Analysis of the Difference Between Asking Price and Selling Price in the Housing Market

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Abstract. In Italy, the opacity of the real estate market, which often does not reveal the real consistency of selling prices, or, in relation to the phase of the economic cycle, the low number of transactions force appraisers to use asking prices as comparables in the market approach. The international literature recognizes the importance of analyzing the relationship between asking prices and selling prices or time on market for the interpretation of the real estate market. In this work, the analysis of the difference is aimed at interpreting its variance by identifying the variables that have greater weight. For this purpose, a multivariate analysis model is built on a sample of data over a 12 years interval recorded in the housing market of the city of Potenza, Italy.

Keywords: Housing market · Asking price · Selling price · Market approach · Stepwise regression

1 Introduction

The estimate of the market value of an urban property intended for sale or to satisfy other possible purposes, if carried out with a market approach, is expressed in the comparison between the asset to be estimated and similar assets of known price (comparables). However, the search for comparables is made very complex by the segmentation and relative lack of transparency of the market. In Italy, the price declared in the notarial deed of sale, except for cases which are in derogation of DPR 131/86, is considerably lower than the selling price. Based on the norm, in fact, the verification of the congruity of the declared value takes place automatically, multiplying the cadastral income of the property by the coefficient of conversion of the income itself into real estate value. The cadastral value, declared in the deed, is however inferior, to a greater or lesser extent, with respect to the actual market value and therefore to the amount paid for the transfer.

The expedient, in most cases, is used to minimize transfer taxes and at the same time to avoid tax assessment. The trace of the real price of sale remains in the settlement,

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whose accessibility is almost zero. The only exception are sales between individuals who do not act in the exercise of commercial, artistic or professional activities, having as their object property for residential use and related appurtenances that, by art. 1, paragraph 497, Law 23 December 2005 n. 266, go in derogation of the legislation already mentioned. In this case, at the time of the transfer and at the request of the purchaser, the taxable base is constituted by the cadastral value, regardless of what was agreed and written in the deed. The rule forces the purchaser to declare in the deed the selling price. In fact, a false declaration, if discovered during the subsequent assessment phase, entails the payment of taxes on the entire amount, and of an administrative sanction from fifty to one hundred percent of the difference between the tax due and that already applied based on the declared value.

The need to have numerous and reliable comparables, in the face of a market which is not very transparent or not very active, often leads appraiser to replace selling prices with asking prices coming from brokers and intermediary agencies. This method of construction or integration of the comparison sample is now common in estimation practice and in some ways legitimized both by case law (Civil Cass. Ord. Sec. 1 Num. 20307 of 31/07/2018) and by the Revenue Agency (July 27, 2007 "Provisions on the identification of criteria useful for the determination of the value of a property").

These sources recognize the asking prices as useful references for estimating the market value of a property, provided that the properties which are the subject of them present an undoubted character of homogeneity with the property to be estimated.

These are asking prices which, as is well known, generally differ in excess, to a greater or lesser extent, from the selling prices. Therefore, the use in the estimate of the asking prices requires the ascertainment of their probable difference from the selling prices. This operation cannot disregard a preliminary and in-depth knowledge of the phenomenon, which must lead to results that can be logically differentiated according to the trends taking place in the market, the intrinsic and extrinsic characteristics of the goods and the behavior of the operators in its various segments.

The size of the difference between the asking and selling price (spread) can depend on many factors. Some of these can be traced back to the determinants of the economic situation, which can therefore condition the real estate market. These macro-economic factors, by altering the balance between supply and demand for real estate, cause fluctuations in the amount of the difference between the asking price and the selling price, especially in the pre or post-economic transition phase. The microeconomic factors are to be identified among extrinsic characteristics, essentially traceable to the location of the property, and intrinsic ones. Above those listed, there is an element which is largely linked to them but which, more than any other, can condition the spread: this is the strategic behavior of the intermediary.

This work aims at investigating the effects of micro and macro-economic factors on the difference between asking price and selling price. This objective, if on the one hand it can constitute an argumentative matter for a deeper study of the phenomenon, on the other hand it makes explicit the logical and methodological premises essential for an estimate in quantitative terms of both the spread and therefore the market value.

2 Literature Review

As already mentioned, a fundamental determinant of the spread is the strategic behavior of the seller who, in choosing the asking price, evaluates the macro and microeconomic conditions, knowing full well that an incorrect definition of the initial request is costly both in terms of the time required to sell the property and the relative final price [1].

In almost all segments of the real estate market, it is common experience to set a list price that differs from the expected sale price. Time on market (TOM) is also influenced by the skills and motivations of sellers. Setting an initial price too high or too low affects the marketability of the property. The asking price clearly plays a critical role in the transaction, and acts as a benchmark for potential buyers [2]. An initial price that is too high can discourage potential buyers and lengthen the time on market. But it has also been shown that while a higher asking price makes the process by which the offered price tends to the asking price less rapid, it also increases the probability of higher selling prices [3, 4]. Conversely, low asking prices correspond to more potential buyers, thus a quick sale, lower transaction costs but also lower probability of high transaction prices [5–10].

The seller must usually address the two conflicting goals: maximizing the transaction price and minimizing the time on the market [11, 12].

In real estate markets, a trade-off occurs between time on market and selling price, and the "pricing strategy" is the balancing act between the two [13, 14].

The strategy of sale can therefore be conditioned from micro and macroeconomic factors that act on the TOM and on the difference between asking price and selling price. Assuming homogeneous behavior of sellers, the variance of the TOM and therefore of the difference must be linked directly to these factors. Macroeconomic factors include those that can affect the housing cycle [2, 5, 7, 15, 16]. In down markets or normal economic times, the asking price generally exceeds the selling price, however when the real estate market is growing, residences can also command selling prices above list prices [17]. The determinants of the real estate cycle are certainly disposable income [18] and mortgage rates that can affect supply and demand [19–22].

Illiquidity is an inherent characteristic of the real estate market. The relationship between TOM and price dynamics is a manifestation of real estate illiquidity [15, 23].

The literature has also shown that the marketability of a residential property and therefore the TOM and the difference between asking and selling price can depend on the geographic area in which the property is located [24] and its quality characteristics [25]. TOM is significantly shorter for newer homes, particularly those in the middle or high price range, while the size of the home has no significant effect [20].

Based on the indications provided by the literature, the model presented in this paper was constructed to measure how macro and microeconomic variables can affect the difference between the asking and selling price.

To eliminate the effect of the factor that the literature considers to be one of the major determinants on the TOM and therefore on the difference between asking price and selling price, the sample was built on data from a single real estate agency.

3 The Case Study

The data were collected by a single real estate agency in the city of Potenza. The city of Potenza is the capital of the Basilicata Region (Italy), and the most populous municipality in the entire region with 67,122 inhabitants, corresponding to a population density of 382.6 inhabitants/sq. km. The real estate market in the last 15 years has had a dynamic that has uniformly characterized both the residential and non-residential segments. The crisis in the real estate market that began in 2008 and continued until 2013 was followed by a phase of slight upturn, which, however, stopped in 2019. 2020, due to the Covid19 pandemic and its effects on the housing market as well, showed a phase of generalized and consistent decline.

The analysis is carried out on a sample consisting of 202 residential properties located in the city of Potenza bought and sold between 2010 and 2021 (12 years). The diversification of the sampled data reflects the need to capture the effects explained on the spread by micro and macroeconomic factors.

In general, the real estate agencies and, as far as this research is concerned, also the intermediary approached, about the contracts concluded, conserve and manage in appropriate data banks the following information.

a) generalities of the contracting parties;
b) planimetry of the property;
c) destination of the surfaces;
d) location, floor level, orientation, year of construction;
e) state of maintenance;
f) cadastral details (n. rooms or square meters, category, class, income);
g) annotations about the condominium charges, services and comfort details;
h) title of provenance and possible lack of administrative authorizations;
i) information regarding the availability of the property (free or leased);
j) asking price and bid value (and any subsequent downward adjustments);
k) time on market;
l) selling price.

In the case under investigation, the analyses carried out on the data of each property in the sample only covered some of the elements indicated, partly due to the difficulty of accessing all the information listed. The information acquired was translated into the explained variable (difference between the requested price and the offered price) and into other extrinsic and intrinsic (microeconomic) variables of the property, each of which was expressed with an adequate measurement system. It is immediate to note that the spread in the sample has an average of 16.86%, a minimum value of 2.86% and a maximum of 42.86%, with a standard deviation of 8.4%.

The measures of some macroeconomic variables were acquired from national databases. The variables considered and the corresponding methods of measurement are described below.

- Spread [Δ], difference between selling price and asking price, expressed as a percentage [%];

- Selling Price [SP], measured in euro;
- Construction Year [CY], a variable measured in number of retrospective years starting from the year 2021;
- Saleable Floor Area [SFA], is defined as the floor area exclusively allocated to a residential unit including balconies, verandahs, utility platforms and other similar features but excluding common areas;
- Preservation and Maintenance [PM], state of preservation and maintenance, expressed on the following scale: 1 = to be renovated, 3 = habitable, 5 = renovated/new;
- Zones [OMIz], variable that defines the Homogeneous Market Zone in which the property is located. Reference is made to the geographical subdivision of the City of Potenza operated by the Revenue Agency (Observatory of the Real Estate Market OMI). The homogeneous zones are 11, the variable is assigned a numerical scale that in an increasing sense goes from the most central to the most peripheral;
- Trend [T], the variable is obtained as the variation of the average quotation of the market value with respect to the previous year (n-1) expressed as a percentage [%]; the average quotation of the market value is obtained as the arithmetic average of the minimum and maximum quotations of the market value recorded, for the homogeneous zone of reference, by the OMI;
- Disposable Income [DI], gross disposable income of consumer households in real terms, obtained using the deflator of household final consumption expenditure;
- Save [S], share of gross savings in gross disposable income of consumer households;
- Invest [I], Incidence of gross fixed investments on gross disposable income of consumer households.
- Note: DI, S and I are variables surveyed quarterly by the Bank of Italy, the value used is the average annual value expressed in euros.

Table 1 shows the minimum, maximum, mean, and standard deviation for each variable.

Table 1. Variables statistics

Variable	Measuring scale	Min.	Max.	Med.	Standard deviation
Δ	%	2.86	42.86	16.86	8.4
SP	€	35,000.00	320,000.00	135,064.36	58,778.28
CY	Years	11	80	51	12.6
SFA	mq	40.00	250.00	101.06	35.70
PM	Ordinal	1	5	2.73	1.58
T	%	0.1190	0.4878	0.0095	0.0236
OMIz	Ordinal	1	11	3.10	2.57
DI	€	276,064.50	294,018.00	283,771.65	5,925.61
S	€	9.20	17.35	11.03	1.82
I	€	7.22	10.35	8.36	0.94

Table 2 reports the Pearson correlation measure between the variables. The statistical significance of the correlations is congruent with what was deductively to be expected about the causal links between the spread and the explanatory variables.

Table 2. Pearson correlation measure between the variables

Variable	Δ	SP	CY	SFA	PM	T	OMIz	DI	S	I
Δ	1	−.598**	0.083	−.309**	−.324**	−.166*	−.241**	−0.063	−0.104	−.274**
SP	−.598**	1	−.389**	.651**	.327**	−0.027	.227**	0.071	−0.124	.192**
CY	0.083	−.389**	1	−.262**	−.377**	−0.101	−.498**	0.099	−.224**	0.073
SFA	−.309**	.651**	−262**	1	0.028	−0.045	.180*	0.071	−0.031	−0.067
PM	−.324**	.327**	−.377**	0.028	1	.143*	.164*	0.069	0.087	0.058
T	−.166*	−0.027	−0.101	−0.045	.143*	1	0.075	.366**	0.085	.195**
OMIz	−.241**	.227**	−.498**	.180*	.164*	0.075	1	0.072	0.041	0.022
DI	−0.063	0.071	0.099	0.071	0.069	.366**	0.072	1	−.195**	.448**
S	−0.104	−0.124	−.224**	−0.031	0.087	0.085	0.041	−.195**	1	−0.133
I	−.274**	.192**	0.073	−0.067	0.058	.195**	0.022	.448**	−0.133	1

**. correlation is significant at the 0.01 level

*. correlation is significant at the 0.05 level

Table 2 shows that the main factors correlated with the difference between the asking and selling price, in order of decreasing importance, are: selling price [SP]; state of preservation and maintenance [PM]; saleable floor area [SFA]; investment [I]; homogeneous real estate market zones [OMIz] and trend [T]. Correlations between spread and construction year [CY], disposable income [DI] and saving [S] are not statistically significant.

The variables sale price [SP], state of preservation and maintenance [PM], saleable floor area [SFA], invest [I], zones [OMIz], and trend [T] all show a direct relationship with the spread.

4 The Model

The stepwise linear multiple regression model was chosen to analyze the data. The procedure begins with the assumption that there are no regressors in the model other than the constant. At the next steps, one variable at a time is added to the model. A significance value is set for the variable F, which indicates the ratio of the variance explained by the model to the residual variance below which its contribution is not considered significant. The variable with the highest significance is selected first, i.e., the one with the highest F value for simple linear regression, which therefore has the highest correlation with the explained variable.

The addition of other explanatory variables in the model is investigated through the Extra Sum of Squares Test applied individually for each of the variables still to be considered. At each step all explanatory variables considered previously in the model

are tested again through the evaluation of the relative F. A variable already introduced in the model can in fact turn out redundant because of the introduction of new variables.

5 Results

In the first elaboration of the model 8 variables (8 steps) have been inserted. The saleable floor area is excluded. In the Table 3 the results are illustrated. The ANOVA test shows that in the 8 steps the introduced variables improve the interpretation of the phenomenon, the F test is always significant. Table 4 shows the coefficients of the variables and the significance (t student test) for the last two steps.

Table 3. Stepwise regression summary

Step	R	R-squared	Adjusted R-squared	Standard error of the estimate	Durbin-Watson
1	0.598	0.357	0.354	6.744114432	
2	0.625	0.390	0.384	6.584983358	
3	0.652	0.424	0.416	6.413419061	
4	0.691	0.477	0.466	6.130480460	
5	0.724	0.524	0.512	5.863853130	
6	0.742	0.550	0.536	5.712959513	
7	0.748	0.560	0.544	5.664818552	
8	0.759	0.577	0.559	5.570847213	1.959
1. regressors: (constant), SP					
2. regressors: (constant), SP, T					
3. regressors: (constant), SP T, CY					
4. regressors: (constant), SP T, CY, S					
5. regressors: (constant), SP T, CY, S, OMIz					
6. regressors: (constant), SP T, CY, S, OMIz, PM					
7. regressors: (constant), SP T, CY, S, OMIz, PM, I					
8. regressors: (constant), SP T, CY, S, OMIz, PM, I, DI					

However, in the last step, the introduction of the disposable income, if on the one hand improves R2, on the other produces an unconvincing result. In fact, disposable income has a negative coefficient. This is not consistent with expectations that an increase in income should induce greater demand and therefore a reduction in the spread. This observation should, among other things, be combined with the strong positive correlation that exists between the savings rate and disposable income. The inclusion of both variables distorts the result. In fact, the constant becomes non-significant. Therefore, it was decided to stop the development of the regression at step 7, excluding disposable income from the explanatory variables.

The Durbin-Watson statistic shows that there is no autocorrelation among the model residuals, which is crucial given that these are observations over time (12 years). About 56% of the variability in the response is explained by the variables included. Observing the residual scatter plot, the hypothesis of homoscedasticity is not violated (see Fig. 1). The hypothesis of normal distribution of errors is also verified (see Fig. 2). For all variables the observed p-value is smaller than the theoretical one (<0.05), each explaining a significant proportion of the variance of the spread.

Table 4. Coefficients and significance of the explanatory variables

Step		Non-standardized coefficients		Standardized coefficients	t	Sign.
		B	Standard error	Beta		
1	(Constant)	28.381	1.192		23.817	0.000
	SP	−8.531E−05	0.000	−0.598	−10.542	0.000
2	(Constant)	27.856	1.174		23.719	0.000
	SP	−8.601E−05	0.000	−0.603	−10.880	0.000
	T	−64.584	19.668	−0.182	−3.284	0.001
3	(Constant)	36.144	2.671		13.532	0.000
	SP	−9.732E−05	0.000	−0.682	−11.621	0.000
	T	−72.603	19.297	−0.204	−3.762	0.000
	CY	−0.135	0.039	−0.202	−3.434	0.001
4	(Constant)	52.201	4.428		11.789	0.000
	SP	0.000	0.000	−0.741	−12.856	0.000
	T	−68.563	18.468	−0.193	−3.712	0.000
	CY	−0.185	0.039	−0.279	−4.730	0.000
	S	−1.114	0.251	−0.242	−4.438	0.000
5	(Constant)	59.799	4.575		13.072	0.000
	SP	0.000	0.000	−0.735	−13.325	0.000
	T	−65.792	17.676	−0.185	−3.722	0.000
	CY	−0.269	0.042	−0.404	−6.399	0.000
	S	−1.196	0.241	−0.260	−4.966	0.000
	OMIz	−0.820	0.187	−0.251	−4.396	0.000
6	(Constant)	63.116	4.563		13.832	0.000
	SP	−9.883E−05	0.000	−0.692	−12.543	0.000
	T	−58.037	17.373	−0.163	−3.341	0.001
	CY	−0.303	0.042	−0.456	−7.192	0.000
	S	−1.160	0.235	−0.252	−4.936	0.000

(*continued*)

Table 4. (*continued*)

Step		Non-standardized coefficients		Standardized coefficients	t	Sign.
		B	Standard error	Beta		
	OMIz	−0.846	0.182	−0.259	−4.647	0.000
	MP	−0.966	0.285	−0.182	−3.390	0.001
7	(Constant)	70.127	5.642		12.430	0.000
	SP	−9.505E−05	0.000	−0.666	−11.851	0.000
	T	−49.692	17.687	−0.140	−2.810	0.005
	CY	−0.288	0.042	−0.434	−6.802	0.000
	S	−1.198	0.234	−0.260	−5.125	0.000
	OMIz	−0.827	0.181	−0.253	−4.579	0.000
	MP	−0.954	0.283	−0.180	−3.375	0.001
	I	−0.940	0.452	−0.106	−2.080	0.039
8	(Constant)	10.801	22.223		0.486	0.628
	SP	−9.528E−05	0.000	−0.667	−12.079	0.000
	T	−67.004	18.493	−0.189	−3.623	0.000
	CY	−0.304	0.042	−0.458	−7.228	0.000
	S	−1.090	0.233	−0.236	−4.676	0.000
	OMIz	−0.885	0.179	−0.271	−4.946	0.000
	MP	−0.998	0.278	−0.188	−3.585	0.000
	I	−1.428	0.478	−0.160	−2.986	0.003
	DI	0.000	0.000	0.157	2.757	0.006

The coefficients of the regression are all negative. The model indicates that when the price of the property, the age of the building, the state of maintenance increase, and when one moves away from the urban center, the difference between the asking price and the selling sale price decreases; as well as the spread decreases with the increase of the saving share, the investment share, and the values of the quotations (real estate cycle in expansion).

The model indicates that as the price of the property, the age of the building, and the state of maintenance increase, and as one moves away from the urban center, the difference between the offered price and the final sales price decreases. As well as also the spread diminishes when the rate of saving and the rate of investment increase and when the values of the quotations grow (the real estate cycle is in expansion).

Looking at the standardized coefficients, the model shows that the greatest weight in explaining the variance of the spread is provided by the selling price, then in descending order: the year of construction, the savings, the location, the state of maintenance, the dynamics of the real estate cycle and the investment rate.

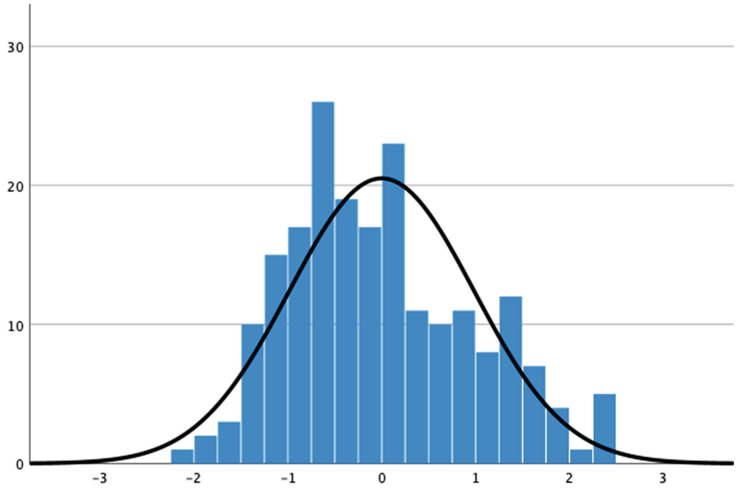


Fig. 1. Regression standardized residual histogram

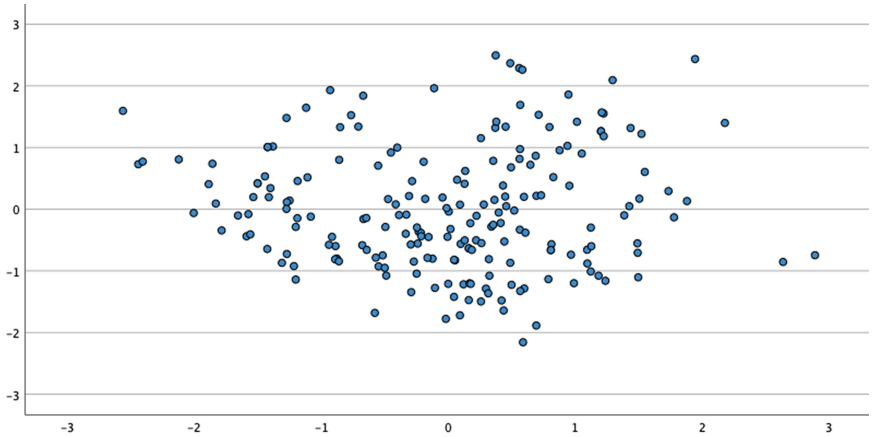


Fig. 2. Scatter plot for linearity and homocedasticity

In relation to the premises we can conclude that the reason the spread decreases if the price and the quality of the finishes (state of maintenance) increase, is to be attributed to the strategic behavior of the brokerage agency. Properties of greater value (in relation to larger size or better quality) are placed in a market segment that has limited demand. The greater difficulty of selling and the need not to lengthen the time on market, with the risk of losing the mandate, pushes the agency to make the seller accept an initial asking price close to the bid price.

This therefore justifies a lower spread. Looking at the microeconomic characteristics, the lower spread for more peripheral properties and those located in older buildings is since in the period covered by the analysis the greatest demand for residential properties

was precisely in this segment. In fact, young couples or families with a lower affordability index, understood as the degree of accessibility to the purchase of a home, fed the demand.

Higher demand justifies lower discounts on the asking price. Higher demand also underlies the lower spread resulting from a growing savings and investment rate and an expanding real estate cycle.

6 Conclusions

The Italian real estate market has always been characterized by a lack of transparency in transactions, although regulations have been enacted in recent years that attempt to reduce this opacity. The lack of transparency limits the possibility of constructing statistically significant samples of selling prices that can be used as comparables in estimates. Since there are no reliable sources of selling prices, often in the practice of real estate appraisers, readily available asking prices become the reference for estimation. The use of the latter, however, has the limitation of the probable discount that then occurs in the transaction.

The proposed model tries to provide an explanation of the variability of the spread between selling price and asking price, identifying and selecting the main micro and macroeconomic variables on which it may depend. The future goal of the research is to quantitatively measure the contribution of these variables in order to make the use of asking prices as a proxy for selling prices in real estate estimation through a measure of the likely adjustment.

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