

Minimum Income Required to Purchase a Property: Conceptual Framework and Application to Malta

Brian Micallef¹

¹ Research Department, Central Bank of Malta, Malta

Correspondence: Brian Micallef, Economic Research Office, Research Department, Central Bank of Malta, Castille Place, Valletta, VLT 1060, Malta. Tel: 356-2248-7931.

Received: July 26, 2022

Accepted: August 31, 2022

Online Published: September 5, 2022

doi:10.5539/ijef.v14n10p13

URL: <https://doi.org/10.5539/ijef.v14n10p13>

Abstract

Housing affordability for potential first-time buyers has two components – the ability to borrow sufficiently from a bank to purchase a property (purchase affordability) and the ability to maintain mortgage repayments (repayment affordability). This paper focuses on the first element by calculating the minimum income required to purchase a property in Malta. Most methods in the housing affordability literature are inadequate to capture the purchase affordability concept, which is critical for first-time buyers. For this segment of the population, bank lending policies and conditions play an important role to obtain the necessary credit required to purchase a property. A conceptual framework is proposed that recognizes the numerous factors that affect the minimum income required to purchase a property that ranges from bank lending policies, monetary and macroprudential policies, the external macroeconomic environment and individual and household characteristics and behaviour. The analysis points to the importance that young people engage in some element of saving from the first years of their working life to accumulate sufficient funds that are required for them to be eligible for a mortgage.

Keywords: purchase affordability, housing market, first time buyers, Malta

1. Introduction

Housing affordability for potential first-time buyers has two components – the ability to borrow sufficiently from a bank to purchase a property and the ability to maintain mortgage repayments. The former is referred to as ‘purchase affordability’ while the latter is called ‘repayment affordability’ (Meen, 2018). By focusing on the averages, one of the most used measures of affordability, the ratio of house prices relative to earnings, misses the heterogeneity experienced by different groups, such as homeowners and prospective first-time buyers (Li, 2015).

For first-time buyers, purchase affordability implies the presence of credit constraints when borrowing in mortgage markets. These constraints can arise due to insufficient income or inadequate savings for the required deposit. The deposit is required for two main purposes. First, they are required by banks due to the presence of adverse selection under asymmetric information and, second, to satisfy the regulations by financial regulators to limit excessive loan-to-income lending for financial stability purposes (Meen, 2018). Savings for first-time buyers should also cover additional house-related expenses, such as taxation and other fees for architects and notaries.

This paper focuses on the first element by calculating the minimum income required to purchase a property in Malta. Malta is the smallest country in the European Union and constitutes an interesting case study since it experienced the largest growth rate in population and economic growth prior to the COVID-19 pandemic. The total population in Malta at the end of 2020 stood at 516,100, an increase of 17.4% compared to the population in 2014 when it stood at 439,691. Most of this growth was driven by a sharp influx of foreign workers (Grech, 2017). Real GDP growth averaged 7.3% between 2014 and 2019, by far one of the largest experienced by EU economies, which led to rapid convergence with EU income levels (Micallef, 2020). These two factors, together with a prolonged period of a low interest rate environment, led to a strong demand for housing and a corresponding increase in prices, which outstripped the corresponding increase in supply (Micallef, 2018).

The rest of the paper is structured as follows. Section 2 provides a critical review of the housing affordability literature. Section 3 describes the conceptual framework used. Section 4 presents the model used to calculate the minimum income required for a borrower to be eligible for a mortgage and the key results. Section 5 provide a

sensitivity analysis for different property price and interest rate assumptions, respectively. Section 6 concludes with some policy recommendations and avenues for further research in this area. Why is this problem important?

2. Literature Review

Housing affordability is a frequently used term in public and policy discourse, but this concept remains an ambiguous one. According to Quigley and Raphael (2004, pp. 191-192), this ambiguity stems from the fact that the concept of housing affordability itself:

“jumbles together in a single term a number of disparate issues: the distribution of housing prices, the distribution of housing quality, the distribution of income, the ability of households to borrow, public policies affecting housing markets, conditions affecting the supply of new or refurbished housing, and the choices that people make about how much housing to consume relative to other goods. This mixture of issues raises difficulties in interpreting even basic facts about housing affordability.”

The above quote implicitly acknowledges that aggregate notion of affordability jumbles together both purchase and repayment affordability. More recent systematic reviews of the voluminous literature on housing affordability point to key emerging themes – ranging from poverty, neighbourhood conditions, housing supply, housing financialization, land policy, housing conditions and urban renewal, among others – but limited emphasis on bank lending (Adabre et al., 2021; Peverini & Cavicchia, 2021). Furthermore, there is no universally accepted definition of affordability although this should come as no surprise, given the contested nature of the term (Gabriel et al., 2006).

A common rule of thumb used to assess affordability is to use the house price-to-earnings ratio. The intuition behind this method is that there should be a constant long-run affordability ratio to which the economy would gravitate towards. While the data underlying the construction of this ratio is readily available for most countries, which facilitates international comparisons, the ratio focuses entirely on the aggregate position of the economy but is not suitable to capture the position of different groups in society, such as first-time buyers. Furthermore, this ratio does not take into consideration other macroeconomic trends, such as the long-term decline in nominal interest rates. With low interest rates, households can purchase more expensive dwellings for a given level of income, thus over-stating the affordability problems during a low interest rate environment (Meen, 2018).

In addition to the house price-to-earnings ratio, there are two main methods in the literature to measure housing affordability.

The first one refers to the housing expenditure-to-income ratio. This approach stipulates that expenditure on housing should not exceed some threshold of household income. The threshold for being cost-burdened is commonly defined as 25% or 30% of household income (Edmiston, 2016). Some variants of this method have been proposed and used in some countries to focus on groups that can be more prone to experience affordability problems. For instance, the 30:40 rule, commonly used in Australia, state that households in the bottom 40% of the income distribution that spends more than 30% on housing costs suffer from housing stress (Gabriel et al., 2006). In the European Union, Eurostat defines the housing cost overburdened rate as the share of the population living in households that spend more than 40% of their disposable income on housing. Furthermore, it also publishes a set of complimentary statistics that focus on housing quality, covering a wide range of issues on the conditions of the dwelling (e.g., over-crowding, sub-standard quality etc.) and of the surrounding neighbourhood.

The second approach is referred to as the residual method. The residual approach focuses on the ability of households to maintain an adequate standard of living once housing costs are met. The latter method thus takes into consideration both housing and non-housing costs, whereas the ratio method only considers housing costs. Conceptually, the residual method is considered to be superior to the ratio method (Hancock, 1993; Stone, 2006). However, due to data and measurement difficulties, especially in relation to the definition of a non-housing budget standard, this method is typically not constructed on a regular basis (Meen, 2018). For instance, in Malta, a minimum essential budget for a decent living standard, which forms the basis of the residual approach, is only published by Caritas Malta and updated once every three years (Caritas, 2021).

The above review highlights the inadequacy of most methods used in the literature to capture the purchase affordability concept, which is critical for first-time buyers. For this segment of the population, bank lending policies and conditions play an important role to obtain the necessary credit required to purchase the property. The limitation is addressed in the conceptual framework, which is discussed in the next section.

3. Conceptual Framework

The conceptual framework recognizes the numerous factors that affect the minimum income required to

purchase a property that ranges from bank lending policies, monetary and macroprudential policies, the external macroeconomic environment and individual and household characteristics and behaviour. Five key parameters enter the formula for the minimum income requires, with a schematic representation illustrated in Figure 1.

The first variable refers to **house prices** in euro terms. House prices reflect the interplay of demand and supply in the housing market. At a micro level, property prices are determined by dwelling-specific characteristics (e.g., floor area, number of bedrooms and bathrooms, the age of the property, quality features and other features such as the presence of a garage, garden, or pool), location (e.g., distance to business and retail centers, as well as fixed attributes such as countryside or sea views) and neighbourhood attributes. The latter includes several social, environmental, and infrastructural factors (Kain & Quigley, 1970; Ellul et al., 2019). At a macro level, house prices depend on demand factors such as disposable income, the availability of credit and the user cost of capital, while on the supply side, it is affected by the stock of housing per capita (Gatt et al., 2018). Holding everything else constant, there is a positive association between house prices and the income required to purchase a property.

The second variable refers to the **bank lending rates on mortgages**. These rates depend on macroeconomic forces, such as the monetary policy stance adopted the monetary authorities, but also on bank-specific characteristics, such as solvency, liquidity, and credit risk (Micallef et al., 2014). The degree and speed of the interest-rate pass-through mechanism, from the policy rates set by the monetary authorities to the bank retail lending rates also depend on the country's financial framework and other structural characteristics such as the degree of competition in the banking sector (Gigineishvili, 2011). There is a positive association between interest rates and the minimum income required – an increase in interest rates would necessitate a higher level of income for a given price of a property.

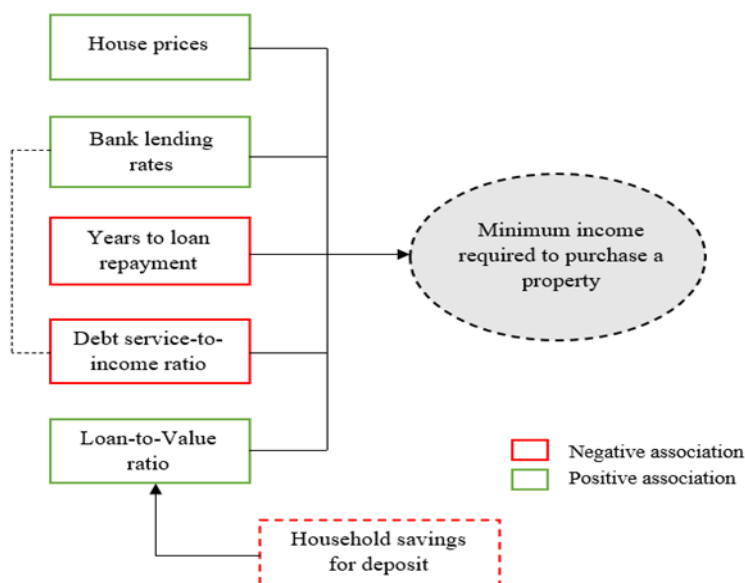


Figure 1. Conceptual framework for minimum income required to purchase a property

The third factor is the **years to loan repayment**, which to a large extent depends on the age of the borrowers. Mortgage repayments are typically capped until the retirement age, which in Malta stands at 65 years. Hence, a twenty-five year old individual will have forty years to repay his mortgage while someone who is older, say forty-five years old, will only have twenty years until he reaches retirement age. The maturity term also depends on the category of borrowers. In Malta, for instance, mortgages for first-time buyers have a maturity term of 40 years (as long as it is repaid by the retirement age) whereas for other riskier categories, such as buy-to-let borrowers, a maturity of 25 years is applied (Central Bank of Malta, 2019). Overall, there is a negative association between years to repayment and the minimum income required – a higher income is required as the years to repayment are shortened.

The fourth factor consists of the **debt service-to-income (DSTI) ratio**. This is the ratio of the monthly debt payments to the borrower's gross monthly income. The DSTI ratio is influenced by internal bank risk management and lending practices. Typical values applied by retail banks in Malta stand between 25% and 30%

(Central Bank of Malta, 2019). This means that the monthly repayment should not exceed 25% or 30% of the borrower's gross monthly income. However, DSTI is also influenced by macroprudential regulations. For instance, according to the borrowing-based measures introduced by the macro-prudential authorities in Malta in 2019, a stressed DSTI ratio of 40% for loans on properties with a market value exceeding €175,000 should also include a shock to interest rates of 150 basis points (Central Bank of Malta, 2019). In such cases, this creates a direct link between the DSTI ratio and the interest rates charged by banks. These measures are intended to strengthen the resilience of both lenders and borrowers against potential vulnerabilities originating from the housing market. Overall, there is a negative association between DSTI ratios and the minimum income required. Higher monthly payments (i.e., higher DSTI ratios) as a share of one's income would lower the income required to purchase a given property. Conversely, more onerous lending practices, with a more conservative DSTI ratio, say 25% instead of 30%, would necessitate a higher level of income.

The final factor refers to the *loan-to-value (LTV) ratio*. This ratio stipulates the value of the loan given by the bank relative to the value of the property and is influenced both by bank lending practices as well as macro-prudential regulations. The latter tend to make a distinction between different categories of borrowers: within the context of the borrower-based measures introduced in Malta, first-time buyers and buy-to-let borrowers have LTV ratios of 90% and 75%, respectively (Central Bank of Malta, 2019). The LTV ratio is linked with the deposit that borrowers must provide upfront, which in turn can be affected by various factors, such as households' saving behaviour, age, or wealth. A higher initial deposit, which implies a lower LTV ratio, would be associated with a lower minimum income required to qualify for a bank loan.

3.1 Operationalization of the Framework

This framework can be operationalized using the PMT function in Microsoft Excel that is used to calculate the payment for a loan. The PMT function, shown below, requires three inputs (another two are option but can be restricted to zero):

$$= \text{PMT}(\text{interest}, \text{nper}, \text{pv}, [\text{fv}], [\text{type}])$$

with *interest* being the interest rate charged for the loan; *nper* is the number of years for repayment; *pv* is the total value of the loan at origination; *fv* (optional) is the cash balance that you want after the last payment is made (default=0); *type* (optional) is when payments are due (0=end of period (default); 1=beginning of period). The calculation of *pv* – the total value of the loan at origination – requires two inputs outside the formula: the price of property and the LTV ratio that is applied by the bank. So, for instance, the total value of the loan for a property (*pv*) valued at €200,000 with an LTV ratio of 90% would amount to €180,000.

The PMT with the three argument – *interest*, *nper* and *pv* – provides the total loan repayment per annum. The latter must be divided by the DSTI ratio to arrive at the minimum income required. This is best illustrated by means of an example. For instance, for a property price of €200,000, an LTV ratio of 90%, interest rate of 3.0% and 40 years to repayment, the total loan repayment per annum amounts to €7,787. The final step depends on the DSTI assumption. With a DSTI rate of 25%, this loan repayment translates into a minimum income of €31,149; with DSTI of 30%, the income required is lowered to €25,957.

The next section applies this framework to the situation in Malta.

4. Results

Figure 2 plots the average value of property purchased in Malta based on the final deeds for households published by the National Statistics Office. The average value of property in Malta has increased from €162,108 in 2018 to €194,264 in 2021. This implies that the average price of a property purchased by Maltese households rose by 20% during this three-year period. While the information is only available for the 'average' property, a comparison with advertised house price data from listings collected by the Central Bank of Malta suggests that properties in this price range tend to be relatively small-to-medium sized apartments and thus a good indication of the properties normally considered by first-time buyers.

In addition to the average price of a property, the calculation of gross income required to purchase a property is based on four key parameters – (i) the loan-to-value (LTV) ratio; (ii) the interest rate on the mortgage; (iii) the years for repayment and (iv) the debt-service-to-income (DSTI) ratio. The LTV ratio is assumed to be 90%, which implies that borrowers need to provide 10% down-payment. The average bank interest rate on mortgages is set at 3.0%, which is broadly in line with the average bank lending rate for mortgages over the period. For the baseline scenario, the years for repayment are assumed to be 40 years. The latter implicitly assumes that a prospective borrower is 25 years old and thus has 40 years to repay the mortgage until the retirement age of 65 years. Finally, estimates are based on two different DSTI ratios, 25% and 30%, which are commonly applied by

banks and are assumed to remain unchanged throughout the duration of the loan. The minimum income required to purchase a property based on the above assumptions, shown in Table 1, was calculated using the PMT function.

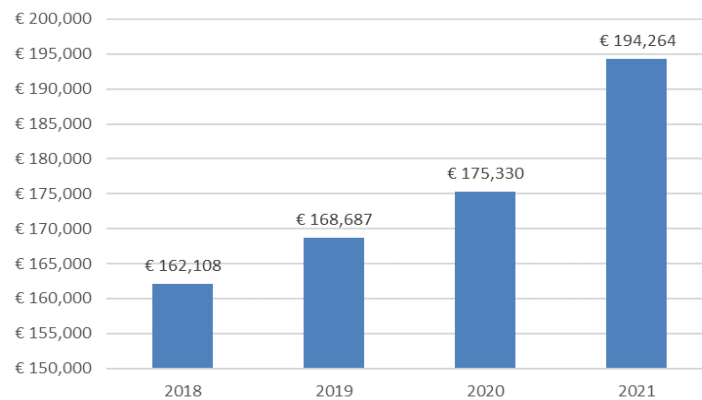


Figure 2. Average value of property purchased in Malta by households (2018-2021)

Table 1. Calculations of the minimum income required to purchase a property in Malta

Year	Average House price	Loan-to-value	Interest rate	Years to repayment	Minimum income required given debt service-to-income ratio of:	
T	P	90%	interest	nper	25%	30%
2018	€ 162,108	€ 145,897	3.00%	40	€ 25,247	€ 21,040
2019	€ 168,687	€ 151,818	3.00%	40	€ 26,272	€ 21,893
2020	€ 175,330	€ 157,797	3.00%	40	€ 27,307	€ 22,756
2021	€ 194,264	€ 174,838	3.00%	40	€ 30,256	€ 25,213

Table 1 shows that the minimum income required for a household to be eligible for a mortgage stood between €25,213 and € 30,256 in 2021. The estimates based on DSTI ratios of 25% and 30% tend to be more stringent than the minimum threshold of a stressed-40% introduced as part of the borrowing-based measures by the macroprudential authorities (Central Bank of Malta, 2019). According to the latter measure, the minimum income required to be eligible for a mortgage stood at €23,753 in 2021.

The minimum income required to purchase a property has increase gradually since 2018, reflecting the increase in house prices observed during this period. Assuming a DSTI ratio of 30%, the required income rose from €21,040 in 2018 to € 25,213 in 2021.

4.1 Additional Costs Required to Purchase a Property

The above calculations do not take into consideration the additional costs required to purchase a property. One of the largest upfront expenses that require cash in hand is the initial deposit, which is usually 10% of the value of the property for first-time buyers in Malta. Given the average house price of €194,264 in 2021, a prospective borrower, whether an individual or a household, should have accumulated savings of €19,426 – 10% of the value of the property – for the down-payment. Savings for the down-payment can be a considerable barrier to homeownership for low-to-median income first-time buyers, especially those that cannot rely on their parents' financial assets for assistance.

In addition to the deposit, there are also other fees associated with the purchase of a property, such as notary and architect fees, home/life insurance policies and stamp duty. To give an example, notary fees are usually between 1% and 2% of the value of the property. Assuming 1.5%, notary fees would amount to around €2,900. Bank fees, including insurance policies, tend to vary by bank, property, and the borrower (including age and lifestyle). The standard stamp duty rate on a property in Malta is 5%, with 20% payable upon the signing of the *Konvenju*, and the rest upon the final deed. As a result of government incentives, however, first-time buyers are exempt from paying stamp duty on the first €200,000 of the property price. Hence, while in 2021 the average property considered in this paper would have been exempted from stamp duty, borrowers would still have incurred property-related costs in excess of €3,500 in addition to their down-payment. As a result, a conservative estimate

implies that borrowers would require savings of at least €23,000.

An additional consideration is the level of furnishings. Estimates from hedonic regressions by Ellul et al. (2019) indicate that finished properties have a premium of between 12% and 21% compared to properties sold in shell form. Most properties for first-time buyers are sold unfurnished. In this case, in addition to the above costs, additional funds are needed to furnish the property and make it habitable. Estimates for furnishings can vary significantly but reasonable estimates range between 5% and 10% of the value of the property (i.e., between €10,000 and €20,000). In the absence of savings, these funds for furnishings will have to be borrowed from the bank. The interest rate on furnishings tends to be higher than the mortgage rate – in 2021, the average interest rate charged by local banks on consumer credit stood at 4.6%.

4.2 Minimum Income Based on Borrowers' Age

First-time buyers tend to be relatively young. As discussed in the conceptual framework, the minimum income required for mortgage eligibility increases with the borrowers' age – a borrower who is 25 years of age has 40 years to repay the mortgage until the retirement age of 65 years, while someone who is 35 years only has 30 years left until retirement. Holding everything else constant, the reduction in the years to repayment until maturity will have to be compensated by higher monthly payments, thus requiring a higher level of income to maintain the same DSTI ratios.

Figure 3 plots the minimum income required for mortgage eligibility for a property of €194,264 in which the borrowers' age increased gradually from 25 years to 49 years. This implies that the number of years to repay the mortgage declines from 40 years to 16 years. The estimates are based on two different assumptions about the DSTI ratio – 25% and 30%. The results indicate that the relationship between the minimum income and the borrowers' age is non-linear and increasingly higher levels of income are required as the number of years to repay the loan decline.

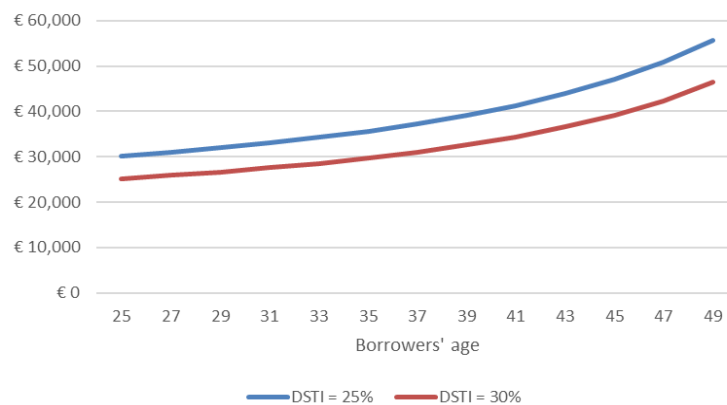


Figure 3. Variation in minimum income required by borrowers' age

Table 3 illustrates the minimum income required for mortgage eligibility for different years to repayment. For instance, the income of a prospective borrower aged 35 years of age, with 30 years to repay the mortgage until retirement, must be at least between €29,734 and €35,680 depending on the DSTI ratios assumed (holding other model parameters constant).

It is important to point out, however, that relatively older individuals should have more years of wage income under their belt and therefore a potentially higher stock of savings. These savings could be used for a higher down-payment, which can partly compensate for the fewer years available to repay the loan until retirement age. Such hypothetical scenarios are calculated in Table 3, which assumes that a 30- and 35-year-old borrower provides 15% and 20% of the value of the property as deposit, respectively, compared to 10% in the baseline case for someone who still has 40 years to repay the mortgage. In this case, the higher stock of savings, which amounts to €38,853 for an LTV ratio of 80% (i.e., 20% down-payment), will compensate significantly for the fewer years for repayment.

Table 2. Minimum income required for baseline property value with different years to repayment (assuming LTV remains fixed at 90%)

Borrowers' age	Years to repayment	LTV	Implied deposit	DSTI = 25%	DSTI = 30%
25	40	90%	€ 19,426	€ 30,256	€ 25,213
30	35	90%	€ 19,426	€ 32,547	€ 27,123
35	30	90%	€ 19,426	€ 35,680	€ 29,734

Table 3. Minimum income required for baseline property value with different years to repayment (assuming increasing LTV with borrowers' age)

Borrowers' age	Years to repayment	LTV	Implied deposit	DSTI = 25%	DSTI = 30%
25	40	90%	€ 19,426	€ 30,256	€ 25,213
30	35	85%	€ 29,140	€ 30,739	€ 25,616
35	30	80%	€ 38,853	€ 31,716	€ 26,430

5. Sensitivity Analysis

Property prices differ according to their characteristics including locality, size, finishings, the quality of the neighbourhood and other amenities such as views or proximity to the seafront. Hence, there exists significant heterogeneity around the 'average' price considered in this study. To account for this uncertainty, estimates of the minimum eligible income are computed for property prices of €175,000 and €215,000, which amounts to around 10% below and above the 'average' price, respectively. The results are shown in Table 4. In addition, estimates of the minimum income required are computed for three different ages – 25 years, 30 years, and 35 years – and two DSTI assumptions. The other model parameters remain unchanged i.e., LTV ratio of 90% and interest rate of 3.0%.

For instance, the results show that the minimum income for mortgage eligibility for a €215,000 property stands between €27,904 and €33,485 assuming 40 years to repayment. The same property but with 35 years to repayment (i.e., for a borrower aged 30 years) requires a minimum income between €30,018 and €36,021.

Table 4. Minimum income for alternative property prices and years to repayment

Average property price	Borrowers' age	Years to repayment	DSTI = 25%	DSTI = 30%
€ 175,000	25	40	€ 27,255	€ 22,713
	30	35	€ 29,320	€ 24,433
	35	30	€ 32,142	€ 26,785
€ 215,000	25	40	€ 33,485	€ 27,904
	30	35	€ 36,021	€ 30,018
	35	30	€ 39,489	€ 32,907

Assumptions about the interest rates are central to the calculations of the minimum income required. Interest rates have been reduced to historical lows since the Great Recession of 2009 by central banks in most advanced economies as inflation rates remained stubbornly below the targets set by the monetary authorities. Recently, however, a combination of factors – such as supply chain disruptions due to the COVID-19 pandemic, high commodity prices, the war in Ukraine and tight labour markets – have led to significantly higher inflation rates. Monetary authorities have responded by tightening monetary policy, gradually raising interest rates to combat price pressures from becoming entrenched in consumers' expectations.

Figure 4 provides a sensitivity analysis to illustrate the impact of rising interest rates on the minimum income required to purchase a property. All the model assumptions remain unchanged – property price of €194,264, LTV ratio of 90% and 40 years to repayment – but interest rates are assumed to increase to 4% and 5%, respectively. The analysis is based on a partial equilibrium assessment that holds all other variables in the model constant.

It is important to point out that these rates are only illustrative and hypothetical. The interest rate assumption of 5% is based on the rates prevailing before the 2009 financial crisis. Over a long period of time, however, it is likely that interest rates will fluctuate and an interest rate of 4% was assumed as an average of the rates prevailing before the 2009 crisis and the current low interest environment. The results suggest that an increase in the mortgage interest rates by 1 percentage point, from 3% to 4%, would raise the minimum income to €29,445 - €35,334, while a 2-percentage point raise will require an income of at least €33,964 - €40,757.

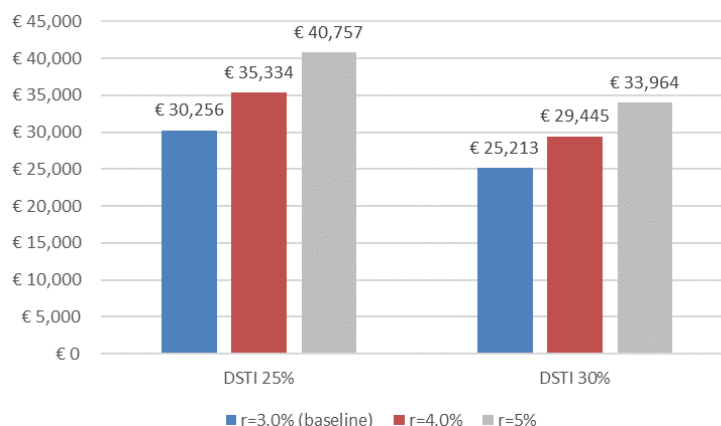


Figure 4. Sensitivity of minimum income required to increases in the interest rate

6. Discussion and Conclusion

This paper has calculated the minimum income required to be eligible for a mortgage to purchase a property in Malta. Based on the following assumptions – an average property price of €194,264, loan-to-value ratio of 90%, interest rate of 3.0% and a repayment period of 40 years – the minimum income in 2021 stood between €25,213 (for a debt-service-to-income ratio of 30%) and € 30,256 (for a debt-service-to-income ratio of 25%). In addition to this minimum income, prospective borrowers should have sufficient savings to meet the required deposit and other property-related costs. For the average property considered in this report, savings of at least €23,000 are necessary. This sum excludes additional funds required for furnishing the property to make it habitable. Overall, the analysis clearly points to the importance that young people engage in some element of saving from the first years of their working life to accumulate sufficient funds that are required for them to be eligible for a mortgage. (Note 1) Government is also aware of this constraint and, in 2020, the Housing Authority in Malta issued a scheme to assist prospective homeowners who despite being eligible for a home loan do not have the necessary liquidity to pay the down-payment on the signing of the promise of sale (Housing Authority, 2020).

The analysis in this paper focuses on purchase affordability, which is distinct from repayment affordability (Meen, 2018). In Malta, once first-time buyers achieve ownership, there is little evidence to suggest that they face significant stress, especially in the context of prudent bank lending policies and a low interest rate environment, which keep housing costs low. The housing cost overburdened rate for Maltese households with a mortgage is significantly lower than the EU average (Peverini & Cavicchia, 2022). Similarly, non-performing loans for household mortgages in Malta remain low, below 3%, and were resilient even during the COVID-19 pandemic because of the moratoria (Central Bank of Malta, 2022). Traditionally, most interest rates on mortgages in Malta were variable although in recent years, the share of mortgages with an initial fixed rate period has been increasing. As illustrated in the sensitivity analysis, holding everything else constant, an increase in interest rates raises the minimum income required to purchase a property. A tightening of monetary policy, however, will also influence other variables in the model, including the interest-sensitive housing sector and could lead to downward pressure on house prices (Grech & Rapa, 2016; Gatt et al., 2018).

According to the Labour Force Survey, the basic monthly salary in Malta stood at €19,359 in 2021. This refers to the average monthly basic salary received by employees before any social contributions and tax deductions, but excludes payments for overtime, allowances, and bonuses. The analysis in this paper suggests that a two-earner couple each earning the average (basic) salary will have enough income to be eligible for a mortgage, assuming that sufficient savings for the deposit and other property-related costs are available. Despite this, the prospective first-time buyers might still be faced with difficult trade-offs, for example, in terms of property type, size and location. The average income is insufficient for single individuals to attain purchase affordability (Briguglio & Spiteri, 2022).

Finally, any detailed assessment of affordability should move away from simply considering the averages and focus more on the distribution of housing and incomes. This analysis will require more granular data than available for this paper. Such data granularity on both household income and house prices by, say, deciles or quintiles is necessary to shed light on the supply of and demand for different properties. This is left for future research.

Acknowledgments

Helpful comments and suggestions by Alexander Demarco, Aaron G Grech, Stefan Cutajar and Jake Azzopardi are gratefully acknowledged.

References

- Abela, G., & Gatt, W. (2021). Saving behaviour in Malta: Insights from the Household Budgetary Survey. Central Bank of Malta, *Working Paper* WP/02/2021.
- Adabre, M. A., Chan, A. P., & Darko, A. (2021). A scientometric analysis of the housing affordability literature. *Journal of Housing and the Built Environment*, 36(4), 1501-1533. <https://doi.org/10.1007/s10901-021-09825-0>
- Briguglio, B., & Spiteri, G. (2022). Housing affordability: a focus on young people in Malta. In Housing Authority (2021). *The Annual Malta Residential Rental Study* (2nd ed.). Retrieved from <https://rentregistration.mt/wp-content/uploads/2022/06/Residential-Rental-Study-2nd-edition.pdf>
- Caritas Malta. (2021). *A minimum essential budget for a decent living 2020: A research study focusing on three low-income housing categories*. Publication by Caritas Malta. Retrieved from <https://www.caritasmalta.org/wp-content/uploads/2021/02/Caritas-MEBDL.pdf>
- Central Bank of Malta. (2019). Banks' Exposure to Real Estate Market and the Central Bank of Malta's Macroeconomic Policy Response. *Financial Stability Report 2018*, Central Bank of Malta.
- Central Bank of Malta. (2022). *Financial Stability Report 2021*. Central Bank of Malta publication.
- Edmiston, K. (2016). Residential rent affordability across US metropolitan areas. Federal Reserve Bank of Kansas City. *Economic Review*, Fourth Quarter 2016, 5-27.
- Ellul, R., Darmanin, J., & Borg, I. (2019). Hedonic house price indices for Malta: a mortgage-based approach. Central Bank of Malta, *Working Paper* WP/02/2019.
- Gabriel, M., Jacobs, B., Arthurson, K., Burke, T., & Yates, J. (2006). Conceptualising and measuring the housing affordability problem. *AHURI Background Report*, AHURI, Melbourne.
- Gatt, W., Micallef, B., & Rapa, N. (2018). A macro-econometric model of the housing market in Malta. Central Bank of Malta. *Research Bulletin*, 2018, 11-18.
- Gigineishvili, N. (2011). Determinants of interest rate pass-through: Do macroeconomic conditions and financial market structure matter? International Monetary Fund, *Working Paper*, 11/176. <https://doi.org/10.5089/9781462312313.001>
- Grech, A. G. (2017). Did Malta's accession to the EU raise its potential growth? A focus on the foreign workforce. *Journal of Economic Integration*, 32(4), 873-890. <https://doi.org/10.11130/jei.2017.32.4.873>
- Grech, O., & Rapa, N. (2016). STREAM: A structural macro-econometric model of the Maltese economy. Central Bank of Malta, *Working Paper* WP/01/2016.
- Hancock, K. E. (1993). Can't pay? Won't pay? Or economic principles of 'affordability'. *Urban Studies*, 30(1), 127-145. <https://doi.org/10.1080/00420989320080081>
- Housing Authority. (2020). *Scheme on 10% deposit for the purchase of a property*. Retrieved from <https://housingauthority.gov.mt/en/Documents/Schemes/10%20percent%20Deposit%20Scheme%20-%20English.pdf>
- Kain, J. F., & Quigley, J. M. (1970). Measuring the value of housing quality. *Journal of the American Statistical Association*, 65(330), 532-548. <https://doi.org/10.2307/2284565>
- Li, R. Y. M. (2015). Generation X and Y's demand for homeownership in Hong Kong. *Pacific Rim Property Research Journal*, 21(1), 15-36. <https://doi.org/10.1080/14445921.2015.1026195>
- Meen, G. (2018). How should housing affordability be measured? *UK Collaborative Centre for Housing Evidence*, 3 September 2018.
- Micallef, B. (2018). Constructing an index to examine house price misalignment with fundamentals in Malta. *International Journal of Housing Markets and Analysis*, 11(2), 315-334. <https://doi.org/10.1108/IJHMA-11-2017-0099>
- Micallef, B. (2020). Real convergence in Malta and in the EU countries after the financial crisis. *Journal of Economic Integration*, 35(2), 215-239. <https://doi.org/10.11130/jei.2020.35.2.215>

- Micallef, B., Rapa, N., & Gauci, T. (2014). The role of asymmetries and banking sector indicators in the interest rate pass-through in Malta. *Journal of Advanced Studies in Finance*, 7(1), 5-13. [https://doi.org/10.14505/jasf.v7.1\(13\).01](https://doi.org/10.14505/jasf.v7.1(13).01)
- Peverini, M., & Cavicchia, R. (2022). Housing affordability and the city. Disentangling the urban and spatial dimensions of housing affordability in Europe. In *ENHR 2021, Unsettled Settlements: Housing in Unstable Contexts*, 440-457.
- Quigley, J. M., & Raphael, S. (2004). Is housing affordable? Why isn't it more affordable? *Journal of Economic Perspectives*, 18(1), 191-214. <https://doi.org/10.1257/089533004773563494>
- Stone, M. (2006). What is housing affordability? The case for the residual income approach. *Housing Policy Debate*, 17(1), 151-184. <https://doi.org/10.1080/10511482.2006.9521564>

Note

Note 1. See Abela and Gatt (2021) for an in-depth analysis of household savings in Malta. However, information on the saving rate of first-time buyers is scarce. Most large-scale, representative surveys of the Maltese population, such as the Household Budgetary Survey (HBS) or the Household Finance and Consumption Survey (HFCS), consider the household as the relevant unit of analysis rather than the individual. Hence, prospective first-time buyers, who tend to live with their parents, will be captured within their parents' household.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).