Short-Term
ROMANIA		20,121,641	19,053,815	(1,067,826)	-5.3%	-1,068,000	-1,019,000	-49,000	5%	19,102,641	-5.1%	-0.5%			
	Total Main Cities	5,658,628	5,483,889	(174,739)	-3.1%										
	Super-Regional	3,361,549	3,353,883	(7,666)	-0.2%										
	Regional	900,084	844,209	(55,875)	-6.2%										
	Local	1,396,995	1,285,797	(111,198)	-8.0%										
BUCURESTI-ILFOV County		2,272,163	2,259,669	(12,494)	-0.5%	-12,000	67,000	-79,000	658%	2,339,163	2.9%	0.3%			
BUCURESTI	Super-Regional	2,272,163	2,259,669	(12,494)	-0.5%	-12,000	66,769				-0.5%	-0.1%	0.3%	2,341,000	POSITIVE-STABLE
	Bucuresti	1,883,425	1,716,983	(166,442)	-8.8%	-166,000									
	Bucuresti - Metropolitan	388,738	542,686	153,948	39.6%		154,000								
CLUJ County		691,106	679,141	(11,965)	-1.7%	-12,000	34,000	-46,000	383%	725,106	4.9%	0.5%			
CLUJ	Super-Regional	380,614	385,167	4,553	1.2%	5,000					1.2%	0.1%	0.5%	400,000	POSITIVE
	Cluj	324,576	286,598	(37,978)	-11.7%	-38,000									
	Cluj - Metropolitan	56,038	98,569	42,531	75.9%		43,000								
TIMIS County		683,540	650,533	(33,007)	-4.8%	-33,000	10,000	-43,000	130%	693,540	1.5%	0.1%			
TIMISOARA	Super-Regional	364,521	342,896	(21,625)	-5.9%	-22,000						-0.6%	0.3%	376,000	POSITIVE-STABLE
	Timisoara	319,279	250,849	(68,430)	-21.4%	-68,000									
	Timisoara - Metropolitan	45,242	92,047	46,805	103.5%		47,000								
IASI County		772,348	760,774	(11,574)	-1.5%	-12,000	93,000	-105,000	875%	865,348	12.0%	1.1%			
IASI	Super-Regional	344,251	366,151	21,900	6.4%	22,000					6.4%	0.6%	0.8%	373,000	POSITIVE
	Iasi	290,422	271,692	(18,730)	-6.4%	-19,000									
	Iasi - Metropolitan	53,829	94,459	40,630	75.5%		41,000								
CONSTANTA County		684,082	655,997	(28,085)	-4.1%	-28,000	-15,000	-13,000	46%	669,082	-2.2%	-0.2%			
CONSTANTA	Regional	316,394	306,270	(10,124)	-3.2%	-10,000						-0.3%	0.0%	316,000	STABLE
	Constanta	283,872	263,707	(20,165)	-7.1%	-20,000									
	Constanta - Metropolitan	32,522	42,563	10,041	30.9%		10,000								
BRASOV County		549,217	546,615	(2,602)	-0.5%	-3,000	21,000	-24,000	800%	570,217	3.8%	0.4%			
BRASOV	Regional	310,404	296,251	(14,153)	-4.6%	-14,000						-0.5%	0.1%	314,000	POSITIVE-STABLE
	Brasov	253,200	237,589	(15,611)	-6.2%	-16,000									
	Brasov - Metropolitan	57,204	58,662	1,458	2.5%		1,000								
DOLI County		660,544	599,442	(61,102)	-9.3%	-61,000	-105,000	44,000	-72%	555,544	-15.9%	-1.7%			
CRAIOVA	Regional	273,286	241,688	(31,598)	-11.6%	-32,000						-1.2%	-0.6%	257,000	NEGATIVE
	Craiova	269,506	234,140	(35,366)	-13.1%	-35,000									
	Craiova - Metropolitan	3,780	7,548	3,768	99.7%		4,000								
GALATI County		536,167	496,892	(39,275)	-7.3%	-39,000	-50,000	11,000	-28%	486,167	-9.3%	-1.0%			
GALATI	Local	249,432	217,851	(31,581)	-12.7%	-32,000						-1.3%	-0.8%	230,000	NEGATIVE
	Galati	249,432	217,851	(31,581)	-12.7%	-32,000									
	Galati - Metropolitan	-	-	n/a	n/a	0									
ARGES County		612,431	569,932	(42,499)	-6.9%	-42,000	-58,000	16,000	-38%	554,431	-9.5%	-1.0%			
PITESTI	Local	219,270	207,706	(11,564)	-5.3%	-12,000						-0.5%	-0.4%	211,000	NEGATIVE-STABLE
	Pitesti	155,383	141,275	(14,108)	-9.1%	-14,000									
	Pitesti - Metropolitan	63,887	66,431	2,544	4.0%	3,000									
PRAHOVA County		762,886	695,117	(67,769)	-8.9%	-68,000	-67,000	-1,000	1%	695,886	-8.8%	-0.9%			
PLOIESTI	Local	220,333	191,326	(29,007)	-13.2%	-29,000						-1.4%	-0.6%	207,000	NEGATIVE
	Ploiesti	209,945	180,539	(29,406)	-14.0%	-29,000									
	Ploiesti - Metropolitan	10,388	10,787	399	3.8%	0									
BIHOR County		575,398	551,297	(24,101)	-4.2%	-24,000	-14,000	-10,000	42%	561,398	-2.4%	-0.2%			
ORADEA	Local	203,601	204,578	977	0.5%	1,000					0.5%	0.0%	0.0%	204,000	STABLE
	Oradea	196,367	183,105	(13,262)	-6.8%	-13,000									
	Oradea - Metropolitan	7,234	21,473	14,239	196.8%		14,000								
ARAD County		430,629	410,143	(20,486)	-4.8%	-20,000	0	-20,000	100%	430,629	0.0%	0.0%			
ARAD	Local	169,784	157,850	(11,934)	-7.0%	-12,000						-0.7%	-0.2%	166,000	NEGATIVE-STABLE
	Arad	159,074	145,078	(13,996)	-8.8%	-14,000									
	Arad - Metropolitan	10,710	12,772	2,062	19.3%	2,000									
BRAILA County		321,212	281,452	(39,760)	-12.4%	-40,000	-44,000	4,000	-10%	277,212	-13.7%	-1.5%			
BRAILA	Local	180,302	154,686	(25,616)	-14.2%	-26,000						-1.5%	-1.0%	163,000	NEGATIVE
	Braila	180,302	154,686	(25,616)	-14.2%	-26,000									
	Braila - Metropolitan	-	-	-	n/a	0									
SIBIU County		397,322	388,325	(8,997)	-2.3%	-9,000	-1,000	-8,000	89%	396,322	-0.3%	0.0%			
SIBIU	Local	154,273	151,800	(2,473)	-1.6%	-2,000						-0.2%	0.0%	154,000	STABLE
	Sibiu	147,245	134,308	(12,937)	-8.8%	-13,000									
	Sibiu - Metropolitan	7,028	17,492	10,464	148.9%	10,000									

-20%
0%
20%

-50%
0%
50%

-20%
0%
20%

-2.2%
0.0%
1.8%

NEGATIVE
NEGATIVE-STABLE
STABLE
POSITIVE-STABLE
POSITIVE

Annex 2, Residential Property Valuation (1/2)

Fair Value (FV) vs Transaction Price @ Dec 2022 – BUCURESTI

BUCURESTI

		Base	
Apartment sqm	50	50	50
Average Price	1,650	1,700	1,750
Rent per sqm per Month	8.00	8.00	8.00
Rent per Month	400	400	400
Transaction Price	82,500	85,000	87,500
Yearly Gross Rent	4,800	4,800	4,800
Gross Yield	5.82%	5.65%	5.49%

	Dec-22	Dec-23	Dec-24	Dec-25	Dec-26	Dec-27	Dec-28	Dec-29	Dec-30	Dec-31
Rent Growth Rate		7.0%	4.0%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Rent per Sqm per Month	8.0	8.6	8.9	9.2	9.5	9.9	10.2	10.6	10.9	11.3
Rent per Month	400	430	450	460	480	490	510	530	550	570
Stabilized Vacancy Rate	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
Gross Rent		4,954	5,184	5,299	5,530	5,645	5,875	6,106	6,336	6,566
Maintenance Costs	15.0%	(743)	(778)	(795)	(829)	(847)	(881)	(916)	(950)	(985)
Leasing & Management Fees	5.0%	(248)	(259)	(265)	(276)	(282)	(294)	(305)	(317)	(328)
Net Rent		3,963	4,147	4,239	4,424	4,516	4,700	4,884	5,069	5,253
Capex	10.0%	(495)	(518)	(530)	(553)	(564)	(588)	(611)	(634)	(657)
Net Cash Flows (pre-tax)		3,468	3,629	3,709	3,871	3,951	4,113	4,274	4,435	4,596

Discount Rate	8.20%
Perp Growth Rate	3.00%
Capex Reserve	10.0%
Cap Rate	4.7%

Exit Value										101,200
Net Cash Flows		3,468	3,629	3,709	3,871	3,951	4,113	4,274	4,435	105,796
Fair Value (FV)	80,200									

Cap Rate

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	5.2%	5.1%	5.0%	4.8%	4.7%
	8.35%	5.1%	5.0%	4.8%	4.7%	4.5%
	8.20%	5.0%	4.8%	4.7%	4.5%	4.4%
	8.05%	4.8%	4.7%	4.5%	4.4%	4.3%
	7.90%	4.7%	4.5%	4.4%	4.3%	4.1%

FV

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	73,100	74,500	75,800	77,400	78,900
	8.35%	75,100	76,500	78,000	79,500	81,200
	8.20%	77,100	78,600	80,200	81,900	83,700
	8.05%	79,200	80,800	82,600	84,300	86,300
	7.90%	81,500	83,200	85,100	87,000	89,000

FV vs Transaction Price ABS

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	(11,900)	(10,500)	(9,200)	(7,600)	(6,100)
	8.35%	(9,900)	(8,500)	(7,000)	(5,500)	(3,800)
	8.20%	(7,900)	(6,400)	(4,800)	(3,100)	(1,300)
	8.05%	(5,800)	(4,200)	(2,400)	(700)	1,300
	7.90%	(3,500)	(1,800)	100	2,000	4,000

FV vs Transaction Price %

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	-14%	-12%	-11%	-9%	-7%
	8.35%	-12%	-10%	-8%	-6%	-4%
	8.20%	-9%	-8%	-6%	-4%	-2%
	8.05%	-7%	-5%	-3%	-1%	2%
	7.90%	-4%	-2%	0%	2%	5%

-20%

0%

20%

Annex 2, Residential Property Valuation (2/2)

Fair Value (FV) vs Transaction Price @ Dec 2022 – CLUJ

CLUJ

		Base		
Apartment sqm	50	50	50	
Average Price	2,300	2,350	2,400	circa 40% higher than Bucuresti
Rent per sqm per Month	9.00	9.00	9.00	circa 10%-15% higher than Bucuresti
Rent per Month	450	450	450	
Transaction Price	115,000	117,500	120,000	
Yearly Gross Rent	5,400	5,400	5,400	
Gross Yield	4.70%	4.60%	4.50%	

	Dec-22	Dec-23	Dec-24	Dec-25	Dec-26	Dec-27	Dec-28	Dec-29	Dec-30	Dec-31
Rent Growth Rate		7.0%	4.0%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Rent per Sqm per Month	9.0	9.6	10.0	10.4	10.7	11.1	11.5	11.9	12.3	12.7
Rent per Month	450	480	500	520	540	560	570	590	620	640
Stabilized Vacancy Rate	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
Gross Rent		5,530	5,760	5,990	6,221	6,451	6,566	6,797	7,142	7,373
Maintenance Costs	15.0%	(829)	(864)	(899)	(933)	(968)	(985)	(1,020)	(1,071)	(1,106)
Leasing & Management Fees	5.0%	(276)	(288)	(300)	(311)	(323)	(328)	(340)	(357)	(369)
Net Rent		4,424	4,608	4,792	4,977	5,161	5,253	5,437	5,714	5,898
Capex	10.0%	(553)	(576)	(599)	(622)	(645)	(657)	(680)	(714)	(737)
Net Cash Flows (pre-tax)		3,871	4,032	4,193	4,355	4,516	4,596	4,758	5,000	5,161

Discount Rate	8.20%
Perp Growth Rate	3.00%
Capex Reserve	10.0%
Cap Rate	4.7%

Exit Value										113,600
Net Cash Flows		3,871	4,032	4,193	4,355	4,516	4,596	4,758	5,000	118,761
Fair Value (FV)	90,000									

Cap Rate

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	5.2%	5.1%	5.0%	4.8%	4.7%
	8.35%	5.1%	5.0%	4.8%	4.7%	4.5%
	8.20%	5.0%	4.8%	4.7%	4.5%	4.4%
	8.05%	4.8%	4.7%	4.5%	4.4%	4.3%
	7.90%	4.7%	4.5%	4.4%	4.3%	4.1%

FV

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	82,100	83,600	85,200	86,900	88,600
	8.35%	84,300	85,900	87,500	89,300	91,200
	8.20%	86,600	88,200	90,000	91,900	93,900
	8.05%	89,000	90,800	92,700	94,700	96,800
	7.90%	91,500	93,400	95,500	97,600	100,000

FV vs Transaction Price ABS

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	(35,400)	(33,900)	(32,300)	(30,600)	(28,900)
	8.35%	(33,200)	(31,600)	(30,000)	(28,200)	(26,300)
	8.20%	(30,900)	(29,300)	(27,500)	(25,600)	(23,600)
	8.05%	(28,500)	(26,700)	(24,800)	(22,800)	(20,700)
	7.90%	(26,000)	(24,100)	(22,000)	(19,900)	(17,500)

FV vs Transaction Price %

		Perpetual Growth Rate				
		2.70%	2.85%	3.00%	3.15%	3.30%
Discount Rate	8.50%	-42%	-40%	-38%	-36%	-34%
	8.35%	-39%	-37%	-35%	-33%	-31%
	8.20%	-36%	-34%	-32%	-30%	-28%
	8.05%	-34%	-31%	-29%	-27%	-24%
	7.90%	-31%	-28%	-26%	-23%	-21%

-20%

0%

20%

Disclaimer

The author of this study assumes responsibility for the information contained in the study. The views expressed in this study do not necessarily reflect the views of the Developer. The study has a purely informative character and was carried out based on the information and documents collected by the author from the public information sources cited in the study. The document contains various forecasts and expectations as well as statements that relate to the future development of real estate. The statements are based on assumptions and estimates and may involve known and unknown risks and uncertainties.

