

The Macro Economic Factors affecting Property Prices in Malta

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Abstract: Property prices have been on top of European governments' agenda for decades as their contribution towards the whole economic system is imperative. Property prices in Malta have been on an upward trend and, lately, the upward trend has been larger than in previous years. Even though this is a sign of a strong and growing economy, it can have implications on residents due to affordability issues affecting their standard of living. This study seeks to determine the factors which have an influence on property price in Malta whilst also analysing the strength of the relationship each factor holds on house prices. This study examines the Gross Domestic Product, unemployment rate, population, inflation, the number of home loans within the Maltese economy, ageing population, the number of tourists, minimum wage, and development permits. Out of these nine variables tested, eight proved to be statistically significant. The variables which had the largest effect on house prices was the unemployment rate whilst the variable with the least effect on house prices was inflation.

Keywords: House prices; macroeconomics variables; affordability; government

The Local Scenario

In Malta, the property market is a major driver for GDP growth and a very important aspect of investment and savings for many people. Property is a source of bequest helping intergeneration transfers which can only keep on happening if people are able to purchase property and transfer it to cash with minimal hiccups. A healthy, well-functioning, and growing property sector tops the agendas of many European governments. The local housing market is a major contributor towards the stability of the financial system; it is imperative that it functions adequately as any instability can have adverse effects within the whole economic system owing to strong linkages with other sectors (Vella 2016).

High prices are evident in the data which has been put together for this study; in fact it has been argued that local property prices are overinflated due to inexperienced developers (*Times of Malta 2009*). Over the past two decades the Maltese economy has experienced economic growth and, needless to say, this brought development and urban growth. The population has also increased significantly which further increases pressure on demands for housing.

In a meeting with the Malta Chamber of Commerce in October 2017, Dr Gordon Cordina, director at ECUBED Consultants, stated that 18% of the property on the market is vacant and this gives rise to an issue of the basic demand-and-supply rules. Even though supply might be increasing, given the constant development, the prices of property are increasing still.



Figure 1. Year-on-Year Increase in Property Price (Source: CBM)

Figure 1 shows that the average year-on-year increase in property prices from 2002 to 2013 was 5.8%; however, from 2013 to 2016 the average increase in property prices grew to 15.3%.

Developments within the housing market are important for the assessment of the overall business system. The housing sector affects the business cycle. Firstly, house prices will affect consumption of households since housing wealth accounts for around 60% of the total household wealth in the euro area. Secondly, developments within real estate affects housing investment and the construction industry which has a significant multiplier effect (Cassar 2015). Finally, put together, these channels tend to be reinforced via the financial accelerator effect; since real estate acts as collateral, it in turn affects the banks' balance sheet and their willingness and ability to provide credit to the real economy (Bernanke *et al.* 1999; Iacovello 2005).

Research Objective

This study aims to assess the macro economic factors which affect local property prices using the Pearson Correlation Coefficient. Furthermore, it will not only identify the factors but also determine the strength of these factors in affecting property prices.

The motivating factor for choosing this topic lay within the importance of certain variables, such as low unemployment rates and high GDP levels which are all positive signs that an economy is doing well. However, do these factors contribute towards higher property prices? And, if so, are they collectively contributing to decreasing affordability within the local property market amongst residents?

The research questions being study are:

- i. Which are the macro-economic factors that affect property prices in Malta?
- ii. What is the influence of each macro-economic factor on changes in local property prices?

- iii. Which macro-economic factor has the largest effect on changes in local property prices?

Purpose Statement

The scope of this time-series study is to develop an understanding of which macro-economic factors affect property prices in Malta through the conceptual framework illustrated in Figure 3 and their contribution towards changes in prices. At this stage in the research, the macro economic factors will be defined as those factors which individual institutions do not have control over but are a function of the economic system and government. The framework relates a series of macro factors (independent variables) to property prices (dependent variable) and examines the relationship between the sets using Pearson's Correlation Coefficient. The sample size which was used for this study covers a 12-year period: 2006-17. The audience for this research are local policy-makers, the finance ministry in charge of schemes promoting sustainable property prices in Malta, along with other institutions affecting the macro economic variables in this study.

Literature Review

The study is based on various sources of literature discussed hereunder which are illustrated in Figure 2 through the use of a literature map.

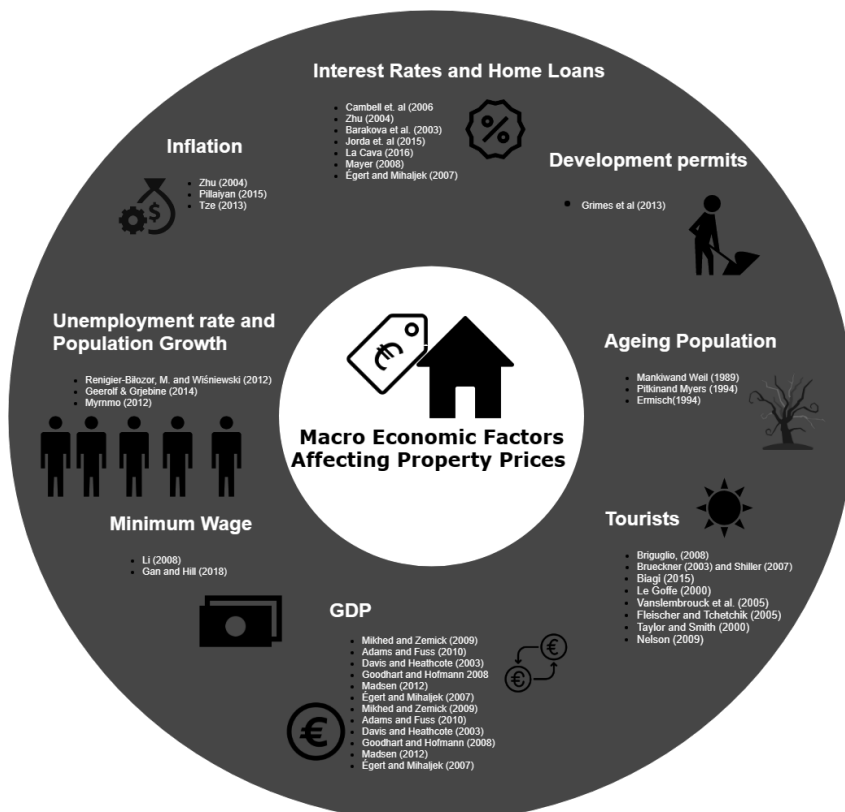


Figure 2. Literature Map

Macroeconomic Factors affecting Property Prices

House prices are usually modelled in terms of changes in demand and supply within the property market (HM Treasury 2003). On the demand side, key factors include income, the real rate of interest rates on home loans, along with financial wealth and demographic factors, such as the labour market conditions. The supply side of housing includes costs of construction, development permits, and other factors, such as material costs. When the housing market is in equilibrium it implies that demand and supply are at par; however, data and various studies shows that the housing market is far from an equilibrium position in nearly every country (Hizmo 2010; Leun 2014; Piskorski and Tchisty 2017). Renigier-Bilozor and Wisniewski (2012) found that multiple macro-economic factors affect property prices in Europe. In Italy, the macro economic factors affecting house price include final consumption expenditure, the price of water and electricity, and the net national income. Furthermore, Renigier-Bilozor and Wisniewski conclude that, in Poland, employment levels and population growth are major contributors towards house pricing.

GDP

Literature is rich when it comes to the relationship between GDP and the housing market. A study in the USA carried out by Mikhed and Zemick (2009) found that a decrease in the GDP levels had a negative effect on house prices. Complementing this finding was a study by Adams and Fuss (2010) which discovered that the higher the GDP growth, the higher the increase in house prices. Furthermore, various studies agree that GDP does have an effect on the short-run prices (Davis and Heathcote 2003; Goodhart and Hofmann 2008; Madsen 2012). However, contrary to the above literature, Madsen (2012) discovered that such a relationship does not hold in the long run. Finally Égert and Mihaljek (2007), who assessed whether GDP is a determinant of house prices in Eastern European countries, concluded that a significant and positive relationship existed in all the three different model specifications that they utilized.

Unemployment Rate and Population Growth

Renigier-Bilozor and Wisniewski (2012) realize that the unemployment rate influences the level of house prices. They conclude that, since Poland could be considered a developing country, unemployment rate influences the demand for property and this is reflected in the price levels. Furthermore, they posit that, in the case of Poland, population growth is a factor which gives further rise to property prices. Geerolf and Grjebine (2014) discovered that, if unemployment falls by 3.4%, property prices appreciate by approximately 10%. This study was carried out across 43 countries for the period 1970–2010. Moreover, Myrnmø (2012) suggests that an increase in the population does influence house prices through the indirect effect of an increase in demand since an increase in population transcribes to more individuals demanding places to live in, generating higher demand and, finally, higher prices.

Inflation

The theory behind as to why inflation affects house prices is described by Zhu (2004). The mechanism of how it influences house prices lies because housing is viewed as an investment and could be utilized as a good hedge against inflation. This implies that that when inflation is high or expected to increase individuals will demand property as they speculate that the price of the purchased property will increase in the near future. However, as described by Zhu, this will in turn increase property prices further,

a self-fulfilling prophecy. Pillaiyan (2015) suggests that the Malaysian housing prices were significantly affected by inflation but Tze (2013) finds no significant relationship between inflation and house prices in Malaysia. The reason a significant result was not found might be the period of study, which was much shorter.

Interest Rates and Home Loans

The Gordon Growth Model can be reinterpreted as a house price model whereby house prices become a function of rent, interest rates, and rental growth implying a convex relationship between house prices and interest rates; the lower the interest rates the greater house price elasticity is to a change in interest rates. In simple terms, the lower the interest rates the higher the percentage increase in house prices (Campbell et al 2006).

Zhu (2004) posits that there is a negative and significant relationship between interest rates and house prices. House prices rise when interest rates drop since most of the purchases are done on credit. This is further enhanced by Barakova *et al.* (2003) who discovers that, since interest rates are low, affordability increases and so does the demand for housing, resulting in an upward push in house prices as well. This implicitly implies that, as interest rates fall, the number of home loans increase which will further increase the price of property. A study in America carried out by Jorda et al (2015) theorizes that higher interest rates make borrowing more expensive resulting in potential borrowers not bidding up house prices leading to a fall in property prices. Similarly, La Cava (2016) postulates that an increase in house ownership is related to lower interest rates, implying that low interest rates stimulate potential buyers to demand property which will result in an increase in price. A similar study carried out by Mayer and Hubbard (2008) in Spain finds that interest rates also affects property prices positively. Égert and Mihaljek (2007) found a strong and significant effect that the amount of credit to the housing industry has on property prices in central eastern European and OECD countries. They also tested the relationship between house prices and the real interest rate and discovered a negative relationship, implying that lower interest rates will increase house prices.

Ageing Population

Several countries, including Malta, are experiencing a new demographic trend called population ageing which can significantly impact house prices. As population ageing becomes more apparent over time, the literature on demographics and housing is continuously expanding. Mankiw and Weil (1989) explain the drastic change in housing demand and found that an ageing population will put downward pressure on house prices. However, not all studies agree with this view; in fact, Pitkin and Myers (1994), utilizing a cohort linked cross-section analysis, showed that housing consumption increases past the age of 70 which results in upward pressure to house prices. Ermisch (1994) discussed how changes in demand for housing is experienced with ageing population because of changes in their needs, mainly downsizing.

Tourists

Tourism is one of the most important economic activities for small island states, such as Malta (Briguglio 2008). Both Brueckner (2003) and Shiller (2007) conclude that both air travel and tourism stimulate the development of the local economy which includes the property market and its prices. Similarly Biagi (2015), who assessed whether tourism affected house prices in Italy utilizing a Generalized Method of

Moments approach and a data set of 103 Italian cities between 1996 and 2007, found that tourism affects house prices positively. Literature on tourism and property prices is rather limited as many studies have focused on the relationship between tourism and related accommodation such as hotels and holiday homes (Le Goffe 2000; Fleischer and Tchetchik 2005; Taylor and Smith 2000; Nelson 2009, Vanslebrouck *et al.* 2005).

Minimum Wage

Income has a great impact on house prices (Li 2008). Housing can be considered a durable good which holds intrinsic value and, as income increases, this results in a stimulus for people to improve their living conditions along with climbing the social ladder; further increased demand for property subsequently results in higher prices. Gan and Hill (2018) found a significant and strong relationship between income and house prices in Sydney, Houston, and the State of Texas. This implies that, as income levels increase, the prices of property will increase as well.

Development Permits

House prices tend to respond to changes in the costs of raw material and labour required. Grimes *et al.* (2013) show that supply tends to be slow to respond to supply shocks in New Zealand but it is much more responsive in small islands. Development permits and their associated costs can be considered as a supply factor owing to the costs they entail. If the costs of development increases, costs for construction increase and so will property prices.

The Conceptual Framework

The literature discussed in previous sections provides ground to extract a conceptual framework. The purpose is not actually to validate what has been found, but is a bid to expand upon the understanding whether the macro economic factors affecting property prices in different countries affect prices also in Malta. Kelle (2005) and Reichertz (2010) advocate that research should be carried out through the extensive use of literature whilst encouraging new insight without creating any bias. Figure 3 depicts the conceptual framework developed for this study. Based on previous studies, this study assesses whether a relationship exists between the dependent variable being property prices and each independent variable. Moreover, the strength of this relationship will also be assessed through the use of statistical tools.

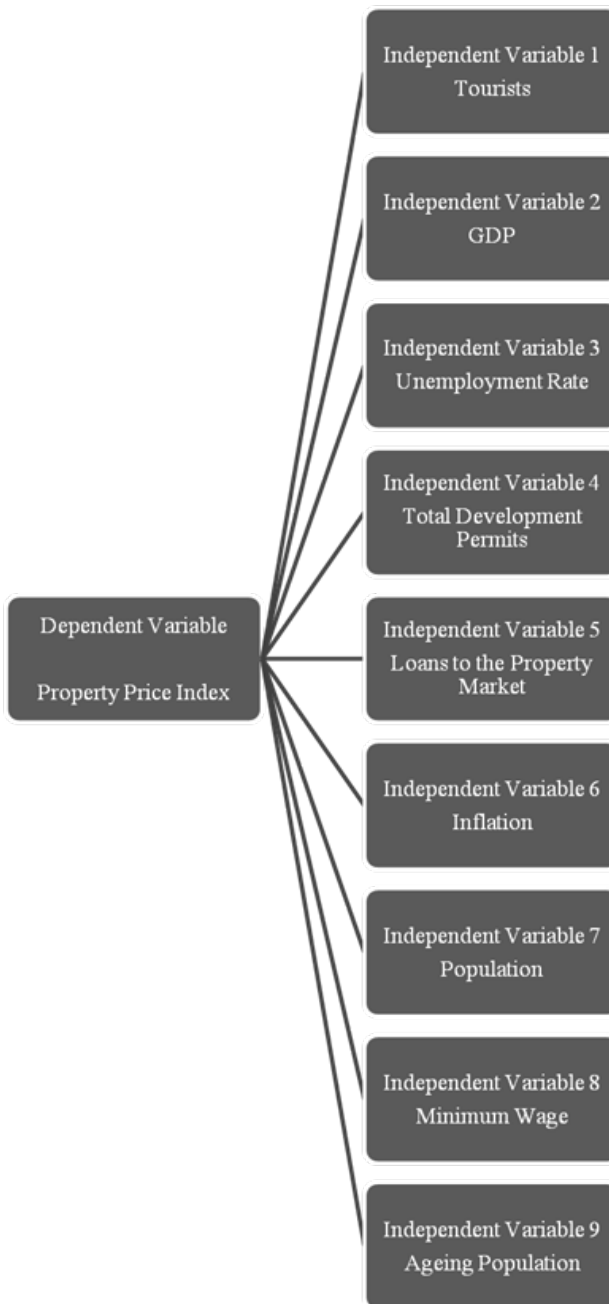


Figure 3. Conceptual Framework

Methodology

Methodology utilized

Research can utilize several tools and methods to assess the research question being investigated. This section described the methods specifically utilized for this study.

The data collected is both reliable and valid since the sources are reputable institutions. Pearson's Correlation Coefficient, or Pearson's R, was developed by Karl Pearson (1948). In addition to being the first test for correlation, it is also the most commonly used measure of association and all subsequent correlation methods stem from Pearson's equation. Pearson's Correlation Coefficient measures the strength, direction, and probability of linear association between two interval or ratio variables. The main purpose that many studies utilize such an approach to test correlation is due to the simplicity of applying the test whilst providing other specification or semi-partial and partial correlation (Puth et al. 2014). Golob et al (2012), which assessed the factors affecting the real estate market in Slovenia, utilised the Pearson Correlation Coefficient to assess such relationship. Similarly, a study in the USA by Valadez (2011) utilized a similar methodology to assess how GDP is correlated to the housing bubble. Quantitative research will be utilized to analyse the relationship between the various explanatory variables and the variable of interest. Based on existing literature, various factors exist which affect house prices and these were taken into consideration and analysed. Creswell (2008) defined quantitative research as means to test objective theories by examining the relationship between different variables.

Data Description

The literature, which provided a solid foundation of various factors which can affect house prices, was based on both EU and non-EU countries. These factors were then taken into consideration and applied to the local scenario to analyse whether such a relationship exists along with the strength of the said relationship.

The Dependent Variable

The variable which was investigated is the property price index for Malta over a 12-year period between 2006 and 2017. The dependent variable is assumed to be explained by various other variables which help to explain changes in the index. The list of variables included in this study are in no way exhaustive in nature and omitted variables might also explain changes in the price. However, the variables included for this research are the ones which are commonly used in studies based on the literature and for which data was available.

The Macroeconomic Factors

Based on the literature available, several macroeconomic factors were chosen to help analyse their relationship with property prices in Malta. In this section a priori expectations of the relationships will be given.

Based on previous studies, the Gross Domestic Product affects the price of property considerably. The variable measuring Gross Domestic Product was obtained from the Central Bank of Malta and is denoted in millions and based on current market prices. Tourism is considered to be another macroeconomic variable which affects property prices. As a norm Malta is accustomed to tourists visiting Malta. Various

sources of literature state that tourists have a positive impact on property prices, implying that their presence increases prices. The data for tourism was collected from the statistics published by the Central Bank of Malta and tourists of every nationality were included. The data gathered was in terms of thousands of tourists. Another important macroeconomic factor affecting property prices is the unemployment rate. Findings in the literature show that a high unemployment rate distorts the value of property since it leads to high crime rates and undesirable living conditions (Melick 2003). Based on previous literature, the expected relationship is a negative one. The data gathered was obtained through published statistics from the National Statistics Office while the data utilized was gathered from the Labour Force Survey. Development permits is another variable mentioned in the literature. For this study, data was gathered from the Central Bank of Malta; the data was not segregated and included various development permits and were not limited to residential property only. Based on previous studies, the expected relationship is positive, implying that, as development permits increase, the price of property should increase too. The number of loans in an economy were also considered as part of the macroeconomic variables. The amount of loans provided by local financial institutions with respect to property is another important variable which is tested in this study. The data for such loans was gathered from the Central Bank of Malta. The data is in the form of a percentage of the total amount of loans in the economy.

Based on previous studies, inflation is another important variable which contributes to changes within property prices. The data for inflation was gathered from the Central Bank of Malta and was the Harmonized Index for consumer-based prices at current market prices. A priori inflation is expected to positively affect house prices. Population is another variable which affects house prices since, as the population increases, the demand for housing will increase and therefore an increase in prices is expected. The data for population in Malta was gathered from Eurostat. Another important factor identified from the literature is the minimum wage, the data for which was gathered from Eurostat. Changes in minimum wage represent changes in all other wages making it a good representation of all the changes in wages in an economy. The expected relationship is positive. Finally, a few sources of literature include ageing population as a variable which should affect house prices. For this study data was collated from Eurostat and is in the form of a percentage of the total population.

Data Sources and Analysis

The macroeconomic variables utilized in this study were gathered through the secondary data published by reputable sources such as the Central Bank of Malta, the National Statistics Office, and Eurostat. The data collected was analysed through two main statistical programmes which include IBM SPSS statistics and Microsoft Excel. IBM SPSS statistics was utilized namely to conduct the Pearson Correlation Coefficient statistic, whilst Microsoft Excel was utilised to present the data gathered in a visual format by utilizing graphical analysis.

The Pearson Correlation Coefficient is a ratio of the covariance of two variances which provides a relationship between the variables under investigation which are of a continuous type. It measures the existence and strength of a linear relationship between two variables and, if the results are significant a correlation, can be said to exist. According to Cohen (1988), an absolute value of r of 0.1 is classified as small, an absolute value of 0.3 is classified as medium, and one of 0.5 is classified as large. The Pearson Correlation test does not show whether a causal link between the variables exists, but only whether such a relationship exists.

The data gathered from various sources was put together as depicted in Figure 4. To ensure that the data can be utilized adequately for this study, it had a common underlying factor which was years which allowed for the comparative analysis to be undertaken within this study.

	Dependent Variable (y)	Independent Variable 1	Independent Variable 2	Independent Variable 3	Independent Variable 4	Independent Variable 5	Independent Variable 6	Independent Variable 7	Independent Variable 8	Independent Variable 9
Year	PROPERTY PRICES INDEX (BASED ON ADVERTISED PRICES) ¹ (based 2000=100)	Tourists (thousands)	GDP in € Millions (current market prices)	Unemployment Rate (total)	Total Development permits, commercial, social and other Permits	Loans to construction and real estate (% of total loans)	Annual average index (HICP (2015 = 100)	Population (thousands)	Minimum Wage (€)	Population aged 65 + (% of total population)
2006	177.0	1124.24	5386.14	4.8	3752	70.42	83.79	404999	584.24	13.80
2007	178.9	1243.51	5757.48	4.3	3667	73.36	84.38	405616	601.90	13.90
2008	174.1	1290.94	6128.68	4.0	2917	75.36	88.33	407832	617.21	13.90
2009	165.3	1182.49	6138.62	4.8	2691	73.84	89.95	410926	634.88	14.30
2010	167.1	1340.31	6599.51	4.5	2354	69.70	91.79	414027	659.92	14.90
2011	169.3	1415.00	6839.79	4.2	1720	65.84	94.10	414989	664.95	15.70
2012	170.1	1443.44	7167.85	4.3	1598	61.61	97.13	417546	685.14	16.40
2013	173.7	1582.15	7641.30	4.5	1540	58.81	98.08	422509	702.82	17.10
2014	185.7	1689.81	8467.12	4.1	1631	54.47	98.84	429424	717.95	17.70
2015	197.4	1783.36	9534.59	3.0	1722	29.52	100.00	439691	720.46	18.10
2016	219.7	1965.93	10196.71	1.9	2124	26.43	100.90	450415	728.04	18.50
2017	245.6	2273.84	11126.01	1.3	3108	26.39	102.18	460297	735.63	18.80

Figure 4. Data Set (Sources: CBM, NSO, and Eurostat)

Data Analysis

Descriptive Statistics

Table 1. Descriptive Statistics

		Minimum	Maximum	Mean	Standard Deviation	Unit
Dependent Variable (y)	Property Price Index (based 2000=100)	165.30	245.60	185.33	24.41	Index
Independent Variable 1	Tourists	1124.24	2273.84	1527.92	346.02	Thousands
Independent Variable 2	GDP	5386.14	11126.01	7581.98	1859.38	Euro Millions
Independent Variable 3	Unemployment Rate	1.30	4.80	3.81	1.14	Percentage
Independent Variable 4	Total Development permits, commercial, social and other Permits	1540.00	3752.00	2402.00	812.46	Integer
Independent Variable 5	Loans to construction and real estate	26.39	75.36	57.15	18.99	Percentage of total loans
Independent Variable 6	Annual average index (HICP (2015 = 100))	83.79	102.18	94.12	6.40	Index
Independent Variable 7	Population	404999.00	460297.00	422939.25	17959.76	Thousands
Independent Variable 8	Minimum Wage	584.24	735.63	671.10	52.18	Euro
Independent Variable 9	Population aged 65 +	13.80	18.80	16.09	1.92	Percentage of total population

*N = 12

Table 1 provides a general description of the variables which are used in the Pearson's Correlation Coefficient test and will aid in the description of the variables in the sections below.

The Dependant Variable

Property Price Index

The property price index provides an average change in property prices over a period.



Figure 5. Property Price Index (Source: CBM)

The average property price index, as indicated in Table 1, is that of 185.33, implying an overall increase of 85% over 18 years. The highest point this index has reached is 245.60 which was recorded in 2017. Figure 5 indicates a positive upward trend line.

Explanatory Variables

Number of Tourists

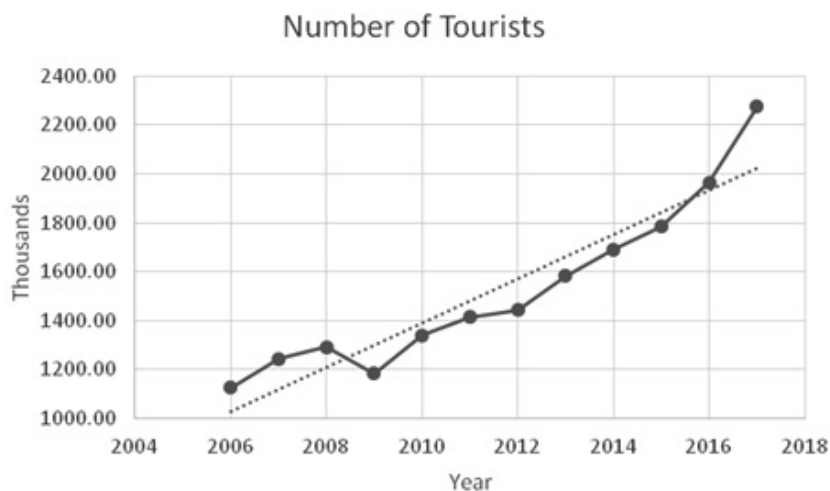


Figure 6. Number of Tourists (Source: CBM)

Figure 6 represents the total number of tourists who visited Malta; the average over the 12-year sample was 1,527,920 with a standard deviation of 346,020. The maximum number of tourists was recorded at 2,273,840 in 2017.

GDP

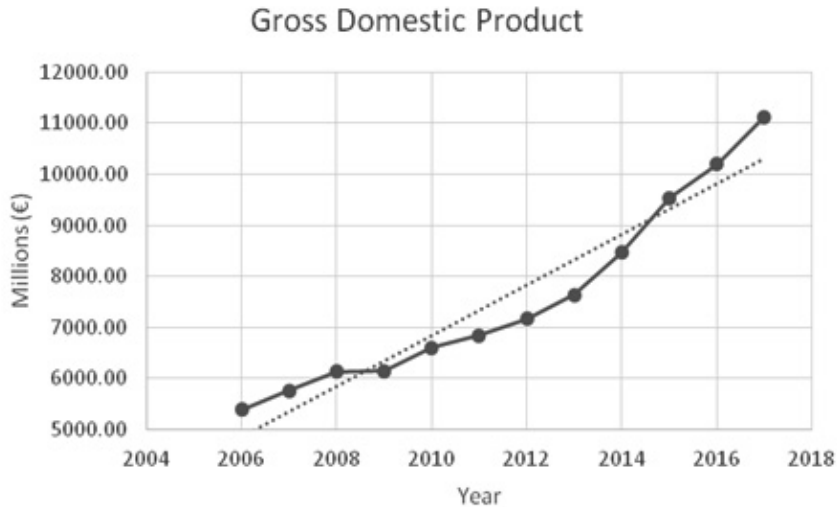


Figure 7. Gross Domestic Product (Source: CBM)

The average GDP was recorded at €7,581,980 with a standard deviation of €1,859,380. The highest point of GDP was recorded in 2017 at €11,126,010. Overall the data depicted in Figure 7 shows a positive trend and, on average, has increased throughout the 12-year sample.

Unemployment Rate

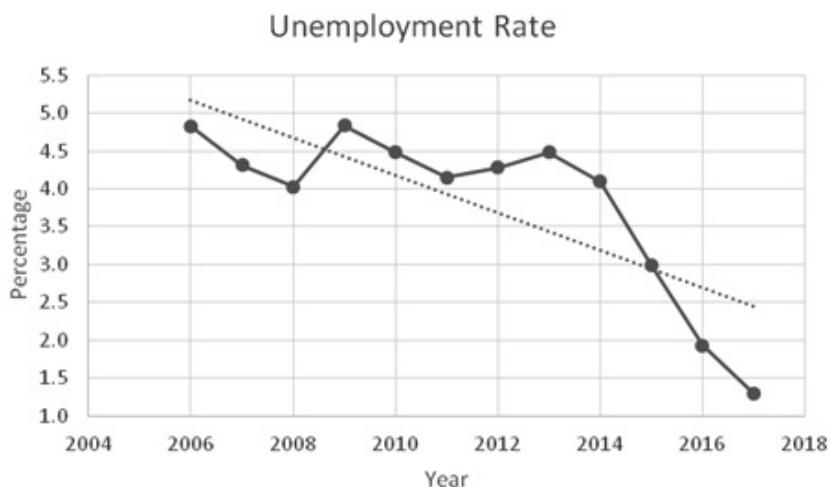


Figure 6. Number of Tourists (Source: CBM)

Figure 8 show the downward trend in the unemployment rate in Malta. Table 1 indicates that the minimum unemployment rate was recorded in 2017 at 1.30%. The average unemployment rate stood at 3.81%, with a standard deviation of 1.14%.

Total Development Permits

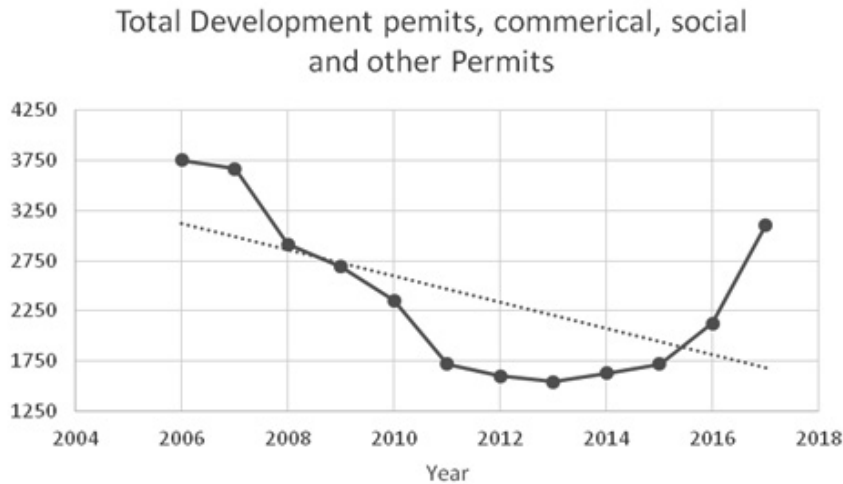


Figure 9. Total Development Permits (Source: CBM)

Table 1 indicates that the average amount of development permits issued per year stands at 2,402. Figure 9 shows that the overall trend is downward; however, one can note that an upward trend exists from 2013 which could be explained by a decrease in the cost for development applications (MEPA), combined with an increase in the GDP levels.

Loans to Construction and Real Estate

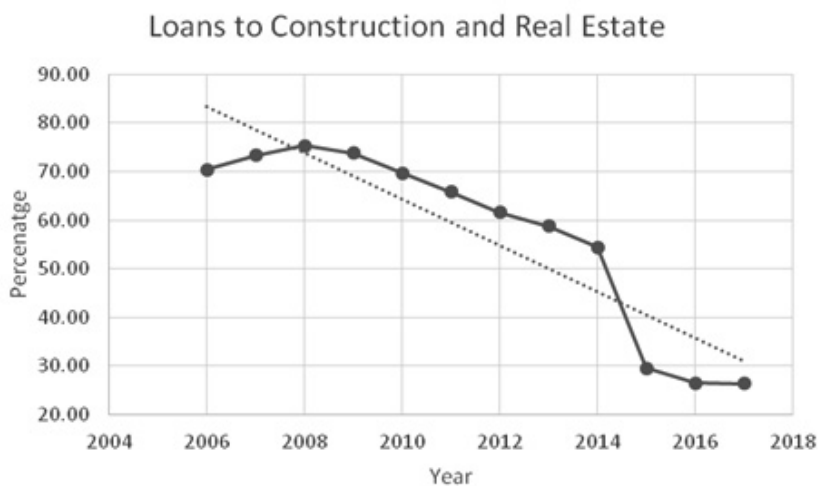


Figure 10. Loans to Construction and Real Estate (Source: CBM; author's own calculation)

Data from Table 1 indicates that, on average, 57% of the total banks' portfolio of loans is within the property industry with a standard deviation of 18.99%. The maximum amount of loans to the property index with respect to the banks' portfolio of loans was recorded in 2008 at 75.36%.

Inflation Rate

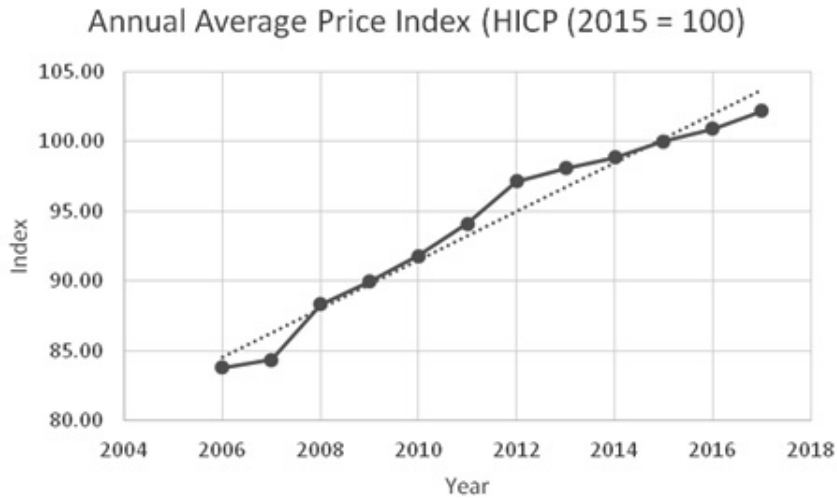


Figure 11. Annual Average Price Index (Source: CBM)

Table 1 indicates that the maximum value of the Harmonised Price Index was 102.18 recorded in 2017 as shown in Figure 11, implying price levels in Malta were 2% higher in 2017 than they were in 2015. Moreover, the average price level was 94.12 with a standard deviation of 6.40.

Minimum Wage



Figure 12. Minimum Wage (Source: Eurostat)

Table 1 indicated that the minimum wage in Malta on average is €671.10 and the standard deviation is €52.18. Figure 12 shows that the data depicts an upward trend due to the positive trend line.

Population

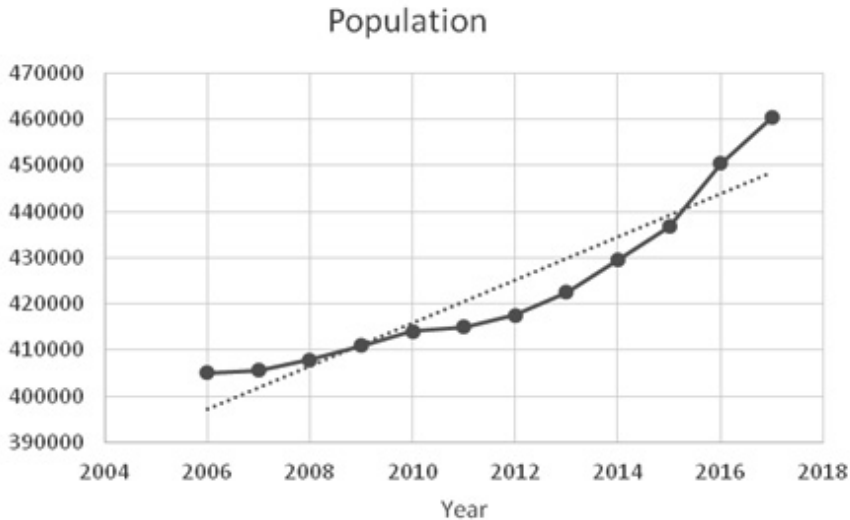


Figure 13. Population (Source: Eurostat)

Table 1 specifies that the average population in Malta stood at 422,939, whilst the maximum was 460,297 recorded in 2017 as shown in Figure 13. The population density in Malta differs from the European market since in Malta the population density stands at 1,325 persons per square kilometre compared to the 117 persons per square kilometre in Europe.

Population aged 65+

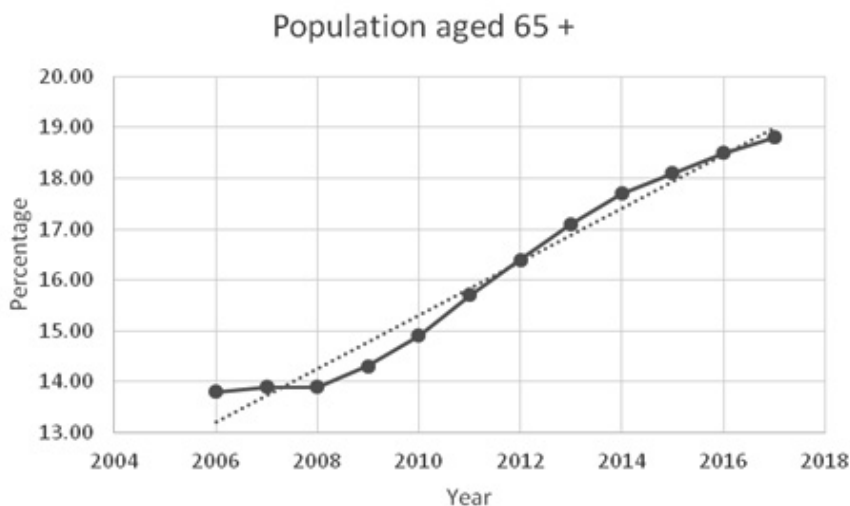


Figure 14: Population of Age 65+

Figure 14 depicts the population aged 65 and over as a percentage of the total population. The trend is positive showing that the amount of people aged 65 and over is increasing in Malta. Table 1 shows that on average 16% of the total population is 65 and over. However, the maximum stood at 18.80% in 2017.

Data Analysis

The data was analysed utilizing Pearson's Correlation Coefficient which is a statistical measure of the strength of a linear relationship between paired data. Evans (1996) suggested that the values of correlation for the Pearson Correlation Coefficient could be classified thus:

Table 2. Correlation Effect Size (Source: Evans 1996)

Pearson Correlation Coefficient	Relationship
0.00 – 0.19	Very Weak
0.20 – 0.39	Weak
0.40 – 0.59	Moderate
0.60 – 0.79	Strong
0.80 – 1.00	Very Strong

A significance test is conducted to decide whether, based on the sample utilized, there is any evidence to suggest that linear correlation is present within the population. The Pearson's Correlation test was run on the dependant variable, the property price index, against all the explanatory variables to determine whether a relationship exists. The results were summarised in Table 3.

Table 3. Summary of Results (Source: Author's Calculation)

Variable	Pearson's Correlation Coefficient
GDP	.877**
Tourists	0.902**
Unemployment Rate	-0.962**
Development Permits	0.127
Loans	-0.874**
Inflation	0.605*
Population	0.915**
Minimum Wage	0.619*
Population aged 65+	0.73**
**Correlation is significant at the 0.01 level	
*Correlation is significant at the 0.05 level	

The Pearson's Correlation value obtained in Table 3 for the Gross Domestic product is 0.877 which indicates that there is a very strong positive relationship between the two variables (Evan 1996). Moreover, the result is significant at the 0.01 level implying that the results of the sample can be inferred to the whole population. Similarly, the Pearson's Correlation value obtained for the number of Tourists is 0.902 which indicates a very strong positive relationship. The correlation co-efficient of the unemployment rate is -0.962 which postulates a very strong negative relationship between the two variables. Similar results were obtained for the correlation coefficient of the number of loans indicating a very strong negative relationship of -0.874.

Even though the Pearson's Correlation value obtained for development permits is 0.127, which indicates a very weak relationship between the two variables (Evan 1996), the result is not significant and can only be applied to the sample.

The Pearson's Correlation value obtained for inflation is 0.605 which indicates a strong positive relationship between the two variables (Evan 1996) similar values were also obtained for the population and aging population, displaying correlation coefficient of 0.915 and 0.73 respectively. The minimum wage also played an important role in property price fluctuations as the correlation obtained is positive at 0.619.

Ethical Considerations

When analysing data, it was made sure that it was not manipulated in any way and that it is true to its original source of collection. Moreover, when the data was analysed it was ensured that no personal bias was included in the write up.

Conclusion and Recommendations

Discussion

The aim of this study is to analyse the factors which give rise to changes in property prices along with their strength in influencing the change in prices. The results obtained were compared to the a priori expectations formed from existing literature. The relationship between GDP and the property price index is a positive one, implying that when an economy experiences high levels of GDP property prices tend to be high too. Xu (2017) concluded that GDP has a positive relationship on the level of house prices. Using a Granger Causality Test it was found that an increase in GDP causes an increase in house prices and not vice-versa. Biagi et al. (2015) found that house prices in Italy are positively affected by tourism levels. This is in line with the results found in this study whereby, as shown in Table 3, a strong correlation exists between the number of tourists that visit Malta and the general house price index. Biagi et al. (2012) conducted another study in Sardinia which is in line with the results obtained, given that Sardinia is an island which shares various characteristics with Malta, it is highly significant that the results are also shared. Cannari and Faiella (2008) concluded similar results between tourism and house prices.

Economic theory states that when unemployment figures are high fewer people can afford a house and the fear of unemployment may discourage people from entering the property market (Sloman et al. 2013). Table 3 indicates that the relationship between unemployment and house prices is negative which is in line with economic theory. Jacobsen (2005) found that high unemployment figures affect house prices negatively which is explained through the linkage effects, since a higher level of unemployment results in a lower expectation of wage growth which will increase

uncertainty concerning future income and the ability to repay any debt obligations; subsequently this will reduce the willingness to pay for houses.

The results in Table 3 indicate a negative relationship between house prices and loans. This implies that, as credit for housing increases, the price of property will fall. This goes against what was found by Égert and Mihaljek (2007) in central eastern European countries. Wenzel (2012) contradicts this view and states that, when interest rates increase and the number of loans fall, property prices will still increase, implying that the opposite is also true; hence as interest rates fall, the number of loans will increase and property prices will fall.

A study in 35 major cities in China carried out by Kuang and Liu (2015) found that inflation has a positive and strong correlation with house prices. They concluded that inflation has a much stronger effect on house prices than house prices have on inflation. From their results it is safe to say that inflation is what causes house prices to increase. These results are in line with the finding of this study which as indicated in Table 3: a strong positive relationship was found between inflation and house prices. Similarly, population and house prices exhibit a positive and strong relationship as indicated in Table 3. This result is also shared by Mulder (2006) who found that population change leads to a change in demand for housing; population growth leads to a growth in housing demand which will increase the price of property. Furthermore, a study by Taltavull (2003) which utilised pooled data across 71 Spanish cities found that population has a very strong significance in explaining changes in house prices.

The results obtained in this study show that the minimum wage has a positive impact on property prices which is significant at the 0.05 level. The results obtained are in line with the study carried out by Gan and Hill (2018) who found a strong and significant impact between ages and house prices in Sydney, Houston, and the State of Texas. Similar to the results obtained by Pitkin and Myers (1994), an ageing population has a positive and significant effect on property prices in Malta. Table 3 shows that the correlation coefficient obtained is significant at the 0.01 level with a value of 0.73, implying a strong relationship. Finally, the results obtained for development permits were not significant, as shown in Table 3, at any level and hence no conclusion can be drawn about such a variable.

Implications of the Study

The results of this study indicate that various factors are contributing towards an increase in property prices. The implication is that these variables all contribute towards higher economic growth and a strengthening of the local economic system although this comes at the expense of residents living in Malta.



Figure 15. Property Price Wage Gap (Source: CBM, Eurostat, Author's Calculations)

This is clearly shown in Figure 15 which depicts a widening gap between property prices and the minimum wage growth in Malta over the past 12 years. A study carried out by The Shelter in the UK (2014) found that house prices have been rising much faster than wages, making house more unaffordable in the UK. Based on the findings of this study, this is what the Maltese economy is experiencing and will result in similar repercussions as reported by The Shelter (2014) which include people being priced out of ownership and remaining trapped within the rental market. Such a phenomenon will increase the demand for the rental properties and prices will increase within that market too; in fact a study carried out by Central Bank of Malta (2016) reports that rental prices in Malta have increased. Even though such an increase cannot be solely tied down to the property price-wage gap, it could be one factor affecting such an increase in rental prices.

Lessard and Modigliani (1975) indicate that inflation within the housing market brings about various implications in an economy which include:

Wealth and income inequality since, as house prices increase, the newer generations find it much harder to climb the property income as first-time buyers must devote a higher percentage of their income to saving for a down payment and paying off the loan. Moreover, those who are not able to purchase a property will end up facing high rental prices. Finally, this will result in greater poverty figures in retirement since the norm is that a home loan would be paid off by retirement age, whereas rent will still have to be paid.

Intergenerational wealth inequality is another issue which high property prices are causing. De Nardi (2004) describes the phenomena of property being a bequest which can explain the emergence of various lifestyles among new generations. Such a bequest motive generates lifetime savings and wealth for new generations. Given the trend in house prices and the shift toward renting property, such bequest motives will no longer be possible and will impinge on future wealth which will affect future consumption behaviour.

Policy Recommendations

Property is one of the major contributor of the Maltese economy and controlling prices will be a very difficult task for policy-makers to undertake. However, government has undertaken various initiatives to elevate such a problem such as the introduction of the First-Time Buyers Scheme and of the Second-Time Buyers Scheme.

Government should introduce more initiatives which will allow buyers to afford property the same way they used to in the past decade. It is also important that the property market is not affected negatively because of the heavily reliance the Maltese economy has on it.

Both EU and non-EU countries have various schemes aimed at helping buyers acquire property. A hybrid system which would be ideal for the Maltese economy is the Shared Ownership Scheme of the UK. If an individual cannot afford a home loan, shared ownership offers the person the ability to purchase part of the home in share value whilst paying rent on the remaining share.

Another UK scheme is the Help to Buy: Equity Loan. Such a scheme will allow borrowers to borrow up to 20% of the cost of a new home from government and would only require 5% cash deposit with the remaining 75% would be taken from a financial institution. Figure 16 provides a visual overview of how such a system would work.

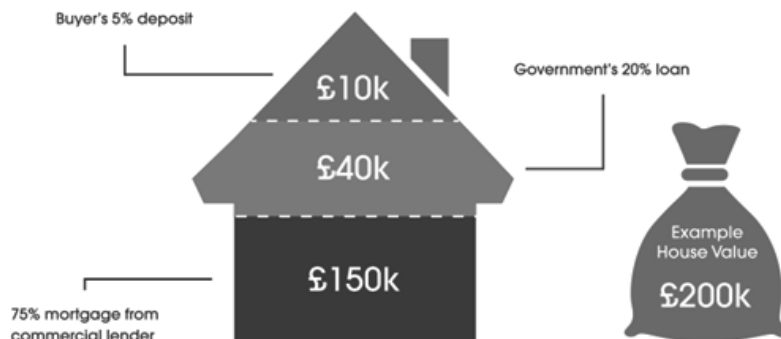


Figure 16. Help to Buy: Equity Loan (Source: HM Government)

Recommendations for Further Study

A more in-depth study can be undertaken to understand the interaction among all the independent variables and dependant variable through regression analysis. Future studies can consider including other macro-economic variables. The study can also be extended to the micro-economic factors in Malta to have a clearer picture of the determinants of property prices.

Conclusion

Based on the data collected and analyses, property prices have been increasing year on year; the rate of increase has outpaced the rate of growth in wages creating an ever-increasing gap. This will have serious repercussions on an individual's wellbeing as explained before. Moreover, as indicated in Table 3, the correlation between the population and house prices is very strong and the problem of an ever-increasing population is a persistent one within the local scenario and will put higher pressure on

house prices. This paper has outlined a few recommendations that policy-makers can consider to make housing affordable in order to reduce the potential negative impact outlined above such a situation might have on the economy.

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