



Citation: d'Amato M., Cucuzza G., Bambagioni G. (2023). Appraising forced sale value by the method of short table market comparison approach. *Aestimum* 82: 39-50. doi: 10.36253/aestim-13808

Received: September 20, 2022

Accepted: March 18, 2023

Published: December 8, 2023

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Data Availability Statement: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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Appraising forced sale value by the method of short table market comparison approach

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Abstract. For International Valuation Standards (IVS) the estimate of the “forced sale” value implies a value judgment with reference to a degeneration of the market value basis, since “a forced sale” is a description of the situation in which the exchange takes place, not a distinct basis of value (IVS 2022, Par. 170.1). The paper illustrates a model that can be used to measure the difference between market value and forced sale value, as an aid to real estate valuations related to real estate executions. The proposed method is aimed at determining the difference between the estimated values and the final sales values obtained through the executive process, on the basis of the Short Table Market Comparison Approach (MCA). This method contributes more appropriately to the estimate of the value obtainable from the outcome of the enforcement process than arbitrary reductions in the market value. An application on a small sample of residential properties undergoing enforcement procedure highlights the possibility of using the Short Table MCA even with a limited number of comparables.

Keywords: market approach, short table market comparison approach, forced sale value, intrinsic value, auctions.

JEL codes: D84, K25, K49, R31.

1. INTRODUCTION

Valuation of forced value using short table market comparison approach (MCA) is a valuation procedure to extract the estimation function from a sample of limited number of comparables. In judicial procedures, as a result of the forced sale process, it is frequent not to obtain the market value from the sale of properties. The definition of market value¹ proposed by the Regulation (EU)

¹ Market Value means « for the purposes of immovable property, the estimated amount for which the property should exchange on the date of valuation between a willing buyer and a willing seller in an “arm’s-length transaction after a proper marketing wherein the parties had each acted knowledgeably,

No 575/2013 implies the existence of specific conditions including the possibility of an “adequate commercial promotion”, as well as the existence of the assumption that both parties act “with knowledge of the facts, with prudence and without being subject to constraints”.

Anyway, the short temporal horizon in which the forced sale of the property should take place may be in contrast with a sustainable value in the long term (Bambagioni, 2021). In December 2015 Bank of Italy updated Circular n. 272/2008² on non-performing financial assets based on the exposure subject to concessions (forbearance), as defined by the Implementing Technical Standards (ITS), which distinguish them in: (i) exposures subject to impaired concessions, which correspond to the “non-performing exposures with forbearance measures”; (ii) other exposures subject to concessions, corresponding to the “Forborne Performing Exposures”. The proposed model tries to determine a price additive function for the property to be valued. Previous applications of this model (d'Amato, 2015a; d'Amato, 2015b) have been applied to the value of the property after an urban transformation. Estimation function allowed the determination of a location variable in the specific market segment and the quantification of other *inaestimabilis* variables determining a unique marginal price for all the variables considered. In this paper we propose the application of the short tab market comparison approach to estimation of forced value. For its determination “the valuer will have to take into account a limitation to current or expected marketability; in this case, the value is connected to specific assumptions that the valuer must indicate in the Valuation Report” (Tecnoborsa, 2018). Forced sale value (sometimes also defined as “judicial value”) is a “degeneration” of the well-known and fundamental basis of market value since “A “forced sale” is a description of the situation under which the exchange takes place, not a distinct basis of value” (IVS 2022, Par. 170.1). Furthermore, the forced sale value must be distinguished from the liquidation value, although the proposed model can be applied in both cases. The forced sale value shows a certain decrease in time on market representing a fundamental characteristic of this degeneration of market value. This is in contrast with the pure definition of market value which states that is based on “an adequate commercial promotion” (Article 4 para 1 point 76 EU Regulation 575/2013 and Italian Prop-

erty Valuation Standard 2018, Chapter 3 par. 2.2). Time on Market in forced value are necessarily short because it is a sum “obtainable from the sale of the property in the event that, for whatever reason, the seller is forced to sell the property” (Bambagioni and Simonotti, 2018, Chapter 3 Para. 2.13). In the liquidation value, although there is a necessary sale, it cannot be excluded that “The individual assets can be sold with a regular sale, that follows a marketing activity” (Tecnoborsa, 2018). In fact, IVS 2022 identify the liquidation value as “the amount that would be realized when an asset or group of assets is sold in a fractional manner”. It must “take into account the costs of selling the assets and those of the divestment activity. Liquidation value can be determined on the basis of two different value assumptions: (a) an ordered transaction with typical marketing period; (b) a forced transaction with a reduced time period usable for marketing” (IVS 2022, IVS 104, Basis of Value, section 80). Numerous papers have highlighted the dimension of the discount – intended as a reduction of market value – as an incentive for a quick sale (Forgey et al., 1994; Hardin and Wolverton, 1996; Shilling et al., 1990). Determination of the forced value was a subject of several contributions. Knight et al. (1994) have highlighted how the decrease in price tends to increase the number of potential participants and to decrease the amount of the offer. An application of multiple regression analysis was proposed to study Australian case based on the basis of a massive amount of data. In this case the dependent variable was the price at the end of liquidation procedure and the independent variables were: size of the property, age of the building, number of services, location, maintenance, construction characteristics, date of sale and type of market (Lusht, 1996). In Australian case, normally the price is higher than the other property markets. The reason proposed by Lusht (1996) was the dimension of the market which at the time of the article represented almost half of the entire real estate sector. Further studies used large quantities of properties considering as independent variables characteristics like age, construction typology, size quality of finishes, location type of market and the rate of interest of the loan at the time of valuation (Dotzour, 1998). Mayer (2003), Marcus (2001) and Quan (2002) confirmed the conclusions of previous studies showing the differences between the competitive market and auction market. Allen and Swisher (2000) analysing a sample of properties sold at auction in Fort Lauderdale found an inverse relationship between the price and the time on market. Campbell et al. (2011) carry out a study on a very large sample of 1.8 million properties sold at auction in Massachusetts in the last 20 years, finding that the average discount is 28% com-

prudently and without being under compulsion» ((Regulation (EU) No 575/2013 of 26 June 2013, on prudential requirements for credit institutions and investment firms [...], art. 4 (Definitions), paragraph 1, point 76)).

² Banca d'Italia – Eurosistema, Vigilanza bancaria e finanziaria – Matrice dei Conti, Circolare n. 272 del 30 luglio 2008 – 10th update (document available in the website <https://www.bancaditalia.it>)

pared to the market value of the same properties in the corresponding market segment. The work highlights also the dynamic nature of the location variable and the role of maintenance. Both conclusions will inspire the short table model. The relationship between sales mechanism on local customs and laws and has been explored by Pennington-Cross (2006). The role of Banks Institution have been highlighted by a subsequent study (Donner, 2017). Susilawati and Lin (2006) conducted an interesting study on the auction markets, discovering meaningful differences compared to other markets. In Australia and Ireland the auction led to an increase in the initially estimated value whilst in the opposite happens in Taiwan and Singapore. A negative influence on the price of subsequent auctions was highlighted together with the influence of the nature of the special properties (Ong, 2006). Hungria-Gunnelin (2013) considered the role of the number of bidders and their influence on auction sales. The increase in bidders positively influences price discovery. Wong et al. (2015) showed that typical auction variables such as proximity to the center or the number of online visitors or even unsuccessful auction attempts are positively correlated with the sale price and relative probability of sale. The role of physical conditions in price discovery was also highlighted by Clauretje and Daneschvary (2009); they found this attribute very important together with time of sale to determine discount on properties sold at auction. The importance of physical characteristics have been emphasized as determinant of value in several contributions (Carroll et al., 1997; Forgey et al., 1994; Hardin and Wolverson, 1996; Shilling et al., 1990). Further studies focused on the nature of the asset (Donner et al., 2016; Donner, 2017). An interesting conceptual review was carried out (Renigied-Bilozor et al., 2018), while more recently the use of multiple regression models was proposed for the Italian reality (Amoruso et al., 2020; d'Amato and Kauko, 2009; d'Amato and Siniak, 2009; Di Liddo et al., 2022). The contribution is organized as follows: (i) description of some general aspects relating to the appraisal in real estate auctions; (ii) formal presentation of the model, based on additive form of the price function normally considered in the application of Market Comparison Approach (iii) an application of the model to a concrete case study; (iv) final remarks and future directions of research.

2. REGULATORY REFERENCES AND APPRAISAL OF ASSETS SUBJECT TO REAL ESTATE EXECUTIONS IN ITALY

In the Italian legal framework of real estate executions, aimed at auctioning the property covered by

the mortgage loan guarantee, the appraiser acts as an “appraisal consultant” and auxiliary to the judge delegated to the executive procedure. Appraiser cooperates with the judge together with the other figures appointed as auxiliaries like judicial custodians, bankruptcy trustees, judicial administrators, sales delegates and finally the creditor and the debtor as well as potential buyers. The role of appraiser is strategic along the procedural process, both in terms of reducing information asymmetries and uncertainties, which could be feared in the context of real estate executions. A further effect may be also reducing time on market, reducing procedural cost and efficient allocation of the properties (Borella et al., 2019; 2020). The reform introduced in 2015³ aimed at reducing both the procedural process and the cost associated with its performance, which can be achieved through the formulation of an appropriate valuation based on accurate and transparent methodologies in compliance with International Valuation Standards. The reduction of time on market of property subject to execution is explicitly required in the “Guidelines on Best Practice in the Sector of Real Estate Executions” issued by Superior Council of the Judiciary (Consiglio Superiore della Magistratura) in 2017 and updated in 2019, hereinafter “CSM Consiglio Superiore della Magistratura Guidelines”. Forced execution for real estate expropriation “*must, in fact, take place according to criteria of efficiency, effectiveness and speed in order to liquidate the assets of the debtor’s assets, achieving the maximum proceeds – to be allocated to creditors and, in a residual way, to the executed debtor – in the shortest possible time*” (Consiglio Superiore della Magistratura, 2017). Appropriate valuation contributes to the pursuit of the objectives underlying the real estate execution procedure as it also allows potential buyers to adequately make known the technical, economic and legal characteristics of the property in auction. Conversely, scarce information, generic and partially documented or approximate property valuation may prevent buyers from the participation to auction process with the consequent increase in time and costs which is considered desirable to contain. The opinion of value provided in the context of real estate executions must therefore necessarily meet the requirements of correctness and reliability, which are decisive for offering those elements necessary for the economic and social benefits to be pursued, which appear consistent not only with Italian legislation but also International Standards. It is possible to report, among the others:

³Law 6 August 2015, n. 132, Conversion into law, with amendments, of the decree-law 27 June 2015, n. 83, containing urgent measures in bankruptcy, civil and civil procedural matters and the organization and functioning of the judicial administration

(i) International Valuation Standards (IVS, 2022); (ii) Guidance to banks on non-performing loans adopted by the European Central Bank (ECB, March 2017)⁴; (iii) Italian Property Valuation Standard⁵ (Chapter 15 – Valuation of Properties as Collateral for Non-Performing Loans, NPL); (iv) Guidelines for the Evaluation of Properties as Collateral for Bad Loans promoted by the Italian Banking Association (ABI, 2018)⁶ together with the National Councils of Technical Professions, as well as Consiglio Superiore della Magistratura Guidelines, previously quoted. An efficient and transparent valuation report also allows a useful estimate of value available not only for the efficiency of trial activity, but in broader sense to make more transparent real estate markets (Burti, 2020). A robust appraisal that allows to identify a reasonable value achievable in the auction, may limit the time of real estate execution reducing associated costs like the advertising communication. It also activates a virtuous stimulating a greater presence of different operators in the auctions, contain the risks of exposure to a prolonged debt position, diminish the uncertainties resulting from deleterious mechanism of adverse selection from part of possible speculators (Mottadelli and Ponti, 2016). Identifying an appropriate appraisal value of the asset subject to real estate expropriation is therefore very important for the procedural process. Anyway, it is a matter of fact that the selling of the asset does not occur in a free negotiation, but in the context of a procedural path in which the selling party may not be consenting. For this reason hidden defects cannot be completely excluded.

Although it is understandable that selling at a higher price means a higher revenue for the creditor, in this kind of valuation report a cautious and prudential determination of value lower than market value is plausible and shared. Italian legislation provides specific recommendation on this, the new legislation promulgated in 2015 reports an interesting part at art. 568 of Italian Code of Civil Procedure which states “*For the purpose of expropriation, the value of the property is determined by the judge having regard to the market value on the basis of the elements provided by the parties and by the expert appointed pursuant to article 569, first paragraph. In determining the market value, the expert calculates the area of the property, specifying the commercial area, the value per square meter and the total value, ana-*

lytically indicating the adjustments and the correction of the estimate, including the reduction of the market value practiced for the absence of the guarantee for defects of the property sold, and specifying these adjustments separately for the urban planning regularization charged, the state of use and maintenance, the state of possession, the constraints and legal charges that cannot be eliminated in the course of expropriation procedure, as well as for any outstanding condominium expenses”. In this legal framework, the appraisal value should provide a forecast of a possible reduction in the market value of the asset as if it were not burdened by an enforceable procedure. The reduction must be adequately justified and documented, rather than being determined in an approximate and arbitrary way on the basis of generic and superficial information, normally justified by expertise. This is an important task due to growing attention that courts pay to identify experts to be appointed as consultants, normally with specific qualifications recognized by third party certification bodies, but also in compliance with best practice used for the valuation of assets subject to real estate foreclosures. In this regard, the Italian Property Valuation Standard (Chapter 15, ed. 2018) takes into account the complexity of the conditions that characterize expropriation, the determination of value, the use of market value as a basis of value with assumptions and/or special assumptions to provide clear explanation of difference with the market value. These assumptions or special assumptions make possible to clarify the state of the asset in the hypothetical exchange, or in the circumstances in which it is assumed that can be exchanged (Tecnoborsa, 2018). National standards for real estate valuation also highlighted that “*the valuer can carry out a weighting/correlation among the properties subject to foreclosures procedures with other comparable properties subject to a foreclosure in the same area, and with other comparable properties subject to contracts in free markets, taking into account consideration of data and information inferable from market analysis*”. In the Guidelines published by Associazione Bancaria Italiana (2022) according to what is indicated in the European Valuation Standards (TEGOVA, 2020) referring to market value assumption it is also mentioned as “*that value of the immovable property to guarantee a bad credit estimated by the expert because of the limiting condition deriving from the execution or extrajudicial procedure, initiated for the recovery of the credit. In this case, the value is connected to specific assumptions that the expert must indicate in the valuation report*” (Associazione Bancaria Italiana, 2022). It is worth to notice how the Guidelines specifies that both the market value with assumption and the forced sale value do not constitute a basis of val-

⁴ See ECB website: https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance_on_npl.en.pdf

⁵ *Ibidem*

⁶ See ABI website: Linee Guida per la valutazione degli immobili a garanzia dei crediti inesigibili (2018) available at: <https://www.abi.it/Pagine/Mercati/Crediti/Valutazioni-immobiliari/Linee-guida-valutazioni-immobiliari-crediti-inesigibili.aspx>.

ue (Associazione Bancaria Italiana, 2022). In the property valuation process for enforcement procedures, being able to provide appraisal modelling which can be used objectively and effectively in line with the reliability and demonstrable requirements that are the basis for the preparation of an appropriate valuation, can be advantageous. In fact, an appropriate valuation model reduce the risk of a subjective and random value estimate providing economic and social implication derived from an increase in the effectiveness and efficiency of enforcement procedures.

3. ESTIMATE OF THE FORCED SALE VALUE WITH THE SHORT TABLE MARKET COMPARISON APPROACH (STMCA)

In this paragraph the foundation of the model proposed will be exposed together with the model of Market Comparison Approach Short Tab (stMCA). This particular kind of the model aim to determine an additive price function to analyse the specific market segment. Considering V_s as the estimated value and V_v as the value at which the asset is actually sold under the conditions of forced sale, the goal is to methodologically define the following difference reported in Equation 1:

$$\Delta = V_s - V_v \quad [1]$$

The difference between the indicated values is recurrently different from zero and in most cases it is positive because the value at which the asset is sold (V_v) is normally lower than the estimated one (V_s). The relationship indicated, in terms of the estimation function, can be modelled considering SUI, the main surface measured in square meters with a continuous cardinal scale, SUB, the balcony surface measured in square meters with a continuous cardinal scale, MAN, the maintenance status measured with ordinal variable to which to associate a distance function, Tcoll, as time on market measured with discrete cardinal variable as the number of months necessary to sell the property and On indicating tax to be paid for the sale, ordinal variable to which to associate a distance function. The whole is modelled as a difference of additive functions coherently with the methodological structure of the traditional MCA normally dubbed 1.0:

$$V_s - V_v = \bar{p}_{SUI}(SUI_S - SUI_V) + \bar{p}_{SUB}(SUB_S - SUB_V) + \bar{p}_{MAN}(MAN_S - MAN_V) + \bar{p}_{TColl}(Tcoll_S - Tcoll_V) + \bar{p}_{FISC}(On_S - On_V) \quad [2]$$

where:

p_{SUI} , is the average price of the SUI feature, main surface;

p_{SUB} , is the average price of the SUB feature, balcony surface;

p_{MAN} , is the average price attributable to the characteristic representative of the maintenance status of the property;

p_{TColl} , is the average price of the characteristic that represents the time of placement (sale) of the asset on the market;

p_{FISC} is the average price of the feature that represents the main expenses related to the forced sale process.

In this case, since we are dealing with average prices, we are in the absence of localization variables; the difference in value would be explained not by the product between the average prices and the corresponding surface variables, but rather by the product between the status variables, which may present an actual variation over time, such as: maintenance status of the property, time of placement on the market and conditions of sale. While, in fact, during the execution of the executive procedure, in terms of surface or floor level there will be no change in the intensity of the characteristic, this will not happen for the other variables considered. A property subject to enforcement procedure may suffer, for example, a worsening of its maintenance conditions, with a difference in the variable in the asset that can also assume significant amounts between the estimated value (V_s) and the corresponding value at the time of sale (V_v) Similar considerations can also be developed for the variable relating to the timing of placement of the property involved in the executive procedure (TColl). The lengthening of the execution times with the final translation of the ownership of the asset, in fact, has an inversely proportional effect on the placement value of the asset in question (V_v). Finally, also the variable On, which represents the synthesis of all those main expenses related to the forced sale process are negatively affected by the changed conditions capable of affecting the value of the asset during the execution of the enforcement procedure. The relationship indicated can also be reformulated in terms of marginal prices:

$$V_s - V_v = (LOC_S - LOC_V) + p'_{SUI}(SUI_S - SUI_V) + p'_{SUB}(SUB_S - SUB_V) + p'_{MAN}(MAN_S - MAN_V) + p'_{TColl}(Tcoll_S - Tcoll_V) + p'_{FISC}(On_S - On_V) \quad [3]$$

In member-to-member subtraction, the asset is compared with itself under different conditions of sale and time. It is therefore plausible that the localization variable is expressed in a differential measure between two

different “states of the world”, which concern the context of the asset being valued. The reader will have grasped that the version of the MCA is founded on additive modelling of simple and logical application, a premise for every methodological application and foundation of the MCA (Isakson, 2002). It follows that, simplifying, the difference between the two values (V_s and V_v) can be explained as follows:

$$\Delta = (LOC_S - LOC_V) + p'_{MAN}(MAN_S - MAN_V) + p'_{TColl}(Tcoll_S - Tcoll_V) + p'_{FISC}(On_S - On_V) \quad [4]$$

Therefore, it follows that:

$$V_v = V_s + (LOC_S - LOC_V) + p'_{MAN}(MAN_S - MAN_V) - p'_{TColl}(Tcoll_S - Tcoll_V) + p'_{FISC}(On_S - On_V) \quad [5]$$

This formulation leads to some operational implications, since, starting from the estimated value through the application of the MCA, it is possible to determine the forced sale value through the marginal prices of the relevant characteristics. However, the purpose of the short table MCA is not to determine the forced sale value, but the estimation function that defines it, in the presence of a relatively small number of comparables. The goal is therefore to have a model similar to a regression model, which can be determined with a very limited number of comparables. In fact, in the presence of a significant number of comparables, falling within the specific market segment, it is possible to apply other more effective market oriented methodologies, such as multiple regression analysis. However, in the short-table MCA the purpose is not the subtraction member by member of the values with which the relevant characteristics are manifested in the asset to be estimated and in the comparables, but the determination of an additive function that allows the formulation of value judgments of the asset, under certain “external” circumstances. In the context of executive procedures, the conditions that may promote the variation of these circumstances may be particularly evident. It therefore appears useful to proceed with the determination of a function that incorporates the natural variability associated with placement times, typical of executive procedures, together with the other determining variables previously mentioned and which can play a not negligible role in the variation between V_s and V_v . The goal, therefore, can be represented by the definition of a linear, additive function such as the following:

$$V_s = V_v \pm \delta LOC - p'_{MAN}MAN_V - p'_{TColl}Tcoll_V - p'_{FISC}On_V \quad [6]$$

or:

$$V_s - V_v = \pm \delta LOC - p'_{MAN}MAN_V - p'_{TColl}Tcoll_V - p'_{FISC}On_V \quad [7]$$

The term δLOC indicates the difference in the localization variable between the two states of the world at the time of evaluation and at the time of sale (Campbell et al., 2011). The weight of the variables that can be calculated using the marginal price theory (aka MCA 1.0) provide a first part of the estimation function. Other variables whose role cannot be neglected like the time on market (Tcoll) or location (LOC) or maintenance (MAN) or others inestimabilis variables may be calculated associating an appraisal system (integrated appraisal system) to the traditional Market Comparison Approach. The approach is similar to the General Appraisal System of the traditional Market Comparison Approach 1.0.

4. AN EMPIRICAL VERIFICATION

In order to be able to validate the above from an application point of view, a concrete case study is shown below in which the estimation function was identified for determining the forced sale value. The procedure constructs short table MCA (stMCA) on the basis of the differences between the estimated value by expert (V_s) and the selling price of the executed assets in the same market segment or in nearby market segments. Therefore the function calculated may be applied in other market segments. The case study is represented by 5 single-family houses located in a town in the Province of Bari, all subject to enforcement procedure at the Court of Bari, of which both the value estimated by the expert (V_s) and the selling value of the executed assets (V_v). The reference data of the five comparables are shown in Tab. 1, where the corresponding estimated values (V_s) are arranged in a column for each asset.

The variable DATA is computed in months retrospectively with respect to the moment of the estimate (DAT), the main surface is computed in square meters as a continuous cardinal variable (SUI), as the surface of balcony (SUB) and the surface of the external area (SUE), both computed in square meters as continuous cardinal variables. The last row in which there is a dichotomous variable relating to the private plant (IMP) concludes the table. Consistent with the above (Equation 7), for each of the assets considered it was possible to acquire additional elements of significant interest for the purposes of the proposed application (Table 2).

Table 1. Data collection of the 5 comparables subject to executive procedure in the Court of Bari.

	A	B	C	D	E
V_s	€ 142,000.00	€ 130,000.00	€ 128,000.00	€ 142,000.00	€ 138,000.00
DAT	15	12	13	14	18
SUI	98	102	85	78	82
SUB	5	3	8	8	7
SUE	12	15	20	12	15
IMP	1	1	0	1	1

Table 2. Further information on the assets subject to real estate execution.

	A	B	C	D	E
MAN	1	2	3	3	1
Tcoll	20	32	21	33	25
On	0.03	0.03	0.03	0.03	0.03
LOC	-	-	-	-	-

Table 3. Market information.

s riv	0.01
p balcony	0.3
p SUE	30
IMP	€ 20,000.00
t^a	12
t^u	35
On	0.03

In particular, for each of the real estate considered, the assessment of the maintenance status organized on three levels is reported as variable MAN, the survey of the sales times calculated in months is indicated with a discrete cardinal variable Tcoll, the costs for the sale approximated with a percentage of 0.03 and, finally, we have the localization variable LOC whose quantification is unknown. The market surveys carried out with reference to the case study, also made possible to identify the mercantile relationships useful for determining marginal prices (Table 3).

In this regard, it is possible to observe that the annual rate of change in prices is positive and is quantified to an extent equal to 0.01; the mercantile ratio of the surface of the balconies is equal to 0.3; the price of the external surface, in the specific market segment, is equal to 30 €/sqm. As for the determination of the marginal prices of the main and secondary surfaces, despite

the presence of some recent authoritative advances (Simonotti et al. 2016; Simonotti, 2018), we proceeded by assuming the position ratio between the marginal price and the average price approximating to the unit and therefore considering similar the marginal price equal to the minimum average price (Simonotti, 2016). In detail:

$$p'_{SUI} = \min(p'_{SUIA}, p'_{SUIB}, p'_{SUI C}, p'_{SUID}, p'_{SUI E}) = (\text{€/sqm } 1,423.52, \text{€/sqm } 1,258.99, \text{€/sqm } 1,457.67, \text{€/sqm } 1,761.69, \text{€/sqm } 1,635.55) = \text{€/sqm } 1,258.99 \quad [8]$$

and then

$$p'_{SUB} = \text{€/sqm } 377.70 \quad [9]$$

Therefore:

$$p'_{SUE} = \text{€/sqm } 30.00 \quad [10]$$

It should be noted that the introduction of the position relationship, in addition to making the determination of the value more precise, allows the processing of the MCA even with a very small number of comparables up to one unit. Appearance worthy of attention especially by those who see this model as outdated. As for the value of the plants, assuming a cost value of € 20,000 and taking into account a simple linear depreciation, the corresponding value was reached as indicated below:

$$p'_{IMP} = \text{€ } 20,000 \times (1 - 12/35) = \text{€ } 13,142.86 \quad [11]$$

Subsequently, therefore, it was possible to proceed with the determination of the value deriving from the estimate function for the various comparables, as indicated in Table 4.

The difference between the estimate value and the value deriving from the estimate function can be motivated by the differences in the localization variable or by other variables not considered in the evaluation procedure. Moreover, in this regard it should be noted that, in the context of the executive procedure examined,

Table 4. Value from estimation function of comparable A.

A	
Vs	€ 142,000.00
DAT	- € 1,775.00 $15 * -0.00083 * € 142,000.00€ = -€ 1,775.00$
SUP	€ 123,380.95 $98 * 1,258.99 €/sqm = € 123,380.95$
SUB	€ 1,888.48 $5 * 377.70 €/sqm = € 1,888.48$
SUE	€ 360.00 $12 * 30 €/sqm = € 360$
IMP	€ 13,142.86 $1 * € 13,142.86 = € 13,142.86$
	€ 136,997.29

Table 5. Difference between the value and selling price for comparable A and the calculation of the costs for the sale.

Vs	€ 142,000.00
Vv	€ 95,000.00
On	€ 2,850.00
Vs-Vv- On	€ 44,150.00

none of the five evaluators involved made any reference to international standards of any kind, referring mainly to the indications of the databases of the Observatory of the Real Estate Market (OMI) or to their expertise in the elaboration of the valuation. Their valuations are based on single-parameter method, which, obviously, still represents a “valid” reference in the professional activity of many technicians and appraisers. In the Table 5 is indicated the difference between the value and the selling price for comparable A:

The difference between the estimated value and the placement value of asset A, equal to € 44,150 (Table 5), represents the value to be implemented in the model proposed and explained previously with formula 7. The final line represents precisely this difference net of the charges that are traditionally connected with the sale of the asset in the judicial procedure. The same application is carried out to the other four comparables. Similarly, the value obtained from the estimate function is followed by the determination of the difference between the valuation and the selling price of execution, net of the related sales charges.

The selling price of comparable B makes it possible to detect the difference between Vs and Vv (Table 7).

Table 6. Value from estimation function of comparable B.

B	
	€ 130,000.00
- € 1,300.00	$12 * -0.00083 * € 130,000.00 = -€ 1,300.00 €$
€ 128,416.91	$102 * 1258.99 €/sqm = € 128,416.91$
€ 1,133.09	$3 * 377.70 €/sqm = € 1,133.09$
€ 450.00	$15 * 30 €/sqm = € 450.00$
13,142.86 €	$1 * € 13,142.86 = € 13,142.86$
	€ 128,700.00

Table 7. Difference between the value and selling price for comparable B and calculation of the costs for the sale.

Vs	€ 130,000.00
Vv	€ 120,000.00
On	€ 3,600.00
Vs-Vv- On	€ 6,400.00

The same procedure is then proposed for comparable C, determining first the estimate function and then the differences between the estimated value and the forced sale value in the following two tables (Tables 8 and 9).

Also in this case, the difference between the value and the selling price is determined (Table 9).

As reported for the previous comparables, the value obtained from the estimation function is also reported for comparable D (Table 10).

Therefore, the difference between the value and the selling price is proposed in the table below (Table 11).

Lastly, the value is determined from the estimation function of the last comparable E (Table 12).

And finally, the recognition also for comparable E of the difference between the value and the selling price (Table 13).

After the determination of the value of the various comparables defining the corresponding estimation functions and after the calculation of the relative differences between the values and the selling price in the judicial procedure, the application of the additive model set in equation 7 is proposed to explain the aforementioned differences. In this regard, it should be noted that the differ-

Table 8. Value from estimation function of comparable C.

C	
€ 128,000.00	
- € 1,386.66	$13^* - 0.00083 * € 130,000.00 = - € 1,386.66$
€ 107,014.09	$85^* 1,258.99 €/sqm = € 107,014.09$
€ 3,021.57	$8^* 377.70 €/sqm = € 3,021.5743$
€ 600.00	$20^* 30 €/sqm = € 600.00$
€ 0.00	$0^* € 13,142.86 = € 0.00$
€ 109,249.00	

Table 12. Value from estimation function of comparable E.

E	
€ 138,000.00	
- € 2,070.00	$18^* - 0.00083 * € 138,000.00 = -2,070.00€$
€ 103,237.12	$82^* 1,258.99 €/sqm = € 103,237.12$
€ 2,643.88	$7^* 377.70 €/sqm = € 2,643.88$
€ 450.00	$15^* 30 €/sqm = € 450$
€ 13,142.86	$1^* € 13,142.86 = € 13,142.86$
€ 117,403.86	

Table 9. Difference between the estimate and placement value for comparable C and calculation of the costs for the sale.

Vs	€ 128,000.00
Vv	€ 94,000.00
On	€ 2,820.00
Vs - Vv - On	€ 31,180.00

Table 13. Difference between estimate and placement value for comparable E and calculation of charges.

Vs	€ 138,000.00
Vv	€ 102,000.00
On	€ 3,060.00
Vs - Vv - On	€ 32,940.00

Table 10. Value from estimation function of comparable D.

D	
€ 142,000.00	
- € 1,656.66	$14^* - 0.00083 * 142,000.00 = - € 1,656.66$
€ 98,201.17	$78^* 1,258.99 €/sqm = € 98,201.17$
€ 3,021.57	$8^* 377.70 €/sqm = € 3,021.57$
€ 360.00	$12^* 30 €/sqm = € 360$
€ 13,142.86	$1^* € 13,142.86 = € 13,142.86$
€ 113,068.93	

Table 11. Difference between value and selling price for comparable D and calculation of charges.

Vs	€ 142,000.00
Vv	€ 87,000.00
On	€ 2,610.00
Vs - Vv - On	€ 52,390.00

ences found also dependent on the different skills of the evaluators involved in the procedure, since in the presence of adequate skills and competences of the appraiser, effectively applied in the assigned judgment, they should lead to a reduction of the consistency of the diversity of these values (Vs and Vv). Under favourable conditions, the differences that can be found could presumably tend to diminish until they are almost completely downsized, in the most virtuous cases, in the two variables maintenance (MAN) and costs (On), reducing the weight of the variable location (LOC) and/or the variable time on market (Tcoll). It is possible to set up the following supplementary estimation system (Sistema Integrativo di Stima) that will explain the variables of the model.

$$\begin{bmatrix} 44,150 € \\ 6,400 € \\ 31,180 € \\ 52,390 € \end{bmatrix} = \begin{bmatrix} 20 & 3 & 1 \\ 32 & 2 & 1 \\ 21 & 1 & 1 \\ 33 & 1 & 1 \\ 25 & 3 & 1 \end{bmatrix} \begin{bmatrix} P'_{Tcoll} \\ P'_{MAN} \\ P'_{LOC} \end{bmatrix} \quad [12]$$

Therefore, an estimate function is obtained that is useful for predicting the forced sale value in the specific market segment, using few comparables (Table 14).

Table 14. Results of the integrative estimation system.

ACRONYM	VARIABLE	IT VARIABLE	AMOUNT	MEASURE
LOC	LOCATION	VARIABILE LOCALIZZATIVA	€ 46,736.70	
MAN	MAINTENANCE	MANUTENZIONE	€ 3,337.54	PER SINGLE CLASS
TCOL	TIME ON MARKET	TEMPO COLLOCAM	-€ 763.35	PER MONTH

The indicated function allows to highlight the role of time on market. It also confirms that the difference between the appraisal value and the selling price of the executed asset can be effectively used through an appropriate model to determine the value of the appraised asset in a more appropriate way to the objectives and context of estimate with respect to what does not happen in conditions of greater uncertainty or even arbitrariness to which the result of the estimate is exposed in the presence of estimates attributable only in part to objective, replicable and transparent criteria.

5. CONCLUSIONS AND FUTURE DIRECTIONS OF RESEARCH

By the formulation of an objective, fair and shareable valuation, it follows the possibility of contributing to the achievement of the objectives of effectiveness and efficiency of the real estate execution procedures, as well as to obtain greater social and economic fairness, in line with what is desired by the evaluation standards and by the stakeholders, including the CSM Guidelines (2017) on good practices in the field of real estate executions. On the other hand, with a view to managing the risk associated with the life of the mortgage loan, a more reliable assessment of the amount that can be recovered following the outcome of the executive procedure contributes for the bank to a better definition of the risk associated with the exposure and sustainability of the loan “in relation to credit-granting processes, and throughout the life-cycle of credit facilities” (EBA, Guidelines on loan origination and monitoring)⁷. In consideration of the specific reference legislation, in particular for the purpose of determining the value of the property pursuant to art. 568 of the Italian legislation

⁷ EBA/GL/2020/06, Par. 2 (Subject matter, scope and definitions), Point 7: “These guidelines apply to institutions’ internal governance arrangement and procedures in relation to credit-granting processes, and throughout the life cycle of credit facilities. Furthermore, these guidelines apply to the risk management practices, policies, processes and procedures for loan origination and monitoring of performing exposures, and their integration into the overall management and risk management frameworks”.

(i.e. the Code of Civil Procedure), as well as the need for the expert (appraiser) to take into account the binding technical, economic and legal conditions in determining the value of a real estate, the need arises to express an estimate in which the basis of the value is constituted by a market value, which is anyway obtained also by assumptions special assumptions (IVS, 2022; TEGOVA, 2020)⁸. In the valuation process, therefore, the valuer operates by resorting to assumptions which, if not adequately weighted, in addition to conditioning the judgment of the estimate, could negatively affect the judicial procedure in consideration of the purposes of the estimate in the context of the performance of the procedural process.

The appraisal report, in fact, constitutes a procedural document of absolute relevance in cases of forced sale and also, in this context, must in any case meet the requirements of transparency, reliability and verifiability, recognized by the best valuation practices at national and international level.

The assumptions made by the expert (appraiser) must therefore be adequately illustrated and justified also in order to contain the risk of determining the value of the property being valued through an approximate (and therefore potentially arbitrary) reduction of the corresponding market value of the asset. In this sense, the possibility of having an appraisal model available that allows to operate objectively, as well as to verify the work of the valuer, represents an extremely useful opportunity to safeguard the transparency of the processes and to guarantee the effectiveness of the valuation judgment. The model proposed and illustrated appears to be consistent with these needs; in addition, it is believed that the results of the application described could in turn be consistent with the data limitations that affect the estimation activities in the case of forced sale. The functional model for estimating the forced sale value with the market comparison method (stMCA) through a limited number of comparables (so-called “short table”) allows, in

⁸ In the event of a forced sale, the valuer must not carry out the valuation on the basis of the forced sale, but rather on the basis of the market value with the special assumptions that apply to the specific case ABI, 2022 and EVS 2020, EVS 1, Note 4.10. 7.5.

fact, to determine an additive function, which allows the formulation judgments of the value of the asset as certain “external” circumstances vary, which could affect the value of the asset itself, which should be taken into account in the estimation conditions that characterize the sale of an executed real estate. In the context of the executive procedures, the conditions that can determine the change in circumstances capable of influencing the value of the asset, can manifest themselves to a significant extent with significant effects also on the final liquidation value of the property.

The determination of a function capable of incorporating the variability associated with placement times, together with other variables capable of affecting the value of the asset during the process such as, for example, any changes in its maintenance status (even if purely theoretical as it is inhibited from the procedure), therefore appears useful, as it is capable of evaluating the variation between V_s and V_v . Furthermore, the application of the proposed model shows that it is possible to determine an estimation function capable of predicting the forced sale value in the specific market segment, highlighting, albeit in a predictive manner, the placement times necessary to proceed with the liquidation.

In particular, it allows to arrive at the determination of the value of the asset that constitutes the collateral of the loan in a way that is more objective, appropriate and suited to the objectives and the context of estimation than can happen through synthetic (and sometimes abstract) reductions in value made in a more or less arbitrary way on the value of asset market.

REFERENCES

- Allen, M., & Swisher, J. (2000). An analysis of the price formation process at a HUD auction. *Journal of Real Estate Research*, 20(3), 279–298.
- Amoruso, P., Mariani, M., d’Amato, M., & Didonato, R. (2020). Italian auction market: features of discounted forced sale price. *Real Estate Management and Valuation*, 28(3), 12–23.
- Associazione Bancaria Italiana (2022). Linee guida per la valutazione degli immobili in garanzia delle esposizioni creditizie. Available at: <https://www.abi.it> (Accessed: 6 July 2022).
- Bambagioni, G. (2021). *Sostenibilità del valore nel finanziamento immobiliare*. Milano, Maggioli Politecnica.
- Bambagioni, G., & Simonotti, M. (2018). *Codice delle Valutazioni Immobiliari | Italian Property Valuation Standard* (Quinta Edizione). Roma, Tecnoborsa Editore.
- Banca d’Italia – Eurosystema (2008). *Vigilanza bancaria e finanziaria – Matrice dei Conti*, Circolare n. 272 del 30 luglio 2008 – 10° aggiornamento. Available at: <https://www.bancaditalia.it/> (Accessed: 6 July 2022).
- Borella, G., Marchi, M., & Schepis, B. (2019). *La giusta esecuzione. Ruolo e compiti dell’esperto stimatore nelle espropriazioni immobiliari*. Mantova, Stimatrix.
- Borella, G. (Ed.) (2020). *La giusta esecuzione. Ruolo e Compiti dei protagonisti della tutela del credito*, Mantova, Stimatrix.
- Burti, A. (2020). I problemi giuridici legati alla stima degli immobili nelle esecuzioni immobiliari. Incontro di studio *Esecuzioni immobiliari. Approfondimento giuridico dell’incarico dell’esperto stimatore*, Verona, 10 gennaio 2020 Available at: <https://www.e-valuations.org> (Accessed: 1 July 2022).
- Campbell, J. Y., Giglio, S., & Pathak, P. (2011). Forced sales and house prices. *The American Economic Review*, 101(5), 2108–2131.
- Carroll, T. M., Claurette, T. M., & Neill, H. R. (1997). Effect of foreclosure status on residential selling price: comment. *Journal of Real Estate Research*, 13(1), 95–102.
- Claurette, T. M., & Daneshvary, N. (2009). Estimating the house foreclosure discount corrected for spatial price interdependence and endogeneity of marketing time. *Real Estate Economics*, 37(1), 43–67.
- Consiglio Superiore della Magistratura (2017). *Buone prassi nel settore delle esecuzioni immobiliari – linee guida*, (delibera 11 ottobre 2017). Available at: <https://www.csm.it/> (Accessed 4 July 2022).
- Consiglio Superiore della Magistratura (2021). *Buone prassi nel settore delle esecuzioni immobiliari – Aggiornamento linee guida*, (delibera 6 dicembre 2021). Available at: <https://www.csm.it/> (Accessed 4 July 2022).
- d’Amato, M., (2015a). Stima del valore di trasformazione utilizzando la funzione di stima. Il MCA a tabella dei dati ridotta. *Territorio Italia*, Giugno, 97–106.
- d’Amato, M., (2015b). MCA a Tabella Ridotta e Sistema Integrativo di Stima. Un secondo caso a Bari. *Territorio Italia*, Gennaio, 97–109.
- d’Amato M. and Kauko T. (2009). Property Market Classification and Mass Appraisal Methodology. In d’Amato M. and Kauko T. (Eds.). *Mass Appraisal Methods: An International Perspective for Property Valuers*. Oxford, Wiley.
- d’Amato M. and Siniak N. (2009). Using Fuzzy Numbers in Mass Appraisal: The Case of Belorussian Property Market. In d’Amato M. and Kauko T. (Eds.). *Mass Appraisal Methods: An International Perspective for Property Valuers*. Oxford, Wiley.

- Di Liddo, F., Tajani, F., Amoruso, P., Ranieri, R. and Anelli, D. (2022). The assessment of the forced sale value in the Italian residential market. *Aestimium*, 80, 15–32.
- Donner, H., Song, H. S., & Wilhelmsson, M., (2016). Forced sales and their impact on real estate prices. *Journal of Housing Economics*, 34(C), 60–68.
- Donner, H. (2017). Foreclosures, Returns and buyer intention. *Journal of European Real Estate Research*, 39(2), 189–213.
- Dotzour, M. G., Moorhead, E., & Winkler, D. T. (1998). The impact of auctions on residential sales price in New Zealand. *Journal of Real Estate Research*, 16(1), 57–72.
- European Banking Authority (EBA) (2020). Guidelines on loan origination and monitoring (EBA/GL/2020/06), June 29, 2020. EBA.
- Forgey, F. A., Rutherford, R. C., & Vanbuskirk, M. L. (1994). Effect of foreclosure status on residential selling price. *Journal of Real Estate Research*, 9(3), 313–318.
- Hardin, W. G., & Wolverton, M. L., (1996). The relationship between foreclosure status and apartment price. *Journal of Real Estate Research*, 12(1), 101–109.
- Hungria-Gunnelin, R. (2013). Impact of number of bidders on sale price of auctioned condominium apartments in Stockholm. *International Real Estate Review*, 16(3), 274–295.
- Knight, J. R., Sirmans, C. F., & Turnbull, G. K. (1994). Listing price signaling and buyer behavior in the housing market. *The Journal of Real Estate Finance and Economics*, 9(3), 177–192.
- International Valuation Standards Council (IVSC) (2022). International Valuation Standards (IVS). Effective 31 January 2022. IVSC, London.
- Isakson, H. R. (2002). the linear algebra of the sales comparison approach. *Journal of Real Estate Research*, 24(2), 117–128.
- Lusht, K. M. (1996). A comparison of price brought by English auctions and private negotiations. *Real Estate Economics*, 24(4), 517–530.
- Marcus, A. (2001). Discount in real estate auction price: evidence from South Florida. *The Appraisal Journal*, 69, 28–43.
- Mayer, C. J. (2003). Assessing the performance of real estate auction. *Real Estate Economics*, 126, 41–66.
- Mottadelli, D., & Ponti, G. (2016). *La consulenza estimativa giudiziaria ed il processo civile telematico*. Palermo, Grafill
- Ong, S. E. (2006). Price discovery in real estate auctions: the story of unsuccessful attempts. *Journal of Real Estate Research*, 28(1), 39–60.
- Pennington-Cross, A. (2006). The value of foreclosed property. *Journal of Real Estate Research*, 28(2), 193–214.
- Quan, D. C. (2002). Market mechanism choice and real estate disposition: search versus auction. *Real Estate Economics*, 30(3), 365–384.
- Renigier Bilozor, M., Walacik, M., Zrobek, S., & d'Amato, M. (2018). Forced sale discount on property market – how to assess it? *Land Use Policy*, 78, 104–115.
- Shilling, J. D., Benjamin, J. D., & Sirmans, C. F. (1990). Estimating net realizable value for distressed real estate. *Journal of Real Estate Research*, 5(1), 129–139.
- Simonotti M. (2016). *Metodi di Stima Immobiliare*. Palermo, Flaccovio.
- Simonotti, M., Salvo, F., Ciuna, M., & De Ruggiero, M. (2016). Measurements of rationality for a scientific approach to the market oriented methods. *Journal of Real Estate Literature*, 24(2), 403–427.
- Susilawati, C., & Lin, V. C. C. (2006). Case analysis of auction market in Brisbane housing system. *pacific rim real estate conference*, Auckland, January.
- TEGOVA (2020). European Valuation Standard, 9th ed. Italian version. Torino, E-Valuations.
- Wong, W. C., Ng, P. L., Lee, J. Y. M., & Daud, M. N. (2015). Apartment foreclosure discount in Kuala Lumpur. *Pacific Rim Property Research Journal*, 21(2), 127–138.