Salvatore Giuffrida

Department of Civil and Environmental Engineering, University of Catania
E-mail: *sgiuffrida@dica. unict.it*

When possibility dominates probability. Global pressures on a local border town: the real estate market of Ortigia*

The real estate market is a highly communicative human and social place in which individual creativity interacts with the urban structure. The rising tendency of the property value and quality stimulates global investors to demand more and more qualified assets. This process involves the public administration, whose policies should focus on the acquisition, for the community's benefit, of a significant part of the surplus of the real estate investments. The appraisal point of view, and particularly the income method, focuses on the capability of the cap rate to represent and integrate the private possibilities with the public perspectives. The outline of the real estate market of Ortigia shows some characters of the capital goods, whose value can be figured out by crossing the theory of the capital and the income method.

1. Introduction: the real estate market as a creative (of value) socio-economic place

The urban real estate market can be considered, because of the features that characterize it as "imperfect", one of the most creative socio-economic institutions, for better or worse. Here the behavior of the agents defines the prevalent market profile according to two layers of motivation: the first one (more general) is the trend of the capital markets; the second one (more specific) is the configuration of the local urban market characters, both in economic and in architectural terms. The creativity of the urban real estate market must be taken as a relevant evaluative feature, especially in the renewal urban processes. The Real estate market closely interacts with land-town policy, especially where and when a significant difference between the real estate prices before and after the transformations is expected. This expectation is assumed as an explicit matter of acting, especially in the recent itinerary of the integrated transformation programs which the urban regeneration praxis is based on. However, according to the community's point of view, linking the urban destiny to the real estate cycles does not appear appropriate. In fact, during booms, optimistic forecasts may stimulate transformation programs that later, when the prospects dwindle, lose their convenience. These cir-

---

cumstances and the consequent risks turned real estate investment from a physical capital investment to a financial capital one. The perspectives of increase in value widen and lengthen particularly in a high quality urban context. Creativity is a property of architectural and economic systems as well. Appraisal is the scientific explaining and synthesizing instrument.

2. Backgrounds

2.1. Cultural background

Real estate is a particular form of capital which eludes traditional analysis based on marginal productivity and diminishing marginal returns. Moreover, property is not a divisible good, and hence the real estate investments are strongly dependent on the nature of the agents, on their balance sheet, and on complementarity between their propensity for risk and inclination to expectation.

Need. Natural systems, as well as deterministic systems, can be considered dominated by *need*. In their acting they do not express any kind of free will. They can be simple, like gravitational phenomena, or complex like meteorological events. We could not expect from a falling stone the decision to return to the top; we do not know exactly the trajectory of the stone in case it matches some obstacles or if it is hit by other falling rocks, but it is not on the stone to decide whether to encounter or to avoid them. In fact, gravity and collision are not "motivations", but just "causes", so the behaviour of the stone can be easily forecasted. The indeterminacy of the final state can be attributed to the inaccuracy of our measure instruments and to the inadequateness of our calculation patterns.

Probability. Biological and animal systems are characterized by the prevailing of *probability*, because they are dominated by natural impulses. They act instinctively and there is always an "enough reason" – hunger, fear, etc. – that can explain their actions. The behavior of biological systems is characterized by a certain degree of determinism.

Possibility. Going up the scale of complexity – from human being to social systems like the economic ones – the behavior becomes more and more unpredictable, and the more the human being is creative the much less predictable it can be considered[1]. Therefore human and social systems are characterized by the prevailing of the *possibility*. The human choices creatively synthesize the individual and collective determinations, which in turn are subject to an evolving value system. A value system drives the agent's creative behavior, which has to be *new and appropriate* at the same time.

---

[1] Particularly, the human being can be considered as the freer one, as he is a person, an adult individual, a subject that is responsible for his choices and that can account for them (De Monticelli, 2009); similarly, his behavior can be considered as much less predictable as he is creative.

In the specific economic sense human being and social systems act creatively as they crash the existing order (probability) with an "unavoidable ordered disorder", highly improbable but possible, that is the unique, special and particular condition of novelty.

Freedom, responsibility and creativity are the three necessary conditions for the economic behavior that make the market constructive and imperfect. Otherwise, the diverse eccentricity of the real estate market (which is much more complex than the other capital markets) impresses the most deviant effects on the global economy in general, and on the architectural heritage and the urban environment as a whole in particular.

The relationship between individual and society, the need for a social basis for human creative behavior and the "ethic of the difference" will be later addressed with specific reference to the philosophical point of view purposed by Roberta De Monticelli (2009).

The imperfect market is the place where "possibility emerges on probability". In the imperfect markets – that are characterized by complexity and uncertainty – challenge, hazard, expectations and hope prevail over all equilibrium conditions considered by the perfect competition model, such as perfect information, no influence on set price by individual action, no barriers to entry or exit, elasticity of supply curve (to mention only the relevant ones in the real estate market).

The most significant issue on the imperfection of the real estate markets is the prevailing of rent, an economic category which may assume so many aspects and shapes to become ubiquitous and unavoidable. Two elements in particular combine to make rent the protagonist of contemporary economy: quality (so rarity of some kind of capital) and securitization of every asset presupposing a relevant difference between spot price and forward price.

Since the early 70es (Rizzo 1972) the equilibrium paradigm, in economics and consequently in the appraisal theory, has been hardly criticized, especially because of the start of the real estate speculation.

2.2. Economic backgrounds: current scenarios and real estate

In the present economic context the housing market has emerged as an important sector in the economies that have passed (or are passing) through the phase of industrialization, and participate to the huge process of securitization of every asset that promises relevant capital gains.

The real estate has been the protagonist in the current "double-dip" as well (Sorrentino, 2011). In the first wave (due to the Lehmnn's default at the end of 2008) the housing market has been the origin of the crisis, having become the indirect target of the bearish trend through the toxic assets linked to subprime mortgages. Now, instead, the real estate could emerge from the second wave of the crisis as the preferred outlet for so far trapped liquidity. Therefore it may become again the possible target of a new bullish course.

In fact, the high inflation of securities in the USA and the UE and – especially in Italy – the rise of the inflation rate could stimulate the investors to hoard their

riches by purchasing properties. This can still be considered the best long-term investment option.

This simple prediction is legitimate only as long as Europe exceeds the crisis that is hitting the euro by means of the speculation on the sovereign debt of heavily indebted countries. Otherwise the general lack of trust will discourage even the most optimistic agents.

The current run of economy confirms the well known Keynesian law of the "liquidity-preference". The importance of liquidity (meant as noun and adjective) is shown by the present circumstance in which economy is hardly stressed by the crisis of the credit (liquidity as noun) and more in general by the loss of value (liquidity as adjective) of the industrial asset, of the bank capital and of sovereign debt. In particular two important "liquidity hoarding" phenomena may be noticed.

The first one is the general race to the traditional safe haven assets like gold and hard currencies (mainly Swiss and Japanese government, Us Treasuries and German bonds).

The second one is the crisis of interbank lend market, with the rise of Euribor-Ois spread (also called "overnight rate"), almost doubled up to 68bps in the two first weeks of august 2011. This spread concerns the day-to-day or short-term financing (My. L., 2011)[2], and is a relevant measure of risk and liquidity in the money market, where it is considered the typical indicator for the stress. Nowadays banks in both the Eurozone and the USA are more liquid than during the crisis of late 2008, but the European ones are strongly stressed because of their broad exposure in government securities of the most indebted countries. But two circumstances have been considered in addition: the first one is the great part of the banks liquidity currently immobilized at the Fed and ECB in case of credit default or recapitalization (Galimberti, 2011); the second one is the inversion of the credit line: the firms are affected by the high grade of uncertainty in the productive investments, and prefer to keep their huge liquidity in bank deposits. So firms finance banks, banks finance central banks and central banks buy the government treasuries of the countries that are most exposed to the risk of default. The liquidity does not circulate for investment and occupation, but only to offset the effects of speculation and to hold up the trust. Now, on the one hand these financial flows put the liquidity away from the entrepreneurial risk and uncertainty, and give shape to a process of widespread and systemic money hoarding; on the other hand the world wealth is being reduced and concentrated. The fall of the productive investments is complementary to the rise of the speculative ones. As a consequence, the current economic crisis may increase the speculative fraction of the real estate demand.

This conjuncture exceeds the Keynesian forecast of the relationship between the interest rate and the investments. The huge liquidity provided by banks has

---

[2] In particular Fed launched a series of controls also known as "stress tests" on the European banks operating in Usa (Poggi 2011). This shows on the one hand the importance of finance for the economy, on the other that "no longer to distinguish monetary economy from real economy makes sense" (Rizzo 2002).

the effect of making the security prices (Amato, 2011) rise; the globalization and the consequent expanded markets, accompanied by a general reduction of salary constraints, have contained the inflation caused by wages and raw materials. On the contrary, the free movement of capital has increased the financial risk, because of the lack of mechanisms for the crises management (Saccomanni, 2011).

Therefore, the current economic crisis may push up the speculative fraction of the real estate demand and then the property prices. L. Dondi dell'Orologio (2010) forecasts a reversal of price performance in the Italian property market.

2.3. Some economic interpretations of the real estate

The two above outlined phenomena relate differently to real estate, which can hardly be considered safe-haven goods, and more significantly must be regarded as a speculative asset. According to the teachings of J. M. Keynes about money, real estate can be interpreted as goods for which demand has three different reasons: functional, productive and speculative.

According to the first reason, the real estate demand is conducted for practical uses and regards the functions of living, employment, trade and production; in this case real estate may be associated with transaction and precautionary money demand. Moreover, because the first function of money is "to measure the value of wealth", real estate can be taken as a benchmark of investment risk.

According to the second reason, the financial one, the real estate demand is conducted for productive investments; in this case the real estate demand may be associated with money demand for investments. Moreover, because the second function of money is "to save the value of wealth", the real estate yield may be compared with the inflation rate under no-risk condition, and with the interest rate under risk condition.

According to the third reason (the speculative one) the demand for real estate is exercised on the basis of waiting for explicit or implicit capital gains. In this case the owners give up the yield to maintain the asset liquidity, that is the only chance for it to be sold easily. Moreover, because the third function of money is "to increase the value of wealth", real estate can be taken as a self-referential asset whose value does not depend on utility or yield but on the agent's motivation profile; it combines the assets availability and the financial possibilities with the psychological, cultural and moral features involving values, beliefs, information, expectations and hopes (as they influence the behavior of the agent through fear or courage, panic or euphoria).

The "individual's liquidity-preference", the most important between the three Keynesian psychological laws, is assumed as "a schedule of the amount of the agent's resources, valued in terms of money or of wage-units, which he will wish to retain in the form of money in different sets of circumstances". Moreover it is considered "the form of immediate, liquid command (i.e. in money or its equivalent)" (Keynes 2001, p. 352).

Now, in an advanced globalized and financialized economic system, real estate could be considered, in some respects, an equivalent of money, especially in the

periods of high uncertainty about the future course of economy. Therefore it is possible to regard the real estate speculation as a form of non monetary hoarding. "The concept of *hoarding* may be regarded as a first approximation to the concept of *liquidity-preference*" (ib., p. 360).

Today the preference for liquidity and the consequent monetary hoarding – by banks and companies – emerges in the paralysis of credit despite the generalized system of quantitative easing. This happens particularly in Europe, the next establishment of the "solidarity fund" (European Financial Stability Facility or Efsf) now partly working. Similarly, the real estate hoarding is shown by the unusual maintenance of the level of prices in comparison with the fall of securities (i.e. by the paralysis of transactions despite low interest rates on mortgages). In this regard, McDonald and Stokes (2011) argue about the relationship between the interest rate policy of the Federal Reserve and the housing bubble that interested the U.S. market until 2007. The U.S. real estate market, in both rise (lowering and holding down the federal funds rate in the period 2001-2004) and fall (with the sharp increase of the federal funds rate during 2004-2006) of the housing price, is characterized by a high dynamism. This is due to the people's mobility, the high level of building maintenance and management, and a more elastic supply curve, that reduce the hording tendency. In Italy instead the real estate market reacted differently to the rapid rise in mortgage rates occurred in 2006, due to an higher interest rate that the ECB has increased in just six months from 2% to 4%. Here, the prices have decreased by about 5% only, at the expense of a general contraction of transactions which, after the positive trend of about 20% in the period 2000-2006, were about 50% down in the period 2006-08 (Nomisma 2009). Gianni Guerrieri (2011), the Director of OMI, the observatory of the real estate market of the Italian Land Agency, remarks that the situation of the Italian property market is characterized by a substantial stability in prices, in spite of the decline of the market, "a phenomenon that we record since 2006: this is a difference between the Italian market and the markets of other countries where prices have fallen. This situation cannot continue indefinitely: at some point the mechanism will stop". Therefore he anticipates an Italian housing bubble destined to burst in a short time. But so far we can see that one of the characteristics of real estate is a general viscosity of the market prices, much more reactive upward than downward when compared with other assets, especially securities (precisely because of their complexity). This viscosity can be considered a proof of the property hoarding.

A final observation can complete the profile traced up to here. Due to the "wealth-effect", the direction of the house prices is in general opposed to the direction of other assets, as argued by Francesco Rizzo (1999, 2002) about the monetary nature of the "processes of liquidity transmutation". Liquidity (as an adjective) is the most specific property of capital goods which, by virtue of it, assume different "time/money shapes", as measured by the specific cap factor.

The property hoarding effects on urban/land economy are devastating like the money hoarding ones on economic activity, as we observe in the current economic crisis, which is mostly a crisis of trust (credit) and liquidity. In these circumstances, rent prevails on income, as possibility emerges on probability.

Therefore, on the one hand the most important conclusion of these arguments is that the housing market is strongly influenced by the fact that property takes advantage of the crises: they can be considered topical turning points of the tumultuous and bubbling evolution of capitalism.

On the other hand we should consider that each economic crisis offers relevant opportunities to policy to intervene in order to regulate the market and reduce or drive the phenomenon of social wealth concentration. The appraisal science and the valuation praxis play an important role in making the public responsibility rise, in order to begin an harmonic process of distribution of this wealth.

2.4. The rise of policy

The financial speculation, steeling and freezing large flows of liquid economy waiting for lower-risk investments, has raised important questions about the global model of wealth distribution, and has made the public attention focus on the activities and products that allowed to amplify the effects of the crisis of confidence.

The present economic crisis is showing that the excesses of the market, the possibility that the financial speculation causes the default of sovereign states, and the distance between the power of states and the capability of financial economies have caused evident instability phenomena even in the biggest countries of the industrialized West.

Some important interventions have marked the rising of the role of policy in economy regulation against the overpower of financial speculation:
- the establishment in the Eurozone of the previously mentioned Efsf; George Soros (2011) argues that an European authority should audit banks, guarantee their liquidity, and break the link between banks and supervisory bodies;
- the collective decision of the European Council to save Greece from default, which is contrary to the rules of stability strongly supported by the strictest members of the ECB board;
- the ban on short sales to avoid the benefits of the downtrend;
- the controls ordered by the U.S. president about the reliability of the international rating agencies;
- the proposal for a taxation on financial trading;
- the emission of the "Eurobonds" that preludes to the establishment of a new political subject in Europe (the USE) to guarantee the strength of the single currency. The Eb could reduce the financial exposure (by reducing the interest rate) of the highly indebted countries and allow them to refinance the debt easily.

3. Positions and roles of the science of valuation

3.1 The science of valuation and the real estate market

The systematic reference to a set of values is one of the most important distinctive features of the science of valuation. Legal valuation, mass appraisal in the

real estate fiscal drag, equalization in urban renewal and regeneration etc., raise questions whose nature is not strictly economic, because it involves the consideration of the specific purposes and programs of the general project context in which assessments are required.

The upstream of this experience is the idea that a real estate valuation pattern is a geographic information system that represents the weight of the urban rent in the anatomy of the total value of the city. In this respect the evaluation provides important references to urban policy which are necessary for the internalization of externalities and the redistribution of wealth that is formed in the evolution of the real estate (as industry, in macro-economic sense) and of the city (in micro-territorial sense). An urban market is not just a segment of an industry, but precisely an epiphenomenon of social relationships inside and outside a macro-regional system.

The real estate market actors simultaneously play the roles of consumers, producers and speculators (bullish when buyers, bearish when sellers), to varying and complementary degrees. The special profile of real estate and economic conditions brings out more and more the role of the speculator, thus compensating the difficulties of consumers who, taking advantage of favorable conditions for loans, ended up exposing themselves beyond their means in acquiring subprime mortgages. On the one hand some unscrupulous credit policies, on the other the dream of home taken as a capital asset and not as a consumer's good or necessary, played an important role in the above mentioned phenomena.

Finance has bet on the bet of *consumers playing capitalists* speculating on their speculation.

The science of evaluation has as main object of study the causes (values) of the socio-economic phenomena, and not only the effects (prices). It does not just collect data and process them, but goes to the source to find out the essence of the phenomena and to distinguish them from mere appearances.

3.2. The science of evaluation and the case study

The final goal of this experience is to provide an information/evaluation model that may be useful in the urban conservation/renewal policy of an ancient city characterized by a remarkable architectural and landscape value, and involved in a rapid process of infrastructure/building development that has taken place together with a sudden increase in the real estate market prices.

The beliefs about what causes and influences the market behavior have a marked impact on the agents' expectations (private and public) and thus on their motivation. Therefore, on the one hand the value of the properties is closely linked to the decisions of the economic agents, and then to the demand-prices; on the other hand, the prevailing of the most solvent agent's choices has the effect to overwhelm the delicate social order of the highly characterized urban center, turning it into a tourist town with negative impacts on the overall urban value. The plan strives to avoid that, and will be able to achieve more relevant results if it includes among its instruments economic analysis and property evaluation.

At this point, the mission of the science of assessments branches in two directions: in the first, the positive one, it merely represents the motivation pattern of the possible investors, and consequently the potential axiological profile of the properties, with the relative possibilities of investment; in the second, the normative one, it intends to indicate not only the present and the future values (when it is possible), but mostly the fair value, especially looking forward to the long term urban renewal investment programs. Public programs and private expectation should look at the same horizon sharing compatible aims. The role of estimation is to figure out public and private not explicit aims and assume them as the foundation of micro and macro appraisals.

"Objectiveness", "actuality", "generality", "ordinariness" and "on scope depending" of assessment are the most relevant issues of the traditional estimation paradigm; these conditions guarantee transparence and fairness in the real estate trading, and are easily found in the efficient markets. But the real estate market inefficiencies are more and more increasing, and for two reasons:

- first the complexity and the dynamic of real estate, due to: 1) the development of accessibility; 2) the expansion of urbanized lands; 3) the decreasing of building costs; 4) the increasing of dwelling quality; 5) the potential of the city that, as a semantic field, increases its complexity and multiplies the opportunities for consumers and the options for investors, making the market prices rise;
- second, the general and global trend of wealth concentration.

The consequences (that can also be considered general causes) are well known: a) the increasing of property demand; b) the chaotic price dynamic; c) the securitization of the real estate market and the wider diffusion of financial instruments which allows savers to diversify their investments, and issuers to share and reduce the risk. Consequently, a local and peculiar real estate market cannot be considered a place dominated by probability, because in this case options would not be stimulating and the lack of perspective and expectation would exclude any possibility of extra-yield. In economy a probability system prefigures only one type of agent who pursues a single goal. But actually buyers and sellers are at the same time and in different quota consumers and entrepreneurs, and properties have become at the same time useful, productive and speculative assets.

When these occurrences match the atypical property supply – characteristic of a unitary and heterogeneous urban context – the need for going beyond the surface of the economic phenomena and analyzing the deep causes of prices emerges. The here purposed approach aims to affirm the superiority of the analytic estimation method which includes the synthetic procedures but exceeds them; the capitalization method is indeed the more capable to represent the reasons of value going to the source of its phenomena.

4. The case-study. The urban context of Ortigia: real estate market

Ortigia, the historic center of Syracuse, consists of an island about 50 hectares in surface, connected to the mainland by three bridges. Until about 2000, Ortigia

has been a marginal neighborhood, largely abandoned and decayed, despite the importance of its monuments and its incomparable scenic value. Later, a massive redevelopment program stimulated the real estate initiative and investments, determining an immediate impact on the market prices, estimated on an average 100% in a year around 2003.

An effective tidal wave in the local market was mainly generated by the global demand exerted because of the touristic importance that Ortigia has always had. The foundation in 2000 of the Faculty of Architecture of the University of Catania has been the second reason for this development, and a further factor of market complexity. This event gave rise to the rent market for students, increasing the prices of the low quality dwellings as well. Nowadays Ortigia can be considered a contradictory real estate market, immature in some respects, largely heterogeneous, strained by tensions and crossed by public and private development strategies.

Many aspects can be taken as the strengths of this market: the wide mix of characters for supply; the high demand both for rent and for sells; the wide range of choice and investment options; the wide range of uses of the properties. Therefore, many agent types are welcome in this market, that offers several options and stimulates different kinds of investment opportunities.

On the contrary, some critical issues should be noticed: the filtering up processes, the loss of the original inhabitants, the deep transformation of the social structure, the prevailing of the touristic functions on the residential ones, the specialization and impoverishment of the economic activities, the progressive decrease of stable population, the gradual widening of the contrast between crowding in the summer and empting in the winter.

The real estate of Ortigia is strongly characterized by relevant historical, architectural, urban and landscape values. Some of the main qualities of the context are: the presence of very important monuments, the double water front, the three major squares, Pancali, Archimedes and Duomo, the picturesque character of the road texture with its unexpected glimpses of the sea and perspectives. The entire old town is subjected to a regime of limited circulation, and is served in the main road axes and alongside the waterfront by a free shuttle service.

These potentials, and the consequent rise in the property prices, is changing the relationship between citizens and their homes, that from necessaries or utility goods are turning in superfluities (auxiliary or speculative) capital assets, monetary goods up to the top rank of the collective goods.

5. Theory, methods and instruments

5.1 Some elements of capital theory

The capital theory assumed as reference of the suggested evaluation model was proposed by Francesco Rizzo since 1977. It describes the self-referential process of increase/decrease in value of a capital asset whose value V is given by the sum of a current value k, commonly esteemed, and a quota of it $\pm|a|k$ where a is

Figure 1. Views of Ortigia.

a coefficient of increase/decrease in value, whose sign is on the bullish/bearish expected trend. Therefore, the value of a capital good for which an increase/decrease in value is expected can be expressed as follows: $V=k\pm|a|k$.

This assumption has some important consequences on the income valuation method commonly expressed with $V=R_n/r$, where R_n is the income and r is the cap rate. If $R_n/r=k\pm|a|k$, then $r=R_n/k(1\pm|a|)$; so the cap rate is on the expectation of increasing/decreasing in value. It is possible to distinguish r from $r'=R_n/k$, that can be considered the average (or commonly esteemed) cap rate. The relationship between V (expected value) and k (current value) is the same between r (expected cap rate) and r' (current cap rate). Moreover, F. Rizzo defines the concepts of increasing (C) and decreasing (D) as the difference between current and

expected cap rate: $C=r'-r$, if $r'>r$, and so $r'=r(1+a)$; $D=r'-r$, if $r'<r$, and so $r'=r(1-a)$. In this model an increasing asset can be considered an asset that capitalizes a greater number of income and vice versa. This property is not of the asset, but depends on the expectations that different agents express about it by means of their investment decisions (on the demand side) or by means of the "supply price" of the capital asset (on the supply side).

Increasing and decreasing concepts have been exposed in terms of income as well, considering the relationship between current (R_{nc}) and expected (R_{na}) income. If $k=R_{nc}/r$, then $V= R_{na}/r$, then (in case of bullish trend), $R_{na}= R_{nc}(1+a)$, and $r'=r(1+a)$, so $r'/r=(1+a)= R_{na}/R_{nc}$.

Regarding the *increasing in terms of income*, it is possible to compare the previously outlined theory with the Keynesian law of the *inducement to investment*, where a difference between the supply price of an asset capital and its expected value calculated discounting the *perspective yields* (Keynes 2001, p. 321) is highlighted. The marginal efficiency e is the rate that equates the expected value to the supply price of the asset capital, so the marginal efficiency can be expressed by means of the expected rate: $e=r(1+a)$ (in case of bullish trend), then $e= r$. The marginal efficiency of capital is the discount rate that includes the portion of interest (ar) which rewards the expectations of extra-yield (aR_{nc}) of the agent. Therefore, the bullish/bearish expectation can be expressed by the in/de-creasing in value ($\pm|a|k$), by the in/de-creasing in yield ($\pm|a|R_{nc}$), and by the de/in-creasing of cap rate ($\square|a|r'$).

A personal interpretation of this model (Giuffrida 2004) allows to define the three prices intervening in a capital asset transaction, whose outcome depends on the future value differently provided and discounted by the two agents. First the supply price k; second, the value assigned by the seller, $V_s=k-|a|k$; third, the value assigned by the buyer $V_b=k+|a|k$.

Now, $V=k(1+r_v)^n/(1+r_d)^n$ where r_v is the increasing in value rate *expected*, r_d is the *observed* discount rate, and n is the moment the buyer plans to sell the property; so, if $r_v>r_d$, then $V>k$ and $V-k=+|a|k$ (bullish behaviour); if $r_v<r_d$ then $V<k$ and $V-k=-|a|k$ (bearish behaviour). This interpretation focuses on the different profiles of the agents expressed in terms of rates, but differently from Rizzo, who refers to the relationship between current and expected cap rate (r' and r).

I. Fisher e J. R. Hicks are the authors who have given some of the most significant contributes of theory of capital on this issue, and to whom Rizzo refers critically, going beyond their results.

Fisher (1930) provides some elements that Rizzo utilizes to define the "temporal form and dimension" of an income flow, and in part the "monetary form and dimension" as well.

The "temporal form and dimension" is the way returns are distributed through time, which according to Fisher depends on intrinsic characteristics of the investment, while according to Rizzo it depends on the profile of the entrepreneur that "challenges the market" imposing his determination and his ability to take a position. Fisher exemplifies three options of exploitation of a land, each with a different elasticity, so defined: $E=(\Delta V_0/V_0)/\Delta r/r$, where V_0 is the Net Present

Value, and r is the discount rate. The investment choice depends on the dimension of r. To define r Fisher uses the forecast of value increase (in physical terms) through time, assuming the path of physical growth of the wood and the diverse annual increase rates, and calculates the moment cutting the wood is more lucrative by comparison between the marginal growth rate in several years and the interest opportunity rate or opportunity cost of capital Fisher attributes to the monetary interest rate.

J. R. Hicks introduces the dynamic analysis comparing the expected income flow with the standard one, which he discounts by means of a given rate; he defines elasticity in temporal terms as an average period P of the income flow, which is longer (shorter) if the incomes of the "expected flow" are deferred (anticipated) compared with those of the "standard flow": $P = \sum_{i=0}^{n} [(iRi/(1+r)^i)/(Ri/(1+r)^i)]$. The concept of crescendo in Hicks is referred to a given rate, while in Rizzo to a rate which reflects the specific profile of the unity formed by the entrepreneur and the capital goods. In this sense they are not distinguishable, as they establish a special empathetic relation that makes (differently elastic) capital goods different. In this sense the above indicated personal interpretation defines the three different values not as alternative, but as convergent to the determination of the most significant value, that means capable to take into account probability k and possibility $\pm |a| k$.

5.2 Methods

In methodological sense and with specific reference to the real estate valuation, N. Zizzo and B. Matarazzo (1979) highlight the real motivations of the different availability to pay of the agents. This comes from a "dust" vision of the real estate market which may be referred to the form of bilateral monopoly. According to the latter the contracting parties confront each other on the grounds of personal and specific motivations. The authors propose a methodology based on the theory of games, so on the transaction utility for the vendor u_s at the price V_s he requests, and for the buyer u_b at the price V_b he offers. The price which concludes the negotiation is the "point of equal division" between the sacrifices of the two contracting parties, and it is as if it is located on the straight line expressed by the equation $\Delta V_b/\Delta V_s = -\Delta u_b/\Delta u_s$. For the present purpose it is important to underline the concept of "utility", which in the case of the capital real estate in speculative markets should more explicitly be referred to the motivational complex inherent to the functions that the goods perform and will perform in the future.

In the field of the business valuation Luigi Guatri (1998) has proposed models which take into account expectations. First, among the income methods, he proposes the REI (Integrated Economic Result), and introduces in valuation the effects of the uncertainty of the apparent income in companies where the created value largely depends on the investments in immaterial goods. The final value $V_f = NOPLAT/(WACC\text{-}g)$ is another method, calculated capitalizing the Net Operating Profit Less Adjusted Taxes, by means of the Weighted Average Cost of Capital corrected with a development rate g which takes into account the income crescen-

do. More recently, the Integrated Valuation Assessment (Guatri 2000) takes into account the ratio between the economic capital W, the potential capital W, and the feasible prices P; the potential capital may be referred to the capitalization of the extra-income, and may be considered a form of goodwill related to the concept of "crescendo in terms of income".

G. Donna (1999) proposes a complex of patterns of valuation of the capability of companies to create value as well; in particular he distinguishes between the creation of economic value (CVE) and the creation of total value (*CVT*): $CVT=CVE[(1+g)/(1+c_k)]^n$ where c_k is the cost of capital, and g is the development rate, in analogy with the discount rate and the above mentioned valorization rate.

In the USA the *Gordon Growth Model* (or Constant Growth Model) is very diffused. It is a financial model used to determine the "intrinsic" value of a stock, based on future dividends, which are assumed to grow at a constant rate. Named after Myron J. Gordon and originally published in 1959, the model values a business as the present value of all future dividends, and leverages a required rate of return that the investor could receive on similar alternative assets.

5.3 Appraisal instruments

The analytic procedure introduced by C. Forte (1968), to which it is referred, is the first valuation model which takes into account the difference between observed and expected values. It has a great pragmatic importance, and is revolutionary in comparison to the courses of doctrinaire valuation. Its major novelty consists of the choice of a capitalization rate *ad hoc* per each property, and the assumption of a difference between average and specific rate. It distinguishes between the characteristics that influence income and those that influence the capitalization rate, highlighting their differences. It is coherent with the theory of the interest, which he refers to, arguing the motivations that justify interest as prize for risk, for abstinence, for the productivity of capital, for the rarity of capital and for expectation, and consequently dimensioning the influences.

The determination of the capitalization rate has been the object of ample and influential application studies. M. Simonotti (1983, 2009) in particular distinguishes the equity yield rate from the equity capitalization rate, respectively used for the direct and the financial capitalization. In this sense the importance of the inclusion in the cash flow of the forecasted increases of income and the expected capital value should be underlined. N. Morano, B. Manganelli, F. Tajani (2009) focus on risk as significant determinant of the dimension of the capitalization rate. They propose a model of financial analysis with which they calculate the optimum period for investment, including the expected revaluation as well.

For the present purpose, the proposed model will follow the path of the C. Forte's approach, which includes in an empiric form the argumentations on the capitalization rate, distributing the difference between minimum and maximum rate in different quota, according to their estimated incidence.

Therefore the aim is to argue, by means of some measurements, part of the indications of C. Forte's resulting particularly meaningful in the case of Ortigia. In

fact, the evolution of this market has not had generic causes as the real estate market in general, but specifically related to the concreteness of its landscape and architectural quality. Through the choices of the investors, these qualities have been translated into economic, financial and monetary variables: the economic ones are related to the management results, the financial ones to the possibility of credit access, and the monetary ones to the auto-valorization perspectives (that means of acquiring value independently of the market trend). On the latter point of view Ortigia has become a target of the global speculative strategies, due to its valuable waterfront, and the tendency to real hoarding.

In the next paragraph, starting from the analysis of the sample, some measurements of how the quality characteristics auto-establish themselves as capital asset will be attempted. These measurements relate to the variables of value, income, and capitalization rate.

6. Data and critical remarks

The study of the real estate market of Ortigia have been conducted with the specific aim of modelling the evaluation procedure. The integration of single and mass appraisal, in fact, could be useful in planning and managing the renewal processes. Because of the peculiarity of this market, a specific evaluation model requires a great number of data. Therefore many opportunely selected and verified sell and rent purposes of agencies and single owners have been collected.

The observations of this market carried out since 2008 (Giuffrida, Martorina, 2010) show how the combination between the urban-landscape quality and the speculation approach has an hard impact on the social urban shape and on the different perspectives of development of its quarters. The interpretations particularly highlight the status of the urban real estate of Ortigia, that is subject to a vast and intense activity of renewal, at first in part public funded. The diverse gaps between present and forward conditions (both of the individual property and of the urban context) generate a various range of expectations: on the one hand they define the economic profile of the properties as real estate investment; on the other they select the different agents that compare their entrepreneur profile with the present and the forward quarter and real estate status.

The present data (April-August 2011) confirm most of the previous results and go over with some measurements. Two databases (sell and rent) has been compiled and each property (record) is described using thirty attributes (field) grouped in five types of characters (extrinsic, intrinsic, technologic, productive, architectonic-environmental). The fields are organized in a *work breakdown structure* in which each group is divided into a certain number of characters, then in sub-characters whose importance is measured by means of a weighed score system articulated following every layer of characters.

The heterogeneity of the real estate of Ortigia requires both the surface area (*sqm*) and the number of rooms (*nr*) to be considered. The tables show the value *V* and the rent (*Cm*) for each property. The score system valuates the properties

under the point of view of the 30 characters assigning the minimum score, 1, in case of very low quality level and the top score 5 in case of very high quality level. A weighted average score (k^*) is associated to each record. The tables work as analytic and appraisal instruments as well. A filter system eliminates the less significant cases, reducing the first database from 118 to 60 cases (rising the correlation index from 0,66 to 0,70, and from 0,39 to 0,72, respectively for the measurements related to rooms and sqm), and the second from 93 to 55 cases (rising the correlation index from 0,56 to 0,63, and from 0,54 to 0,67). The filters reduce the uncertainty of analysis and valuation; they are: the general ratio *sqm/nr_g* (from 20 to 31); the specific ratio *sqm/nr_g* (from *sqm/nr**−5 to *sqm/nr**+5, where *sqm/nr** is the avarage ratio calculated for each of the different urban contexts analyzed; the ratio *V/sqm/k** (from 492 € to 808 €), the ratio *V/nr/k** (from 10.221 € to 18.481 €).

The selected sample allows some observations with the aid of the graphics of image 2, which confirm what has already been stated on the constructive imperfection of this market.

Section a) refers to the values and shows on the left side the relation between consistency and current prices. The high level of dispersion (low value of R^2, depends on the architectural-town planning heterogeneity of the real estate.

The interpolating curve is characterized by the maximum value of R^2, and it is worth noticing that both the relations between consistency and absolute values and between quality and unitary values show an exponential trend. The law of decreasing marginal utility is denied in both cases.

The asymmetrical distribution with an elongated tail toward the higher values is another aspect coherent with what has been stated: this shows on the one hand a growth potential of the whole market, on the other the significant distance between average (more probable) and outstanding (feasible even if less likely) properties, i.e. those facing the waterfront, those of high architectural quality, and those located near the important monuments.

Section b) refers to incomes, with results that confirm the categorical difference between flow quantities and stocks, and above all how their dynamic is at a certain extent of opposite sign, in a tendentially speculative market. In fact, contrary to value, income takes the function of utility measurement, as is made clear by the relation between consistency and income. Moreover, the relation between quality and income shows on the one hand a $R^2=0,11$ sample wide dispersion in the analysis per unit of surface, and $R^2 = 0,17$ in the analysis per room. This shows that despite the theoretical trend is positive anyway, it doesn't represent significantly the phenomenon. The trend of the distribution curve is more characterized as a statistic anomaly than as an important indication as well, and this is also due to the low value of R^2.

Section c) refers to cap rate, and it is the most important one as it shows exactly how it reduces as quality rises. The latter, in this case, is to be considered as a composite productive factor which, if amassed in its different forms, and also due to its high level of complementarity, is able to increase the length of the real estate investment, precisely measured by the cap factor.

Figure 2. Analysis of the sample: values, yields, cap rates.
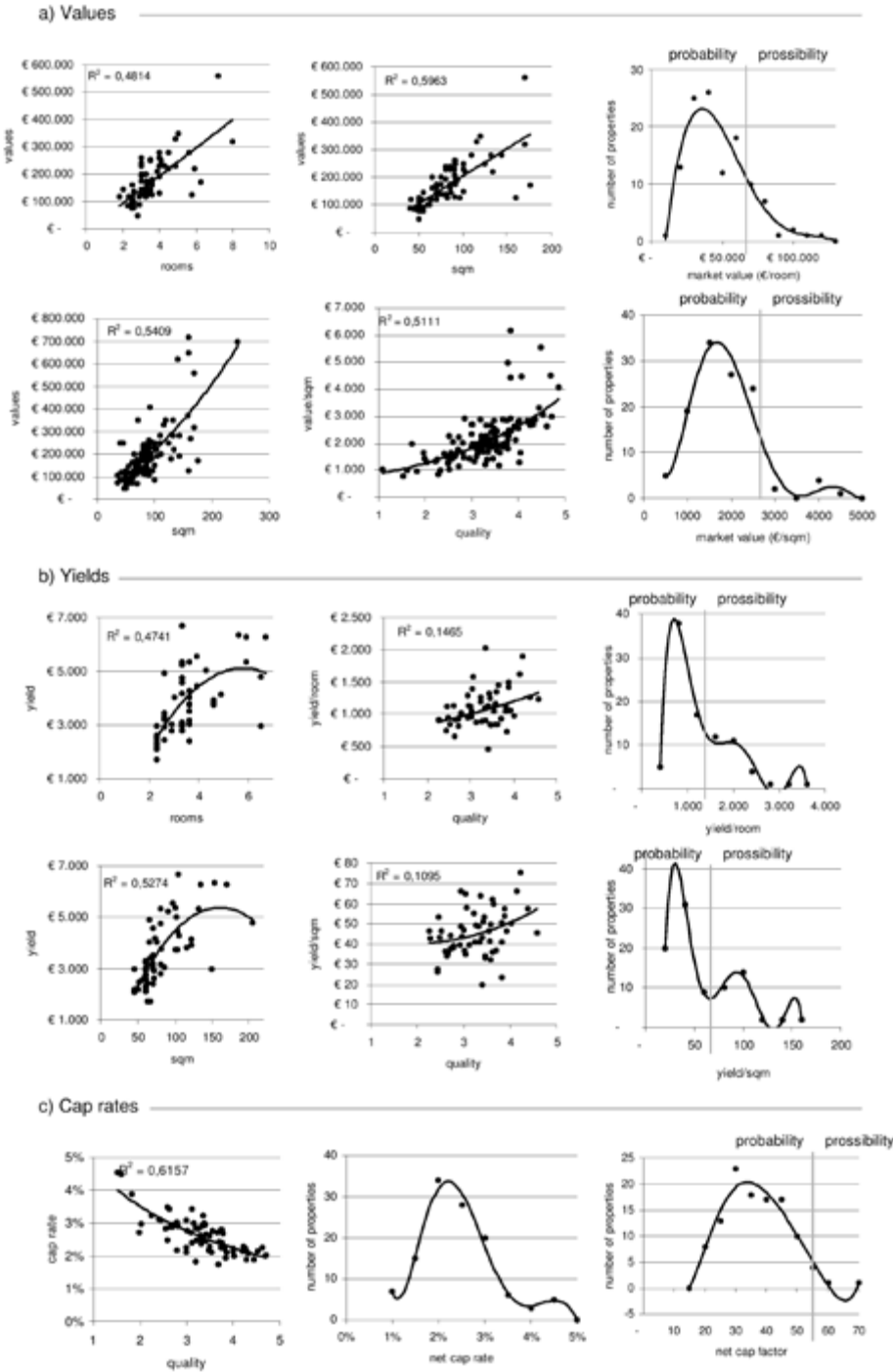
The presence of a tail elongated toward the right in the distribution curve of the capitalization rates leads to hypothesize the trend of an income rise at value parity. This is due to the ample diffusion of the occasional and university rent. Instead, the presence of a tail elongated toward the right in the curve of distribution of the capitalization factors indicates the tendency to "real hoarding", that means to give up the higher yield in favor of the full expression of the potentials of the goods. The functional and productive uses (i.e. the real estate use and rent) are alternative to the speculative ones, that reduce yield to zero, in order to maintain the maximum potential value of the capital asset.

The capitalization rates on which the above mentioned analysis has been performed have been calculated as ratio between the yields of each property for sale. The analysis of the rents has been performed with the aid of specific filters which select sub-samples of the database and form sets of similar goods in which (R_n/room)/k^* and (R_n/sqm)/k^* functions may be constructed. Therefore the database assumes the functions of a model of valuation. The latter allows to select some sub-samples, and to carry out specific valuations of a given property whose thirty descriptive character values may be implemented.

Reminding the capitalization formula, $V=R_n/r$, the evaluation model can be expressed as follows:

$$V = \frac{R_L - s_{(k_e, k_t)}}{{}^w r' \left(1 + a_a - a_d\right)} \tag{1}$$

where V is the value that has been calculated, is the gross yield and is the amount for owner's expenses whose variation mainly depend on the location and the maintenance status previously scored; is the average cap rate of the specific sub market w – as shown in image 3; and are the factors that adjust the average cap rate and represent the economic, financial and monetary potential of the specific property to appraise. The yield can be calculated by means of a simple linear regression by using the total quality score , as follows:

$$R_L = c_w k^* + m_w \tag{2}$$

where c and m vary in each submarket w.

The last step is the calculation of and that are a quota of the half difference chosen among the 36 influences suggested by C. Forte, each compared to the half difference proposed in his model (2%). They indicate the potential of auto-valorization the property expresses, if it checks the presence of certain internal (of the property itself) and external (related to the macroeconomic conjunction, to the sector appraisal and to the development segment) conditions.

Figure 3. Relationship between property quality and cap rate dimension in four sub-markets.

waterfront	rooms	sqm	quality	cap rate
lungomare vittorini	3,0	85	4,3	1,80%
lungomare alfeo	3,5	70	2,6	1,95%
via Tolomei	4,0	90	3,5	1,81%
vicolo II alla giudecca	3,0	70	3,8	1,93%
via ruggero VII	3,0	75	4,3	1,91%
ronco III alla turba	3,0	75	3,0	1,69%
via vittorio veneto	4,0	110	4,0	1,83%
porta marina	5,0	120	3,8	1,65%
via nizza	3,0	80	4,7	1,79%

cap rate	calculted	expected
min	1,65%	1,78%
average	1,82%	1,82%
max	1,95%	1,86%
elasticity	-0,039	-0,011

y= -0,0002 x   0,0188

main sreets	rooms	sqm	quality	cap rate
via vittorio veneto	2,3	64	3,7	2,72%
via mestranza	3,0	80	3,5	2,01%
via roma	3,5	90	4,0	2,03%
corso matteotti	2,5	65	3,8	2,20%
via vittorio veneto	2,5	50	3,2	2,52%
via roma	3,6	90	3,7	2,62%
via vittorio veneto	2,6	70	3,1	2,10%
via nizza	7,2	170	4,4	2,04%

cap rate	calculted	expected
min	2,01%	2,04%
average	2,28%	2,40%
max	2,72%	2,76%
elasticity	-0,066	-0,065

y= -0,0018 x   0,0294

secondary roads	rooms	sqm	quality	cap rate
via dione	3,3	96	2,0	2,45%
via larga	3,0	86	3,2	2,30%
via gargallo	2,3	50	3,3	2,61%
via paolo sarpi	2,5	55	2,2	2,67%
via cavour	2,5	50	3,0	2,24%
via dei mergulensi	4,5	103	3,2	2,01%
via dione	3,3	75	3,2	2,29%
via dione	3,5	80	3,2	2,43%
via resalibera	3,3	70	2,7	2,40%
via gargallo	2,5	50	3,3	2,13%
via larga	2,5	51	2,6	2,80%
via resalibera	2,5	63	2,6	2,36%
via santa teresa	2,9	63	3,3	2,36%
via larga	3,6	85	3,1	2,21%
via santa teresa	2,3	40	3,4	2,37%
via cavour	3,6	91	3,6	2,23%
via resalibera	5,8	160	1,5	3,80%
via mirabella	3,3	86	3,3	2,01%
vi cavour	6,2	176	1,8	3,22%
via giudecca	5,9	134	2,8	2,47%
piazza duomo (pressi)	3,9	90	3,7	1,96%
domus mariae (pressi)	2,3	48	2,7	2,36%
tempio di apollo (pressi)	3,6	82	2,5	2,53%

cap rate	calculted	expected
min	1,96%	2,04%
average	2,44%	2,40%
max	3,80%	2,76%
elasticity	-0,121	-0,065

y= -0,0057 x   0,041

This simulation define the range of the cap rate for that can be expected in the four urban context filtered with regard to the location character of the properties belonging to the sample analyzed.

The sequence of graphs shows how the decresing of the quality of the location is followed by a rising of the cap rate. Moreover, in the first case can be noticed that the context quality, higher in the waterfront properties and lower in the alley properties makes indifferent the other quality, while when location quality decreases the elasticity of the fitting curve increases in absolute value.

alleys	rooms	sqm	quality	cap rate
via mendozza	2,8	50	2,4	3,06%
ronco capobianco	4,3	81	3,7	2,57%
via mendozza	3,1	55	1,6	3,75%
via laberinto	5,6	144	3,4	2,97%
via gemmellaro	2,3	53	3,3	2,62%
via dell'olivo	2,6	60	2,5	2,85%

cap rate	calculted	expected
min	2,57%	2,04%
average	2,97%	2,40%
max	3,75%	2,76%
elasticity	-0,078	-0,065

y= -0,0047 x   0,043

7. Discussion and conclusions

The proposed model allows to keep into account, for the choice of the cap rate, the income characteristics of credit access and liquidity that identify each property, acknowledging its individuality status. Individuality, or personality, is the distinctive feature of mankind, and is transferred to its products, that express it as intrinsic capability to motivate new behaviors and deeds. According to this point of view the urban real estate are products with an high gradient of "nov-

elty", then of humanity. We perform in them most part of our vital and symbolic activities. Moreover we dedicate most part of our income to real estate realization, directly, purchasing or renting, and indirectly, contributing to the creation and maintenance of the city. The capitalization rate is the economic term that expresses and represents more clearly the individuality of an urban property, its exceptionality, its emerging from its natural environment, and the "intention of novelty" which human creativity infuses in it. The capitalization rate measures positively the capability of real estate of being part of a "world", that means of participating to the creation of the new city, or negatively, of being a fraction of the built environment characterized by an entropic drift. This was the situation of Ortigia before 2000. The properties with a low capitalization rate are durable and valuable, and reveal the availability to give up immediate and high incomes provided that the capital value is preserved and increased. In this sense, stock and flow quantities are alternative, then divergent when the capitalization rates are equal. As a consequence the capitalization rate participates to the ethics and the aesthetics of the city, as is shown by the real estate market of Ortigia.

These considerations refer to the theoretical contribution on "theory of person" proposed in a lucid, deep and ample analysis by Roberta De Monticelli in *La novità di ognuno* (each one's novelty) (2009).

The author shows, with a phenomenological approach, that a person is formed in the long and tiring path through which a subject conquers the freedom of his or her own deeds. One person is the subject of free deeds when is able to:

- *position oneself* (p. 187), that means take a position in relation to the situations of his or her own natural and social environment through the practice of the valuation assessment (meant as capability of discerning);
- *being author,* that means being able to perform "free actions" which fully express his or her own free will, auto-determining oneself through them (p. 228);
- *being actor,* that means being able to show through deeds this will, declaring it to society through the full capability to take on oneself the related obligations, the duties and the responsibilities involved in a project (pp.229-230).

Therefore the three above mentioned requisites refer to the notion of *individuation:* "primary individuation" which sanctions the uniqueness and singularity of the subject, and his or her own identity and personhood (pp. 308-310); "secondary individuation", which defines his or her own profile as a subject capable of novelty and *personality* (pp. 311-313).

It is possible to finalize these indications considering that real estate emerge from the status of objects as complementary to the economic agents that operate in their market.

The speculative nature of an historically in crescendo capital market as the real estate one impresses itself on properties, which it is possible to define as *individuals* that share the fate of those who purchase, maintain, transform, live in, and resell them. Real estate emerge from the status of object when a complex of internal and external conditions occur and concur to "differently motivate", offering them alternative, combined or convergent investment options.

About the unity good-agent, that in this context could seem strained, it is possible to quote a psychoanalytic concept from the Lacanian "anamorphic esthetics", as showed by Massimo Recalcati in *Il miracolo della forma* (2007). The author mentions the *picture function*: the picture inverts the fruition relationship: "the picture looks at us" (p. 55). This condition indicates a rising status, an exceeding, an emerging that in economy corresponds to the formation of surplus (over the global cost comprehensive of the normal profit) known as rent. In art *the picture looks at us*, in economy *the object uses us*, *the good buys/sells us*, *money spends us*, *capital owns us*. In architecture *home dwells us*, *city lives us*, *landscape contemplates us*. Property does not distance itself from this destiny as well knows who, hypnotized by home mirage, never stops desiring more, even beyond his or her need, or buying beyond his or her possibilities: *property accumulates us!*

The final stimulation offered by the essay of R. De Monticelli to make further meanings of the cap rate clear concerns the relationship between individual and context (pp. 269-283). Community establishes a form whose importance is not perceived unless it is missing. The context is the term of comparison in whose respect the subject emerges as a person. This could not happen without a community. The more advanced is the context, the greater probability it has to successfully occur. The relationship between an hypothetical perfect market and the rising of his imperfections that amplify the difference of cap rate can be interpreted The same way: accumulation of surplus, formation of capital, abstraction of value, speculation, lower correspondence (and sometimes, indifference) between yield and value, incoherence between value and price in many sectors of economy. The perfect market is the socio-economic context characterized by the *unintentional* adjustment of *natural* prices and quantities; it is the "state" which the *intentional* individuality rises against by assuming a dominant position. It influences the further rising of new and different individualities. The artificial (speculative) prices measure the abstraction level of economy and its accumulation potential. The capitalization rate measures: how much value depends on yield or on liquidity; how much value is a probability or a possibility; how much value depends on local or on global demand; how much value depends on the material and functional characters or on the cultural and symbolic ones, and finally how much the activities that produce value are inspired by fear or courage.

Bibliography

Amato G. (2011). Speech during the debate about *European Crisis, Italian Crisis*, Capalbio (GR). August 27.

De Monticelli R. (2009). *La Novità di ognuno. Persona e libertà*. Milano. Garzanti.

Dondi dell'Orologio L. (2010). Osservatorio nel mercato immobiliare. *Territori*. 1.

Donna G. (1999). *La creazione di valore nella gestione dell'impresa*. Roma. Carocci.

Fisher I. (1930). *The Theory of Interest*. New York. Macmillan.

Forte C. (1968). *Elementi di estimo urbano*. Milano Etas Kompass.

Galimberti F. (2011). Una Maginot per i titoli bancari. *Il Sole 24 Ore*. August 20.

Giuffrida S. (2004). Dalla teoria del capitale alla prassi della perequazione urbanistica: il caso del PRG di Cercola. Giordano G. (a cura di) *Pratiche di valutazione*. Napoli. Denarolibri.

Giuffrida S., Martorina L. (2010). Densità di valore e tensione nei prezzi in un mercato immobiliare eccentrico. Il caso di Ortigia. *Valori e valutazioni*. 7.

Guatri L. (1998). *Trattato sulla valutazione delle aziende*. Milano. EGEA.

Guatri L. (2000). *Il giudizio integrato di valutazione. Dalle formule al processo valutativo*. Milano. Università Bocconi Editore.

Guerrieri G. (2011). Casa, compravendite ancora giù. 'Malgrado la crisi, i prezzi non calano'. *Repubblica. Economia.* 8 giugno.

Hicks J. R. (1959). *Valore e capitale*. Torino. UTET.

Keynes J. M. (2001). *Teoria generale della moneta, dell'interesse e dell'occupazione*. Torino. UTET.

L. My. (2011) La crisi rallenta l'interbancario. *Il Sole 24 Ore*, August 20.

McDonalds J., Stokes H. (2011). Monetary Policy nd The Housing Bubble. *Journal of Real Estate Finance and Economics*. Springer.

Morano N., Manganelli B., Tajani F. (2009). La valutazione del rischio nell'analisi finanziaria di Ellwood per la stima indiretta di immobili urbani. *Aestimum*. 55.

Nomisma (2008). III Rapporto 2008. Osservatorio sul mercato immobiliare. Bologna

Poggi C. (2011). Indagine Fed sulle banche europee. *Il sole 24 Ore*. August 19.

Recalcati M. (2007). *Il miracolo della forma. Per un'estetica psicoanalitica*. Milano. Bruno Mondadori.

Rizzo F. (1977). *Analisi critica della teoria delle valutazioni*. Seminario Economico dell'Università di Catania.

Rizzo F. (1999). *Valore e Valutazioni. La scienza dell'economia o l'economia della scienza*. Milano. FrancoAngeli

Rizzo F. (2002). *Dalla rivoluzione keynesiana alla nuova economia. Dis-equilibrio, tras-informazione e coefficiente di capitalizzazione*. Milano. FrancoAngeli

Saccomanni F. Speech during the debate about *European Crisis, Italian Crisis*, Capalbio (GR). August 27.

Simonotti M. (1983). L'analisi finanziaria dl saggio di capitalizzazione. *Estimo e territorio*. 12.

Simonotti M. (2009). Problemi di verifica del saggio di capitalizzazione. *Estimo e territorio*. 12.

Soros G. (2011). Perché appoggio gli eurobond. *Il Sole 24 Ore*. 17 August.

Sorrentino R. (2011). Gli indici danno al 38% il *double dip* negli Usa. *Il Sole 24 Ore*. September 21.