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Prices of residential property in Italy:
Constructing a new indicator

by Salvatore Muzzicato, Roberto Sabbatini and Francesco Zollino

PRICES OF RESIDENTIAL PROPERTY IN ITALY: CONSTRUCTING A NEW INDICATOR

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Abstract

We present a new indicator of house prices in Italy, with more extensive geographical and time coverage. The new indicator now makes it possible to analyze medium- and long-term trends with satisfactory representation of the Italian housing market. It also allows for timely updating, for prompt assessment of housing input both to the business cycle and to inflationary pressures. We offer a preliminary identification, based solely on graphical inspection, of four different property price cycles since the late 1960s; the latest began at the end of the 1990s and signaled a slowdown since 2006. Finally, we tentatively assess the effect of including transactions in dwellings in the Italian HICP basket according to the net acquisition approach, which apparently results in about a quarter point of additional inflation each year since 2000.

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1. Introduction[1]

In recent years developments in housing markets have gained growing importance in economic discussion, especially in countries where innovations in mortgage loan markets have been most wide-ranging. The signalling function of property prices has become increasingly important for the conduct of monetary policy. However, in most European Union (EU) countries an accurate assessment of property market conditions is hindered by a shortage of timely and detailed statistical data on the factors that affect housing supply and demand.

In particular, European countries currently lack official house price indexes calculated according to uniform methodologies. Data collected by private and public research centres, and by specialized operators, are generally used to make up the shortfall; often national central banks calculate house price indexes, summarizing data gathered from various sources. Since 2000, the EU central banks have been regularly exchanging the national data they deem most reliable, which are subsequently aggregated by the European Central Bank (ECB) into an average index for the euro area (Eiglesperger, 2006).

This study presents an index of house prices in Italy, calculated using data taken from the review *Il Consulente Immobiliare* and based on a method that has been amply revised compared with previous formulations. The index covers a time horizon that extends back to the mid-1960s and permits a detailed geographical breakdown. These are two vital characteristics for the purposes of economic analysis and the study of the property market, and mark a new departure from the indexes available previously.

Section 2 of this study sums up the reasons for the growing interest of central banks in the housing market, and Section 3 illustrates the main statistical and methodological problems connected with the reporting of house prices. Section 4 recalls the main data sources available in Italy. Section 5 describes the method used to construct the new index. Section 6 analyzes the index's performance and makes a preliminary assessment of its information content for the analysis of the housing cycle. Section 7 concludes.

2. The housing market in the economic debate

Since the 1990s the housing market has taken on increasing importance in the academic debate and in discussions on monetary policy objectives, due to a set of interrelated factors: (a) the

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[1] The views expressed in this paper are of the authors alone and do not necessarily involve the Bank of Italy.

increase of the share of home owners; (b) the greater incidence of mortgage payments on households' disposable income; (c) radical innovations in the instruments for financing house purchases; (d) sharper variations in house prices, with a prolonged phase of strong growth followed by a sudden downturn in several countries. As a result of the financial crisis underway since the summer of 2007, the emphasis on the housing sector has become even more pronounced both as regards the channels for transmitting monetary policy impulses and financial stability. Also aggregate business cycle may be heavily affected by developments in the housing market (Leamer, 2007).

Property wealth accounts for a substantial share of the total assets of households in all the major euro-area countries, estimated at 65 per cent of total assets in France and 60 per cent in Germany and Italy (Eiglesperger, 2006; Cannari and Faiella, 2007). In countries where households have a greater propensity to invest in stock markets, the share is around 55 per cent in the United Kingdom, 45 per cent in Canada and 40 per cent in the United States. In all countries the share of property wealth is reported to be increasing; at the same time the percentage of households that own the house in which they reside is also rising. In Italy 72 per cent of households own their own home, 5 percentage points more than in the United Kingdom and the United States, 15 points more than in France and 30 more than in Germany.

These trends reinforce the wealth effects stemming from a rise in house prices. In Italy, the most recent estimates suggest that in the long term every one-euro increase in the value of property will be accompanied by around two cents more consumer spending (Bassanetti and Zollino, 2007; Guiso, Paiella and Visco, 2005). The impact is greater in countries where financial markets have developed more intensively and where it is easier for households to gain access to credit (Calza, Monacelli and Stracca, 2007; Ludvig and Slock, 2002). For one thing, the appreciation of property wealth constitutes real collateral for loans to households, facilitating access to consumer credit, in line with the indications of the financial accelerator model (Bernanke, Gertler and Gilchrist, 1998; Goodhart and Hofmann, 2000; Feldstein 2007). Secondly, the lower contribution requested to households for property purchases lessens the need for younger generations – which account for most of those who do not own their own home – to accumulate savings. This curtails the asymmetrical impact of the wealth effects on spending by homeowner and non-owner households (Muellbauer, 2007). In recent years there has been a widespread increase in household debt, which in the United States has come to exceed disposable income. In this scenario, the effects of a decline in house prices at national level can acquire a significance that goes well beyond the size of the domestic real estate market, with repercussions on liquidity conditions and the correct functioning of financial markets, and risks of contagion at international level.

In normal conditions, house prices contain significant information for the purposes of assessing inflationary pressures, in relation both to the possible effects on current rentals (included in the price indexes) and expectations about future prices, such as the prices of financial assets.

Overall, therefore, it becomes vital to improve the quality of indexes to enable housing market trends to be monitored reliably and promptly (Mishkin, 2007).

Focusing on house prices only[2], the debate in Europe has developed primarily around two issues: (a) the identification of a uniform methodology for calculating price indexes; (b) the inclusion of property transactions in the HIPC basket. Regarding the first point, no official statistics are currently available. In the majority of countries some – albeit incomplete – information is published by research centres and specialized sector operators. The indicators vary in numerous crucial ways, for example in respect of the type of dwellings and market segments considered, the territorial coverage and the frequency of surveys (Arthur, 2006; Eiglesperger, 2006).[3] As to the second point, any assessment of the advisability of including properties in the HICP basket has been postponed until the new indexes become available, probably in 2009; to date most observers agree that the "net acquisition approach" would be best suited to this task, in other words an approach based on "net purchases" or the transactions households conclude with entities belonging to other institutional sectors. These primarily refer to new properties, sold directly by builders, but also comprise transactions that can occasionally take on considerable importance in the market, such as divestments of state properties. The preference for this method stems from the consideration that it is in line with the rules of the HIPC, insofar as it treats house sales and sales of other durable goods in an equivalent manner (see Appendix A).

3. House price indexes: the main methodological issues

Compared with other goods and services, the calculation of a property price index entails more complex methodological problems, which can be summed up as follows.

i) Territorial representation. The housing market is highly segmented at territorial level in relation to the population distribution, income levels, the availability of areas suitable for building and the regulatory framework, which affect the levels and dynamics of prices in the various geographical areas. It is therefore necessary to ensure that synthetic house price indexes are representative of the

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[2] In European countries with few exceptions there is a lack of other cyclical indicators for the housing market, such as data on the number of building licences, housing starts, new houses put on the market and sales; this contrasts with the findings in Anglo-Saxon countries, where these data are instead made available regularly every month, enabling a timely assessment of market trends.

[3] This situation has made it necessary for Eurostat to launch a research project aimed at harmonizing the surveys participated in by the EU statistical institutes.

prices applied throughout the national territory. This need for representation also has a local dimension, insofar as within a given municipality the index should reflect trends in the prices of dwellings located in different areas (for example centre, semi-centre and outskirts). In areas where the low number of property transactions prevents any representative assessment of the state of the market, it could prove difficult to survey a sample of houses with characteristic data over time.[4] The main consequence of insufficient numbers for a sample is the excessive volatility of prices for several types of dwelling.

ii) Land suitable for building. The cost of land should not be taken into account when calculating a house price index, given that this is connected with an activity that is not "produced"; the cost of land is typically associated with the part of the property price relative to the investment component and should therefore be excluded from consumer inflation measurements (Makaronidis and Hayes, 2006). However, the available data rarely permit this distinction, so reference is usually made to the property price inclusive of the cost of the land.

iii) Quality changes. Dwellings can differ with respect to numerous architectonic characteristics (state of repair, size, age, presence of fittings and fixtures, etc.) and urban features (availability of means of transport, traffic, proximity to shopping centres, etc.), with the result that it is very difficult to secure accurate data in order to monitor the prices of houses with similar characteristics over time, as is common practice for the items included in the price index. Even the impact of size alone would require a more rigorous assessment than the simple rule of proportionality, usually expressing real estate prices per square metre; surveying other characteristics that together distinguish buildings could prove even more complex.

In this respect, a first option is to classify houses in relation to the main characteristics that influence price formation. In this instance, the sample is subject to a rather detailed stratification, guaranteeing a minimum number of observations on prices for each cell, from which to calculate an average for each period (sometimes the median to take account of anomalous observations). In practice, there is a trade-off between the breakdown of the classification, in order to preserve its representation by type of property and geographical area, and the number of comments available within each cell.

A second solution adopting a less detailed stratification is based on estimating some hedonic regressions for each cell to take account of the effects stemming from quality changes. This approach, which is widely used for durable goods, allows the factors determining quality to be

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[4] In surveys of prices of newly built homes, for example, the number of observations can be very low in historic centres.

adequately represented but requires very detailed data on the main characteristics, which are almost never available in the case of residential properties.[5]

The practical difficulties of these two approaches mean that in the majority of cases the price indexes are based on a simple average of all the prices surveyed in a given period, without sufficient stratification. In reality this means calculating an "average unit value" index, raising the problem that elementary prices are aggregated according to an "implicit" weighting structure linked to the number and type of transactions made in the period; thus changes in the index do not necessarily reflect a genuine inflationary dynamic, as they are affected by composition effects and, moreover, can be excessively volatile.

iv) The temporal component of price. Property transactions can take a relatively long time to be completed and as a result, the price surveyed can refer to diverse phases, in particular the date on which the preliminary contract of sale was signed or that of the actual transfer of property, considering that the interlude can be quite long as a function of the loan amount, means of financing and characteristics of the mortgage market.

v) The frequency of data collection. The difficulty of collecting a sufficiently large number of observations, especially in the smallest territorial areas, is the main obstacle to calculating an index with a high frequency; this is why the price indexes of properties are typically published on a bi-annual or quarterly basis, and only in some cases on a monthly basis.

vi) Weighting. In defining the weighting scheme, there is the problem of whether to take account of the flow of transactions or the stock of dwellings. In line with the practice of price indexes the approach should be based on the value of the transactions, even if its application to property is complicated by the strong influence of cyclical phases. These phases can differ with the type of properties and their location, triggering what may even be high fluctuations of the weights from one period to the next.[6] In practice, the main reason why the stock of dwellings is normally used is because it is easier to retrieve the information requested, which is available in the tax registers.

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[5] The hedonic regression breaks down the price of an asset into components attributable to various characteristics, making it possible for the same mix of features to be compared over time (Griliches, 1971). In the case of dwellings, a price regression is estimated for each period in relation to the variables identified to describe the quality of the property; the coefficients thus estimated are the "implicit prices" of each characteristic. The index is therefore calculated with reference to weights derived from the recurrence of characteristics in a given period (the base year) to which the estimated coefficients are applied, period by period.

[6] One solution is to consider, where possible, a moving average for several periods, long enough to attenuate the effects of the property cycle, which are typically more persistent than in the rest of the economy.

4. The prices of residential property in Italy

Italy still does not have any official data on property transaction prices, although Istat does take part in a Eurostat project to calculate an index using a harmonized methodology (see Appendix A). Systematic data are released by public or private research institutes and by specialized operators active in property transactions. Geographical coverage, the type of property considered, the time horizon of the data, the frequency of data collection and the basic sample design differ depending on the source. The main data available for Italy are summarized below.[7]

i) Nomisma. The data are collected twice a year, in May and October. The house price index refers to average prices reported by a sample of real estate agencies active in 13 large provincial capitals and another 13 middle-sized provincial capitals.[8] Nomisma considers three different types of dwellings – new, previously inhabited and in need of renovation. Each group considers four different municipal locations: (a) luxury areas; (b) town centre; (c) semi-centre; (d) outskirts. For each municipality the basic data are aggregated using a weighted average, with a weighting structure that is constant over time and across cities.[9] The aggregation of the data of individual cities in a national index is obtained using a simple average.

The main advantage of the Nomisma index is that it is based on a methodology and sample of cities that has remained largely unchanged since the surveys started in 1988, enabling the property cycle to be valued over a sufficiently long time horizon. Given its limited geographical coverage, the problem of this index is its scant representativeness at aggregate level.

ii) Il Consulente immobiliare (CI). Since 1965 this industry specialised review published by *Il Sole 24 Ore* media group collects information twice a year from market operators on average house prices. The data are divided into two property categories (new and recently built) and three locations (centre, semi-centre and outskirts). The main advantages of this survey include its long existence and broad territorial reach, given that it comprises data on all provincial capitals and in recent years over 1,000 other municipalities; the main drawback is the recurring alterations in the reference sample, which raises the issue of continuity of the historical series; moreover, the methods for collecting the data are not adequately documented in respect of the actual frequency of field

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[7] This paper does not take into consideration data collected since 1965 by the Bank of Italy in its *Survey on Household Income and Wealth* (SHIW), since these data are available only every two years. The data comprises households' subjective estimations of the value of their homes, which do not necessarily correspond with the actual market prices.

[8] The first group comprises Bari, Bologna, Cagliari, Catania, Florence, Genoa, Milan, Naples, Padua, Palermo, Rome, Turin and Venice; the second, Ancona, Bergamo, Brescia, Livorno, Messina, Modena, Novara, Parma, Perugia, Salerno, Taranto, Trieste and Verona.

[9] The weights, which are the same for each city, are 1/15, 2/15, 4/15 and 8/15 for (a), (b), (c) and (d), respectively.

surveys and the selection of the sample, especially with reference to municipalities that are not provincial capitals.

iii) Osservatorio del mercato immobiliare (OMI). Since 2002 the Property Market Observatory, a unit of the Italian Territorial Agency,[10] publishes the selling prices of properties twice a year, almost completely covering the entire national territory with a very detailed breakdown by location and quality of property.[11]

The prices reported are a combination of data from various sources; in particular, the direct survey of actual prices quoted by market operators or detailed in administrative archives is combined with the assessments of local experts aimed at correcting imperfections in the survey of basic data, and also at attributing a reference price whenever a low number of transactions limits the representativeness of the prices reported. The undoubted benefit in terms of the wealth of data acquired is counterbalanced by the lack of historical depth of the information and the delay in their publication, on average three or four months after the reference period has ended. Moreover, the basic data are sensitive to regulatory innovations, which can alter the tendency to represent market values accurately in administrative documents, leading to a discontinuity in the series and/or broad revisions.

iv) Scenari immobiliari. As a research institute specialised in the analysis of the property market, it publishes information on residential property prices in all of Italy's municipalities, whose level of detail and frequency differ depending on the type of municipality surveyed. In particular, for 150 cities – provincial capitals and other major cities – highly detailed data are published every two months, disaggregated down to the main streets. For the other Italian municipalities, the data refer to macro-areas (centre, semi-centre and outskirts) and are updated every six months. In both cases, three prices are reported, corresponding to the minimum, maximum and that held to be most frequent, relating to a standard type of residential property.[12] It is important to note that these are not actual prices reported on house sales, but an estimate of the interval within which the final selling price will presumably fall. The starting point is the prices requested by sellers as reported in advertisements mainly published on the internet; these are then updated at three different points in time, based on the hypothesis that when the advertisement no longer appears, the house has been

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[10] The Italian Territorial Agency is a public body established in 2001 as part of a series of reforms of the Ministry for the Economy and Finance and is present nationwide.

[11] The archive surveys homogenous areas in terms of socio-economic and urban characteristics (such as geographical location, quality of public services and tourist flows), building infrastructures (lifts, central heating, etc.) and other factors (such as properties' state of repair) that together determine price.

[12] The typical dwelling measures between 90 and 100 square metres, is equipped with mid-quality fixtures and is located on an intermediate storey of a new or almost new building with 15 to 20 apartments. Adjustment coefficients calculated by the same Institute are used to calculate the prices of other types of property.

sold. The published values are finally obtained using non-linear interpolations reported for each reference area in a given period. In respect of residential dwellings located in semi-central areas only, the data are aggregated in a national index using a weighting system based on the stock of dwellings of each municipality.

The source that is best suited to analyzing medium-term developments in the property market, taking sufficient account of the territorial breakdown that generally characterizes it, is the *Consulente Immobiliare* survey, and these data have been used in the construction of the house price index presented here. Another option for the wealth of information provided and territorial coverage is the OMI databank, used in Cannari and Faiella (2007), but it is available only since 2002.

5. The construction of a new index based on data from *Il Consulente Immobiliare*

For some time now, the Bank of Italy has been considering methods for calculating house price indexes that are representative of the entire national territory. Initial calculations based on CI data can be found in a survey on the territorial mobility of workers and on consumer demand (Cannari, Nucci and Sestito, 2000). However, several methodological issues connected with the basic data remained unresolved, especially regarding the continuity over time of geographical coverage. In this section, we illustrate a new methodology aimed at overcoming these problems, in order to ensure that the CI data is put to more effective use.

5.1 The basic data

The CI publishes highly detailed data on the national territory, carrying out twice-yearly surveys of the average prices of sales made in a set of cities that currently includes all the provincial capitals and approximately 1,400 other municipalities. The prices refer to three types of dwellings, divided according to their location within each city: (a) centre; (b) semi-centre; (c) outskirts. In the non-capital cities, the "centre" category also comprises luxury dwellings, regardless of their location.

Depending on the municipality, the surveys are further distinguished in relation to the property's state of repair:

(a) for the provincial capitals, the data concern separately (i) new or wholly renovated buildings,[13] which are still unoccupied (hereafter "new houses") and (ii) "recently built" dwellings (those not more than 35 years old);

(b) for the other municipalities, data on prices are collected for new houses only.

In addition to the average prices of sales that were actually concluded, the *Consulente Immobiliare* also publishes parameters that are useful for assessing specific kinds of property.[14] In contrast to this wealth of micro-data, primarily aimed at giving market operators a guide to the formation of prices of individual residential units, there are, however, no data on aggregate estimates of prices for an entire city or for larger geographical areas.

The basic data just described have two important methodological problems:

i)　　the prices published represent average unit values and are not a pure measure of price. They are affected by variations in the quality composition of the properties sold, between the various cities and over time. The sole aspect that enables at least partial account to be taken of quality is location within the city, hypothesizing that valuations are regularly affected by distance from the centre;

ii)　　the selection of municipalities to include in the survey does not correspond to a sample plan aimed at maximizing representation of the entire universe, but tends to vary even over short time intervals. The reasons for these changes and the ways they were introduced are not specified, however.

To attenuate the discontinuities in the databank, methods were devised to impute the occasionally missing data and identify and adjust anomalous observations. Subsequently, the problem of aggregating the basic data was addressed, from the level of individual cities, the region and macro-region, and nationwide.

5.2 Breaks in the surveys

The CI surveys are available from the second half of 1965 onwards for a limited set of cities, comprising 29 provincial capitals and a changing, poorly documented group of other municipalities. The survey gradually increased its coverage of provincial capitals and since 1980 has embraced nearly all of them (Table 1 and Table B1 in Appendix B). Coverage of other municipalities also

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[13] Including buildings that have been renovated to preserve only small parts of the pre-existing structure (for example the façade and load-bearing walls), in order to maintain the original surface area.

[14] For example, for each urban location the percentage to be applied to the average price to obtain that of an apartment situated on upper storeys or with luxury accessories/fixtures (lifts, balconies, etc.) is reported. These data, however, are not accompanied by information on the incidence of the various types of apartments on total transactions and are accordingly ill-suited to making a hedonic adjustment of prices.

grew and became more systematic, stabilizing at around 1,400 since 1998. In addition to breaks in territorial coverage, the data for individual locations in the sample cities are sometimes incomplete.

Table 1

MAIN CHANGES IN THE TERRITORIAL COVERAGE OF THE CI SURVEY

		Number of municipalities					Proportion of total national housing stock (percentages)
	1965	1978	1979	1980	1998	1999	2001
Provincial capitals	29	44	89	100		103	28
Other municipalities		Changing aggregates				1,400	33

The following steps were taken to obviate these problems.

Provincial capitals. For the years before 1980, for the cities still not included in the survey, prices were imputed as follows:

1. of the 29 provincial capitals covered from the beginning, the 8 largest were excluded on the grounds that they were not plausibly comparable with the smaller provincial capitals for which survey data were unavailable;

2. the data on the selected cities were then grouped into six geographical areas and for each area the average price of houses was calculated in three different locations (centre, semi-centre and outskirts) with weights based on the stock of housing units as derived from census data;

3. the rates of change in the prices of the three aggregates so obtained for each area were used to project any incomplete time series backwards.

Other municipalities. These were excluded until 1997.[15] For subsequent years, the continuity of survey data for some 1,400 municipalities allowed them to be used in calculating an indicator for the entire national territory, thereby extending its total coverage to almost 60 per cent of the nation's housing stock.

Missing data within individual municipalities. In cases of incomplete data within a city that is otherwise always included in the survey, the missing data were imputed by assuming that:

1. prices in the semi-centre always fall between those in the centre and in the outskirts;

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[15] Although this entailed a reduction in territorial coverage, the evident variability in the composition of the groups and lack of information concerning the underlying scheme of aggregation made this course convenient.

2. where survey data are lacking for all three locations for one or more half-years, the missing values follow the linear interpolation of the available data;

3. where survey data are lacking for one or two locations for a given half-year, the relation between the missing and the available data remains unchanged with respect to the previous period.[16]

5.3 Anomalous data

The quality of the elementary data is affected by measurement errors, which are routine in a survey of this scope. Such errors were present throughout the period considered, though they were greatest in the years around the turn of the century, possibly owing in part to errors in transcribing prices in connection with the introduction of the euro. The problem manifested itself in greater house price volatility, which increased much more in the smaller towns than in the big cities.

To attenuate the impact of anomalous data on the aggregated price indicators, the following procedure was implemented for each of the three available locations (centre, semi-centre and outskirts) in each city included in the survey plan:

1. for the series of changes on the corresponding period in the average prices published by CI, for moving intervals of six periods (three years) starting in 1985 the median of the changes is calculated to obtain the time series of a "moving median";

2. around that time series a symmetric interval is identified, of constant size for the entire period, defined in such a way that no more than a given number of all the observations can lie outside it (the number is set at 4 in order to limit the impact on the original sample);

3. in correspondence with the anomalous observations so identified in the field of percentage changes, the time series in levels is modified by imputing a price equal to the average of those observed in the two adjacent periods.

This procedure results in the size of the adjustment being determined endogenously as a function of the local market and the time horizon considered, without generating appreciable discontinuities in the profile of the adjusted series. For example, in a provincial capital of average size such as Genoa, the number of observations shown to be anomalous because they lie outside the band constructed around the moving median (grey line in Figure 1) vary between the different

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[16] For example, for a given city, the missing value for the dwellings located in the semi-centre at a given point in time is equal to the product of the available value for the dwellings located in the centre for the same time and the ratio of the values for the semi-centre to those of the centre for the immediately preceding time.

locations in the city. The size of the differences between the changes of the original series and those of the adjusted series (continuous dark line) also vary.

Fig. 1

GENOA: COMPARISON BETWEEN UNADJUSTED DATA AND DATA ADJUSTED FOR THE MAIN ANOMALOUS OBSERVATIONS
(at current prices; changes on corresponding period)
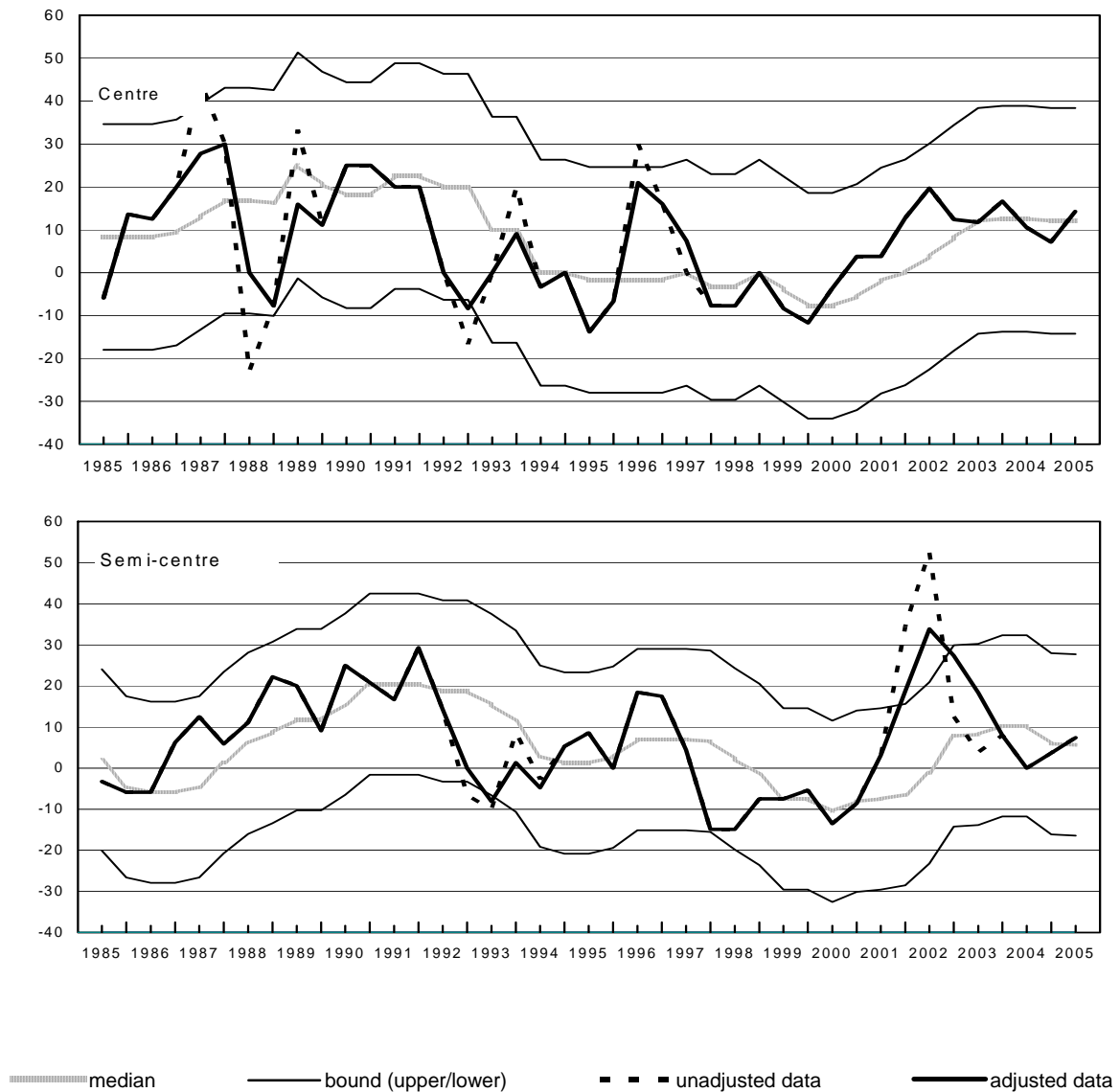
Let us note that the procedure makes it possible to identify the anomalous values among the data actually published by CI empirically. From the statistical point of view it would have been more efficient to intervene ex ante on the basic observations, hence on the individual data underlying the average price reported for each location, but this proved unfeasible.

5.2 The aggregation scheme

The disaggregated observations for each location within each city are aggregated using a two-stage weighting technique.

a) Individual city. In the first stage an aggregate price measure is constructed at city level, calculated as the average of the prices in the three urban areas weighted on the basis of the distribution of the population recorded in the Bank of Italy's *Survey of Household Income and Wealth*.[17]

b) Province and higher aggregates. The subsequent stage consists in aggregating at higher and higher level, from the province on up to the entire national territory, the average prices for the cities included in the reference area, weighting them in proportion to their incidence on the total number of housing units (occupied and not) in the area as shown by the censuses.

6   The new indicator of transaction prices

The indicator presented in this work is obtained by combining three separate components that differ in terms of type of housing, geographical cover and time horizon:

1. prices of *new houses in the provincial capitals*, available from the first half of 1966;

2. prices of *new and recently-built houses in the provincial capitals*, available from the first half of 1985;

3. prices of *new houses in other municipalities*, available from the first half of 1998 for some 1,400 municipalities.

Each component is calculated according to a disaggregation at provincial, regional, macro-regional and national level; at national level, there is separate calculation for the set of urban areas (identified as cities with more than 250,000 inhabitants) and non-urban areas.

In the absence of data on the composition of the housing stock by year of construction, the prices of new houses in each city are aggregated using weights based on the total stock of houses in existence, with the risk of introducing distortions where the distribution between new and recent houses differs geographically. Owing to the same lack of data, the prices of new and recent houses are obtained as the arithmetic mean of those recorded individually for the two categories.

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[17] These data are available at two-year intervals from 1986 on. For earlier years we have assumed that the distribution of dwellings within the urban areas coincides with that of the first survey. Plausibly, this involves an underestimation of the weight of the areas of the semi-centre and the outskirts, since it does not take the rapid urban expansion of the 1960s and 1970s into account. The data for non-survey years were obtained by interpolating the pairs of adjacent observations.

As to the third component, although the towns surveyed by *Il Consultente Immobiliare* are not selected by well-defined sample design, the proportion of the provincial stock of housing that they represent is generally higher where that of the provincial capital is lower. It follows that by summing the two groups of municipalities we can obtain fairly homogeneous coverage of the stock of housing for each province as a whole. For the sake of simplicity, considering the provincial capitals that are also regional capitals, the dispersion in the representation of the housing stock of the respective provinces is sharply reduced by extending the sample from the capital cities to the other municipalities surveyed by CI (Table 2, columns A and C). The same is confirmed in terms of the representation of each province with respect to the total national stock: the correspondence between the actual shares and those surveyed in each province increases sharply when the non-capital municipalities are included (columns I and L). This finding is reassuring with respect to the risk that the enlargement of the sample to the latter could distort the results, as would have happened if, in the provinces where the capital city accounts for a relatively modest share of the stock, the survey had included only a few other municipalities.

Table 2

REPRESENTATIVENESS OF THE INDICATORS BASED ON THE *CONSULENTE IMMOBILIARE* DATA

Rank	Province	Capital city's share of total provincial stock	Other surveyed municipalities' share of total provincial stock	All surveyed municipalities' share of total provincial stock	Capital city's share of total national stock	All surveyed municipalities' share of total national stock	Province's share of total national stock	Non-capital municipalities' share of total national stock	Non-surveyed municipalities' share of total national stock
		(A)	(B)	(C)=(A)+(B)	(F)	(G)	(H)	(I)=(H)-(F)	(L)=(H)-(G)
1	Rome	67.05	14.39	81.44	4.22	5.12	6.29	2.07	1.17
2	Milan	38.60	46.64	85.24	2.32	5.12	6.01	3.69	0.89
3	Turin	39.59	29.28	68.87	1.56	2.72	3.95	2.39	1.23
4	Naples	33.84	31.17	65.01	1.33	2.55	3.92	2.59	1.37
5	Bari	20.86	49.78	70.64	0.48	1.63	2.31	1.83	0.68
6	Palermo	46.04	19.79	65.83	0.99	1.42	2.15	1.16	0.73
7	Genoa	61.02	22.22	83.24	1.12	1.52	1.83	0.71	0.31
8	Bologna	42.76	34.36	77.12	0.71	1.29	1.67	0.96	0.38
9	Florence	41.47	42.28	83.75	0.63	1.26	1.51	0.88	0.25
10	Venice	32.58	33.16	65.74	0.47	0.94	1.43	0.96	0.49
11	Cagliari	21.24	22.93	44.17	0.26	0.54	1.22	0.96	0.68
12	Trento	16.48	33.17	49.65	0.18	0.53	1.07	0.89	0.54
13	Perugia	24.93	48.25	73.18	0.24	0.72	0.98	0.74	0.26
14	Ancona	22.47	45.88	68.35	0.17	0.51	0.75	0.58	0.24
15	Bolzano	21.49	35.46	56.95	0.16	0.42	0.73	0.57	0.31
16	Catanzaro	19.18	24.18	43.36	0.14	0.32	0.73	0.59	0.41
17	L'Aquila	16.35	40.88	57.23	0.12	0.42	0.73	0.61	0.31
18	Potenza	14.19	20.42	34.61	0.10	0.24	0.69	0.59	0.45
19	Trieste	88.63	9.06	97.69	0.41	0.45	0.46	0.05	0.01
20	Campobasso	16.56	31.40	47.96	0.07	0.22	0.45	0.38	0.23
21	Aosta	15.87	38.02	53.89	0.06	0.20	0.37	0.31	0.17
Coefficient of variation		11.53		4.05				0.72	0.26

The three types of price display marked differences in levels but not generally in dynamics in the more recent period for which all are available. Considering, for the sake of simplicity, figures referred to the whole country, the prices of new houses in provincial capitals remain highest. They rose from about €2,000 to €3,800 per square metre between 1999 and 2007, with a growing gap especially vis-à-vis the prices of similar homes in other municipalities, which rose from €800 to €1,800 per square metre over the same period (Figure 2).

Figure 2

HOUSE PRICES IN EUROS IN ITALY
(at current prices per square metre)
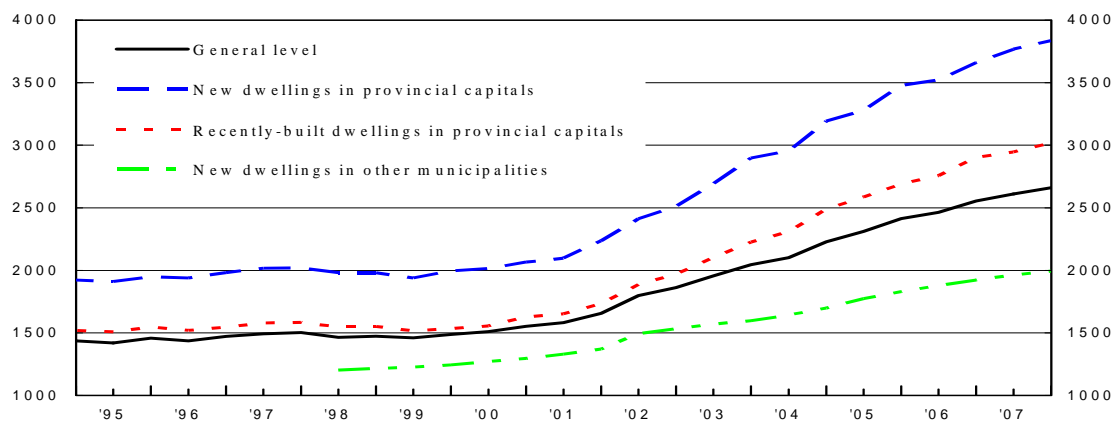
Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.

The differences between the three categories of price in terms of changes were negligible between 1999 and 2002 but then sharpened in the three following years owing to the lower rate of increase in the non-capital municipalities. In particular, in 2003 the prices of new houses increased by 3.5 per cent there, some 9 points less than in the provincial capitals (Figure 3). However, the gap has started to narrow again in recent years.

In the light of these considerations, we first calculated a composite indicator from 1998 onwards, deriving it as the weighted average of the prices recorded in all the municipalities, including non-capitals. We estimated the prices for earlier years on the basis of the change in prices only in the provincial capitals, for new and recently-built dwellings up to 1985 and for new dwellings alone up to 1966. We thus obtained a measure of house prices that for the most recent years covers up to about 60 per cent of the entire national stock and is sufficiently representative of its geographical distribution.

Figure 3

HOUSE PRICES IN ITALY

(at current prices per square metre; percentage changes on corresponding period)
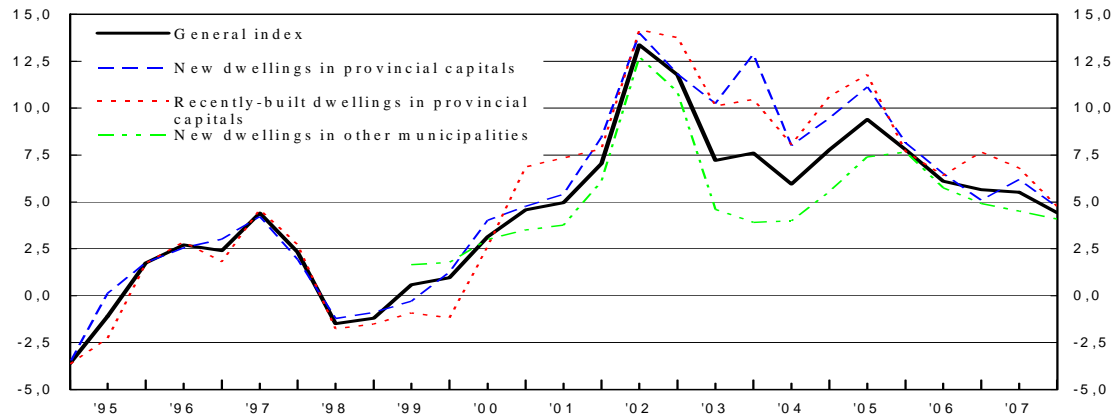
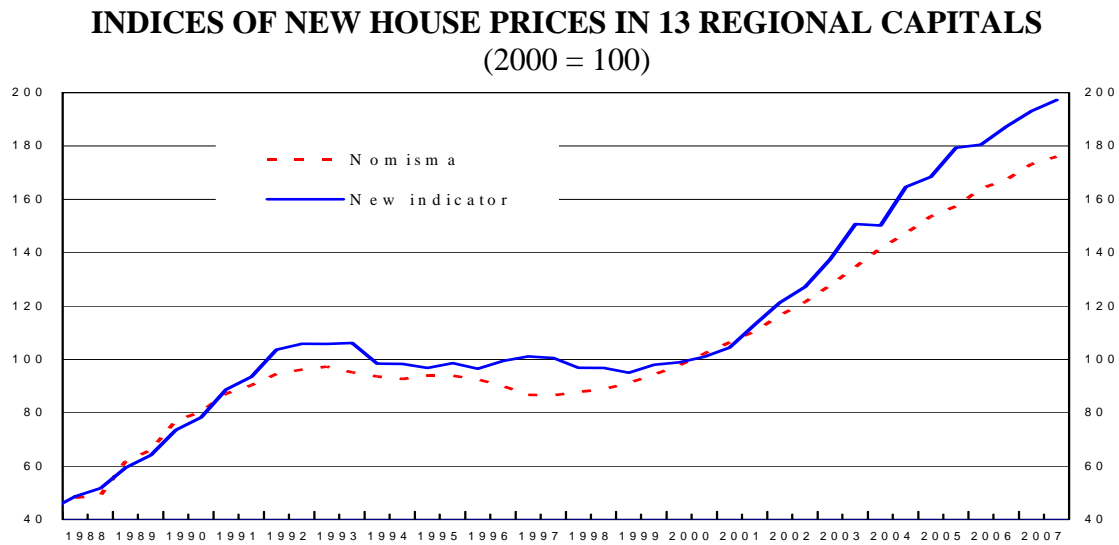Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.

The behaviour of the indicator is rather similar to that of the indicators published by other research centres, controlling for geographical cover and types of dwelling. Compared with the index calculated by Nomisma for 13 cities, for example, our indicator for the same cities shows a generally limited discrepancy, although there are temporary divergences clustering mainly around the cyclical turning-points due to the different weighting of the data for the individual cities (Figure 4).[18] As expected, our indicator, with its wider geographical coverage, displays more pronounced differences in levels and changes.

Compared with the indicator calculated by Cannari and Faiella (2007) mainly using the OMI data and limiting attention to the three years 2004-2006, for which the OMI surveys are deemed to have reduced some inconsistencies that were found at the start in 2002, our indicator show very limited difference in price changes (Figure 5). Between the first half of 2004 and the second half of 2006, at national level house prices rose by an average of 7.7 per cent on an annual basis according to our calculations, against 7.4 per cent based on the OMI data. The discrepancy remains small even when territorial sub-indices are considered (through the sign is inverted for municipalities other than capitals) except for the South and Islands, for which the indicator based on OMI data signals an increase of about 1 percentage point higher with respect to our indicator. This appears to be due in part to some anomalous changes that were found for the South and Islands in the OMI archive.[19]

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[18] Recall that in the Nomisma index the figure for each city does not take account of changes in the incidence of the different locations and the aggregate figure is obtained on the basis of an unweighted average.

[19] These data reflect not only the prices at which transactions were actually completed, directly surveyed at market operators, but also information obtained from administrative archives and from real-estate appraisers at local level. The

Figure 4

INDICES OF NEW HOUSE PRICES IN 13 REGIONAL CAPITALS
(2000 = 100)

Sources: Based on Bank of Italy, *Il Consulente Immobiliare*, Istat and Nomisma data.

Figure 5

DIFFERENCES IN HOUSE PRICE CHANGES ACCORDING TO THE INDICATORS BASED ON CONSULENTE IMMOBILIARE AND OMI DATA (1)
(percentage points)
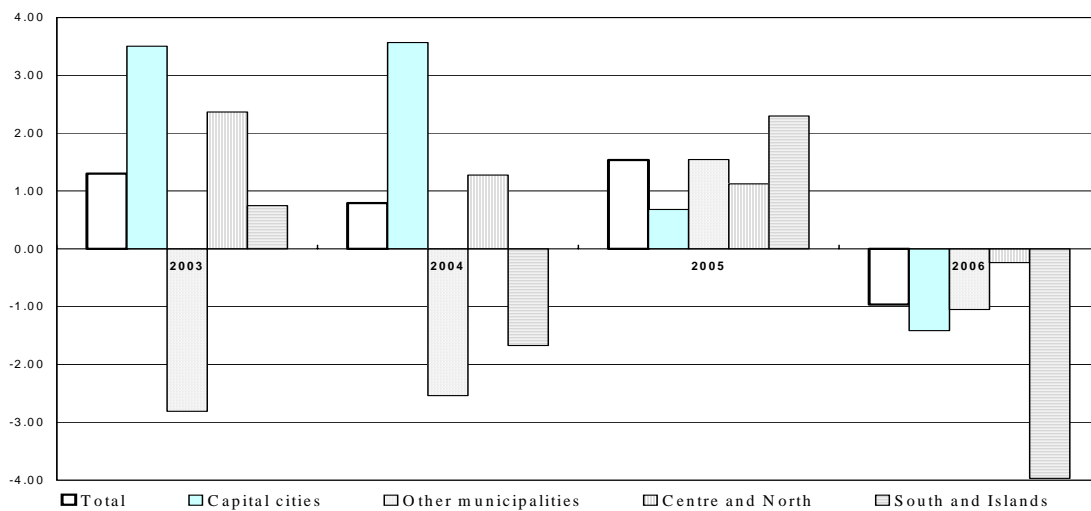
(1) For the indicator based on OMI data, see Cannari and Faiella (2007).

6.1 The cycle of house prices in Italy

A simple graphical analysis of the behaviour of the composite indicator of house prices adjusted for consumer price inflation allows us to identify four real estate market cycles in Italy (Figure 6).

last-mentioned data are important especially where the scant number of transactions limits the representativeness of the prices surveyed.

Figure 6

HOUSE PRICES IN ITALY – GENERAL INDEX
(2000=100)
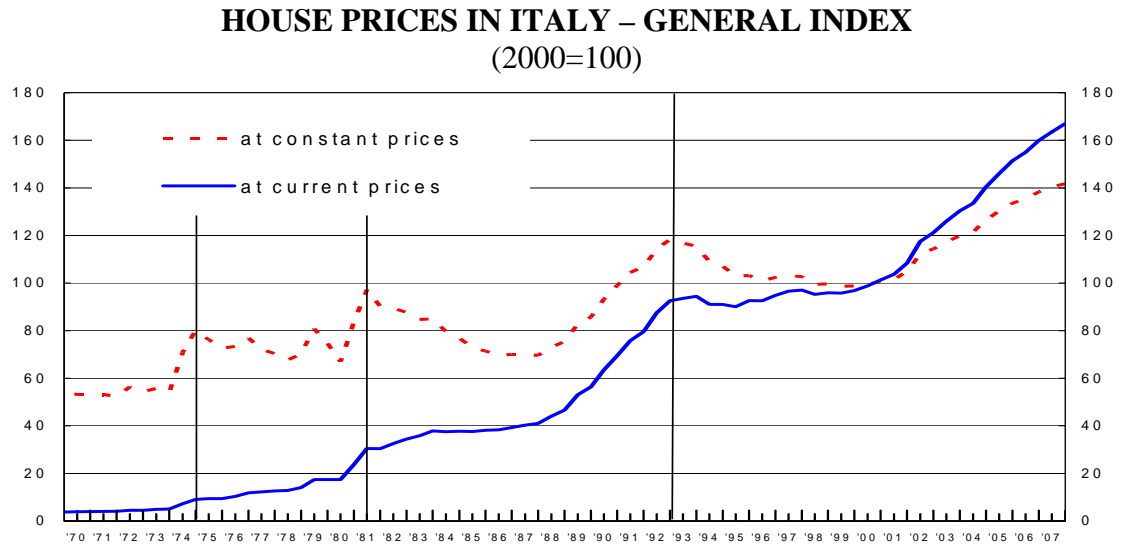
Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.

Figure 7

HOUSE PRICES IN ITALY - MAIN COMPONENTS
(at constant prices; 2000=100)
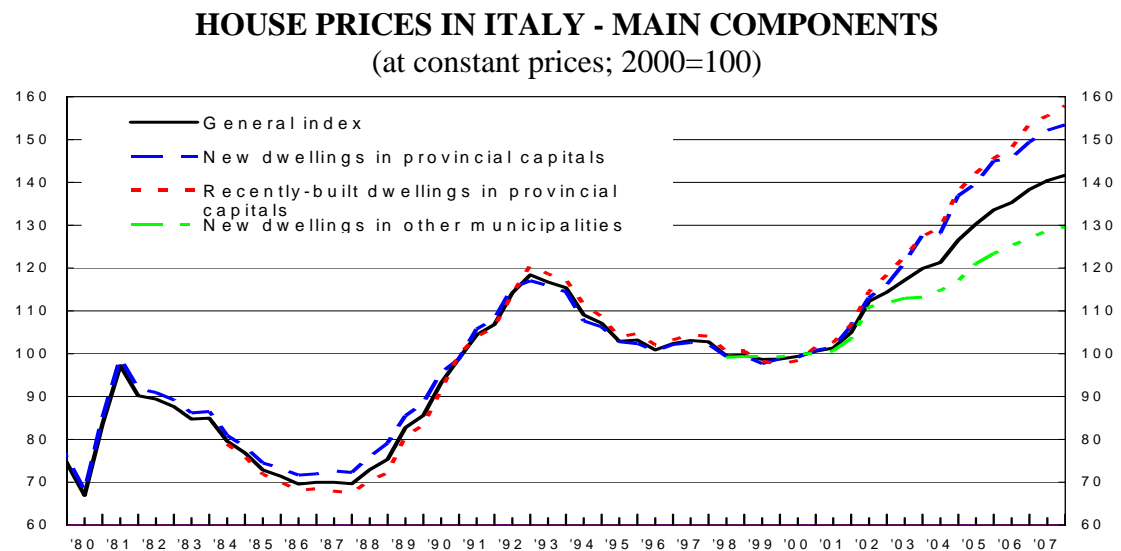
Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.

The first cycle, presumably already under way when data collection began in 1965, closed with the peak reached at the end of 1974, when prices surged by more than 30 per cent after five years of broad stability. A contributory factor may have been the first oil shock, which made investment in real estate more attractive as a hedge against the loss of real wealth caused by high actual and expected inflation.

The second cycle, from the end of 1974 to mid-1981, was characterized by a phase of volatility that was more accentuated around the second oil shock, interrupted by an abrupt rise in prices, which reached a new peak in 1981.

The third cycle, lasting up to the second half of 1992, began with a gradual downward correction, with prices down in 1986 to the low of the previous cycle. The ensuing uptrend, in which prices increased by more than 8 per cent per year in real terms, reached its peak in 1992.

The fourth cycle, beginning at the end of 1992, is still under way. Opening with the recession of the early 1990s, house prices declined, albeit with pauses, until the first half of 1999. In those seven years the fall in prices in the provincial capitals was around 10 percentage points smaller than the drop recorded in the same phase of the third cycle. With the start of Monetary Union, the decline in the cost of money and the recovery in households' purchasing power fuelled a prolonged upswing in house prices, which began to show some signs of slowing at the end of 2006. Compared with the low of 1999, house prices in the provincial capitals rose by an average of nearly 7 per cent per year in real terms, those in other municipalities at about half that rate. For Italy as a whole, the rate of increase was almost 5 per cent per year.

It is interesting to note that the acceleration recorded around 2002, which coincided with a sharp drop in share prices, was more pronounced in the big cities. Between 2002 and 2005 house prices rose in real terms by about 30 per cent in the five biggest cities and 22 per cent in the fourteen biggest, compared with 15 per cent at national level (Figure 8).

Figure 8

HOUSE PRICES IN ITALY
(at constant prices in euros per square metre)
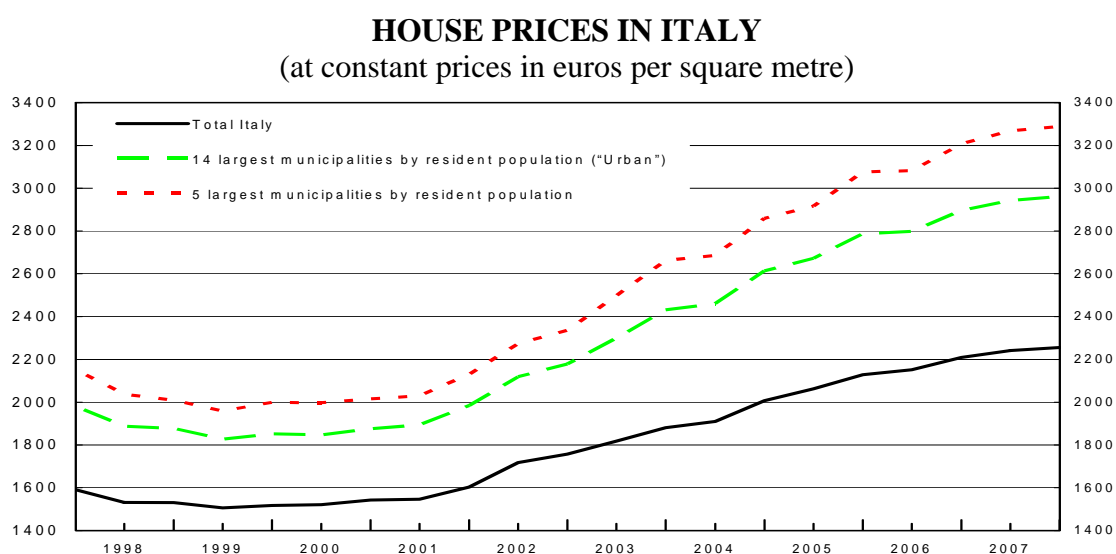
Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.

The moderation in the subsequent years was also less marked in the largest cities. In the last two years the average annual increase was almost 4 per cent in the first five provincial capitals, about half a point greater than in Italy as a whole (Table 3). By geographical area, the annual rate of growth was higher in the South and Islands (4.5 per cent, against 2.9 per cent in the Centre and North), where the total increase had been smaller between 2002 and 2005 (about 15 per cent, against 17 per cent).[20]

Table 3

INDICES OF HOUSE PRICES IN REAL TERMS (1)
(percentage changes on previous period)

Period	Total Italy	Centre and North	South and Islands	14 Big cities[2]	5 Biggest cities (3)
	New and recently-built houses in provincial capitals and new houses for the other municipalities				
2005	6.5	5.6	8.5	7.4	8.2
2006	3.7	3.2	4.8	3.5	3.8
2007	3.1	2.1	5.5	3.5	4.1
2005 - H1	3.0	2.4	4.5	2.8	2.8
2005 - H2	2.5	2.0	3.9	3.4	4.6
2006 - H1	1.3	1.1	1.6	0.4	- 0.1
2006 - H2	2.3	2.2	2.4	2.8	3.2
2007 - H1	1.5	0.9	2.9	1.6	1.9
2007 - H2	0.9	0.1	2.6	0.9	1.1
	New and recently-built houses in provincial capitals				
2005	7.5	6.2	11.4	8.2	9.2
2006	4.2	3.6	6.1	3.9	4.3
2007	3.7	2.5	7.1	3.8	4.4
2005 - H1	2.5	1.8	4.9	2.0	2.2
2005 - H2	3.1	2.2	5.7	3.8	5.0
2006 - H1	1.1	0.8	1.7	0.2	- 0.3
2006 - H2	3.2	3.3	3.0	3.7	4.2
2007 - H1	1.5	0.7	3.6	1.4	1.8
2007 - H2	1.2	0.3	3.7	1.1	1.0

Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.
(1) Deflated with the consumer price index. – (2) Fourteen cities with a resident population of more than 250,000. – (3) Bari, Milan, Naples, Rome and Turin.

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[20] Data for longer time horizon are reported in Appendix B (Table B2).

More detailed information on the segmentation of local property markets is shown in Table 4, which gives trends in individual regional capitals in the downward and upward phases of the last two real estate cycles. The divergences emerge mainly in the downswings (columns A and C), especially in the latest cycle. During the last recession there is sometimes even a difference in the sign of the change, whereas in the expansion the rise in prices is more uniform and, overall, more limited.

Table 4

INDICES OF HOUSE PRICES IN ITALY AND PROVINCIAL CAPITALS
(cumulated percentage changes in real terms, unless differently indicated)

	Weight in general index (%) (1)	1981-86	1986-92	1992-99	1999-07	Price level (2)
		(A)	(B)	(C)	(D)	(E)
Rome	5.1	-5.7	12.5	-5.1	7.8	4,353
Milan	5.1	-6.3	14.5	-5.9	5.4	3,470
Turin	2.7	-7.1	12.3	-6.4	3.6	1,953
Naples	2.5	-2.8	9.7	-2.0	5.6	3,049
Bari	1.6	-1.0	5.4	-4.4	4.6	1,763
Genoa	1.5	-6.3	6.1	-2.3	4.8	2,921
Palermo	1.4	-7.3	9.0	0.4	4.1	1,814
Bologna	1.3	-6.3	11.3	-3.5	4.0	2,572
Florence	1.3	-5.2	11.4	-8.5	7.8	2,862
Venezia	0.9	-5.8	11.6	-4.4	5.6	3,106
Perugia	0.7	-5.8	10.2	-0.7	2.6	1,602
Cagliari	0.5	-5.5	10.4	-0.7	4.9	1,745
Trento	0.5	-8.4	9.9	0.5	3.8	2,049
Ancona	0.5	-2.5	2.9	2.9	3.8	1,916
Trieste	0.4	-7.6	4.3	2.8	3.3	1,884
Aquila	0.4	-9.4	6.5	-1.0	1.2	1,377
Catanzaro	0.3	-4.3	1.8	1.9	3.0	1,056
Potenza	0.2	-3.4	3.6	1.0	1.7	1,205
Campobasso	0.2	-7.8	4.2	-1.2	4.7	1,268
Aosta	0.2	-4.2	6.4	1.1	2.7	2,644
ITALY	100.0	-5.7	8.9	-2.3	4.6	2,249
Coefficient of variation	-	-0.8	1.7	-5.9	0.7	-

Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.
(1) Share on total dwellings in 2001 among all municipalities included in the index (60.8% of total dwellings in the country). – (2) Euro per square metre in 2007.

6.2   *House prices and consumer price inflation*

In this section we provide a tentative estimation of the likely impact on inflation that would derive in Italy if real-estate transactions were included in the basket of the harmonized index of consumer prices (HIPC) according to the approach currently receiving more support in the

European debate, namely the net acquisition method.[21] The exercise is based on the estimates of the incidence of net transactions in dwellings on household consumption calculated by Eurostat for the individual countries of the EU for 1998-2003 (Mendonca, 2006). For the subsequent years we updated these estimates on the basis of the investment in residential construction net of extraordinary maintenance.[22]

Overall, net transactions in dwellings were equal to between 4 and 5.5 per cent of the household consumption basket in the ten years from 1998 to 2007. Combining the estimates of the weights with those of the price changes of new houses based on our index,[23] we find that between 1999 and 2007 annual consumer price inflation would have been around 0.3 percentage points higher if transactions in dwellings had been included in the HICP basket. Over the common time horizon (1999-2002), this estimate is broadly in line with the finding for the euro area based on the same method (Mendonca, 2006), suggesting around 0.2 percentage point higher inflation in each year, on average.

Table 5

CONSUMER PRICE INFLATION WITH AND WITHOUT HOUSE SALES
(percentage changes on previous period, unless differently indicated)

	Consumer prices (HICP)	Weight of houses in HICP (net acquisition approach) (1)	House prices		Additional inflation due to the inclusion of dwellings in the index according to the net acquisition approach (percentage points) (2)
			new and existing	*New*	
	(A)	(B)	(C)	(D)	(B)*(D)
1999	1.7	4.0	-1.5	-0.7	0.0
2000	2.6	4.0	4.3	3.7	0.1
2001	2.3	4.3	6.3	6.2	0.2
2002	2.6	4.3	13.9	13.6	0.6
2003	2.8	4.7	12.2	13.5	0.6
2004	2.3	5.1	10.9	10.0	0.5
2005	2.2	5.3	10.0	9.9	0.5
2006	2.2	5.4	7.3	6.3	0.3
2007	2.0	5.4	5.4	5.9	0.3

(1) Weights are those reported in Mendonca (2006) for the years 1999-2003, updated on the basis of residential investment for the subsequent periods. – (2) Under this method the reference prices are only those of new houses (see Appendix A).

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[21] The HICP indexes currently computed by National Statistical Institutes only include expenses made by owner-occupiers for services related to housing, such as minor repairs and some insurance connected with the dwelling

[22] It is worth stressing that in Mendonca (2006) the net acquisition approach takes also account of expenditures related to major repairs and maintenance which, instead, are excluded from our computations.

[23] A sound calculation would require a full re-computing of the HICP index to include the owner occupied housing, which proves particularly hard to tackle due to the chaining nature of the HICP; we simply estimate the contribution of house price developments by multiplying the year-on-year rate of change of our index by the estimated weights of this item in the HICP reported in Mendonca (2006).

Verifying the impact of alternative approaches as regards Italy would require disaggregated data that are not presently available; as a broad guidance, preliminary studies which compare the various methods for the euro area indicate that between 1997 and 2002 average consumer price inflation including dwellings would have been about 0.15 percentage points higher according to the imputed-rents method (Mendonca, 2006) and 0.4 points higher with the user-cost approach (OECD, 2005).

7 Conclusions

In this paper we have presented a new indicator of house prices in Italy, characterized by broad geographical and temporal coverage. Compared with the alternative sources currently available, the new indicator has the advantage of making it possible to analyze the medium- and long-term trends with a satisfactory representation of the national housing market.

The new indicator flanks that calculated by Cannari and Faiella (2007), based on a geographical dataset that is more complete but available only from 2002 on. For the most recent years the two indicators show broad convergence in terms of price dynamics; this is a reassuring finding also in view of the possible utilization of our indicator in cyclical analysis, given the promptness with which it is updated. The large time horizon for which the new indicator is now available allows for a cycle dating on the housing market. In the paper we provided a tentative identification, only based on graphical inspection, of four different cycles since the late sixties analysis, with the latest starting at the end of the nineties and apparently reaching a mature stage since 2006. Furthermore, we tested for the effect of including transactions in dwellings in the HICP basket according to the net acquisition approach; preliminary results point at higher annual inflation, on average by 0.3 percentage points per year over the period 1999-2007.

All in all, the new indicator provides a reasonable measure of house price changes in Italy, while it remains in the agenda for future research the validation of different sources now available for basic data as far as levels of house prices are concerned.

Appendix A

Owner-occupied housing in the HICP

European Union country data are mainly disseminated by public or private research centres and by operators involved in the sector. In some cases, central banks aggregate the basic data in an indicator for the country as a whole. As regards the euro area, the most reliable price indexes feed into an average all-country indicator calculated by the ECB.

Databases vary from country to country in terms of the kind of housing considered (for example only existing properties or also including housing starts), territorial reach, and the frequency of data publication (Arthur, 2006; Eiglesperger, 2006). A critical aspect of the existing sources is how far back the databases go – not very many years in most cases. Another problem for the longer historical data series is major methodological breaks which are a severe handicap in long-period analyses.

To fill these data gaps, in 2000 the EU's Statistical Programme Committee (SPC) proposed a project to calculate an official index for house prices using harmonized methods to span the various countries. The task was assigned to the Eurostat working group responsible for harmonizing the consumer price statistics, composed of members from all the EU countries' statistics institutes, the ECB and some NCBs in the ESCB. From the outset, Eurostat has encouraged the calculation of an indicator based on the net acquisition approach (see below), the only method in line with the definition adopted for the HICP (Makaronidis and Hayes, 2006).

After the house price index has been systematically calculated and harmonized for the various countries, the advisability of including this item in the HICP's field of observation can be evaluated. It is a rather controversial question. Basically, on the one hand some think that including only rentals in "Housing costs", as at present, makes it difficult to compare national rates of inflation given significant differences in the proportion of households living in owner-occupied homes.[24] On the other hand, the legal basis of the HICP (EU Council Regulation 1687/98) provides that reference be made exclusively to consumption of goods and services purchased by households involving monetary transactions, which rules out measuring consumption of the service provided by an owner-occupied house on the basis of imputed rental. Moreover, strict reference to consumer spending only also makes it difficult to include property purchases in the basket following the

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[24] According to Christensen, Dupont and Schreyer (2005), in euro-area countries the proportion of households who own their own homes (data for 2002) is about 80 per cent in Ireland, Italy and Spain, 50 per cent in France and the Netherlands, and 40 per cent in Germany. The figure is between 60 and 80 per cent in the remaining countries.

practice adopted for other durables (motor vehicles, household appliances, etc.), since a house purchase may also be an investment and thus, like other financial assets, not included in a price index.[25]

The main methods proposed in the literature to include owner-occupied housing in a consumer price index reflect the characteristics particular to the good in question, which is "bought" at a given moment but whose "consumption" and "payment" (especially when financed by a mortgage) covers a period of many years. In the European system of national accounts (ESA95) and in the calculation of consumer price indexes, the purchase of a durable good by households is entirely attributed to the period when that purchase is made. In the case of property, however, this is inappropriate because the consumer will use the services provided by the house for many years or will have to pay off the mortgage for a certain number of years.

The main characteristics of the most common methods are summarized below (for details see the manual by ILO *et al.*, 2004).

1) *The net acquisition approach*: the price of the house must be recorded at the time the transaction takes place, independently of both the duration of the service provided by the good and the payment procedures. Typically, in the context of a price index, this method is used in reference only to "net transactions" for housing, i.e. those between the household sector and other economic agents, in particular building contractors (for purchases of "new houses"). In other words, reference is made exclusively to transactions that change the stock of housing owned by households overall.[26] This solution has the merit of being in line with practices followed for other durables such as motor vehicles where purchases of second-hand vehicles are not included. Nevertheless, reference to the market for new housing aggravates the previously mentioned problems connected with recording prices because these properties tend to be located in the suburbs and are often specific types of housing and so listings for housing in old town centres will be under-represented in the index.

2) *The user cost (or consumption) approach* measures the cost of "consuming" the housing service provided by an owner-occupied house. In the literature, two main variants are proposed for implementing this method:

i) *Cost of use*. All the cost factors deriving from ownership of a house such as: extraordinary maintenance costs (taken as a proxy for the property's depreciation); insurance premiums; property taxes; the mortgage interest payments if the property is purchased in this way; the opportunity cost

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[25] For example, in the context of national accounts, house purchases are considered as an investment while the service rendered by an owner-occupied house is included as an item of household consumption as an imputed rental (see below).

[26] For house purchases, the transaction costs (e.g. estate agent's and solicitor's fees) must also be included.

of buying a house rather than an alternative asset, measured on the basis of the yield of that asset (ILO et al., 2004).

ii) *Imputed rentals*. Based on how much owners would have to pay in rent if they lived in a house they did not own but with similar characteristics to the one they do own.

3) *The payment approach*. Households' outlay over time for the purchase and maintenance of the house they live in, including the initial cost, any periodic mortgage repayments, taxes, insurance premiums and extraordinary maintenance costs.

All the methods illustrated have drawbacks. The net acquisition approach is in line with the standards used by the HIPC but there are some practical problems with the treatment of land prices and in calculating indicators only for the purchase of new houses representative of trends in the property market. The "imputed rentals" version of the user cost approach has the great advantage of not needing any extra information beyond what is already available for the compilation of the HIPC but at the price of bringing a cost not related to a monetary transaction into the index's field of observation. Lastly, the payment approach and the "cost of use" are not advisable from the monetary policy standpoint, since they would include in the price basket an item that is positively correlated with the official interest rates, so that monetary policy decisions aimed at maintaining price stability would have the opposite effect to that desired.

The fact the various methods all have their pros and cons explains the differences in how this item is dealt with in the industrialized countries and, above all, why a significant number of countries, almost all in the euro area, have chosen not to include owner-occupied properties in the basket (Table A1).

According to an empirical analysis conducted by Eurostat (Mendonca, 2006), covering the period 1997-2002, consumer price inflation in the euro area, calculated including housing in the HIPC using the imputed rentals method and the net acquisition approach, was slightly higher (on average 0.15 and 0.07 points higher inflation per year respectively). The gap is wider taking the user cost approach (about 0.4 percentage points on average in each year), on the basis of the OECD estimates (OECD, 2005). Considering the single years, however, there is some difference between the inflation rates measured with and without owner-occupied housing, independently of the method used. It is important to note that these estimates are subject to high margins of uncertainty due to the incomplete and preliminary nature of the data used to estimate the price index for owner-occupied housing under all three methods.

Table A1

OWNER-OCCUPIED HOUSING IN THE CPI OF INDUSTRIALIZED COUNTRIES

	Acquisition approach	User cost	Rental equivalence	Payment approach	OOH excluded from index
Canada		X			
United States			X		
Australia	X				
Japan			X		
New Zealand	X				
United Kingdom		X (RPI)			X (HICP-CPI)
Denmark			X		
Sweden		X			
Euro Area (HICP)					X
Austria					X
Belgium					X
Cyprus			X		
Finland		X			
France					X
Germany			X		
Greece					X
Ireland				X	
Italy					X
Luxembourg					X
Malta					X
Netherlands			X		
Portugal					X
Slovenia					X
Spain					X

Source: Christensen, Dupont and Schreyer (2005).

Appendix B

PROVINCIAL CAPITALS ADDED OVER TIME TO THE SURVEYS
OF *IL CONSULENTE IMMOBILIARE*

1965	1966 - 1978	1979		1980
ANCONA	NOVARA	ALESSANDRIA	PERUGIA	ASTI
BARI	MASSA	AOSTA	PESCARA	LECCO
BERGAMO	COMO	ASCOLI PICENO	PIACENZA	STRESA
BOLOGNA	SIENA	AVELLINO	PISTOIA	AGRIGENTO
BOLZANO	FOGGIA	BELLUNO	PORDENONE	BIELLA
BRESCIA	SAVONA	BENEVENTO	POTENZA	CATANZARO
CAGLIARI	PISA	BRINDISI	RAGUSA	CROTONE
CATANIA	AREZZO	CALTANISSETTA	RAVENNA	LODI
FERRARA	LUCCA	CAMPOBASSO	REGGIO C.	PRATO
FIRENZE	RIMINI	CASERTA	REGGIO E.	VIBO V.
FORLI	VITERBO	CHIETI	RIETI	VERBANIA
GENOA	CREMONA	COSENZA	ROVIGO	
GROSSETO	PAVIA	CUNEO	SIRACUSA	
LIVORNO	SONDRIO	ENNA	TERAMO	
MILAN	VARESE	FROSINONE	TERNI	
MODENA		GORIZIA	TRAPANI	
NAPLES		IMPERIA	TREVISO	
PADUA		ISERNIA	UDINE	
PALERMO		L'AQUILA	VERCELLI	
PESARO U.		LA SPEZIA	VICENZA	
ROME		LATINA		
SALERNO		LECCE		
SASSARI		MACERATA		
TARANTO		MANTOVA		
TURIN		MATERA		
TRENTO		MESSINA		
TRIESTE		NUORO		
VENEZIA		ORISTANO		
VERONA		PARMA		

ITALY – HOUSE PRICES
(at current prices; indices=2000)

Year	Total Italy	Northern Italy	Center Italy	Southern Italy	Ilands	Piemonte	Valle d'Aosta	Lombardia	Trentino A.A.	Veneto	Friuli V.G.	Liguria	Emilia Romagna	Toscana	Umbria	Marche	Lazio	Abruzzi	Molise	Campania	Puglia	Basilicata	Calabria	Sicilia	Sardegna
1980	20.6	20.1	21.7	20.5	20.0	23.7	17.4	19.7	16.2	18.3	19.5	22.7	16.8	21.9	20.3	17.6	22.3	22.6	27.8	17.9	22.5	21.3	22.9	20.3	17.5
1981	30.4	29.7	31.0	32.4	29.2	34.1	25.4	28.9	25.3	26.6	30.9	34.0	26.0	35.0	27.4	26.4	30.5	35.2	45.8	27.8	35.5	34.2	35.0	29.9	26.9
1982	33.5	31.8	34.8	37.4	33.1	35.7	29.0	30.9	26.1	28.5	32.6	38.2	27.5	37.7	30.6	29.5	34.7	38.0	48.7	33.5	40.4	38.1	40.3	33.9	28.9
1983	36.8	36.0	37.6	39.8	35.1	37.6	32.9	34.1	26.2	33.5	36.1	48.5	31.9	40.5	33.1	33.4	37.5	41.1	55.3	36.0	40.9	40.7	46.1	35.7	30.8
1984	37.6	36.0	38.3	43.6	35.1	38.7	35.6	33.4	26.7	32.5	38.2	46.0	33.5	40.5	35.0	34.6	38.3	44.2	62.8	38.4	44.8	42.9	54.3	35.6	32.5
1985	37.9	35.9	37.9	45.2	36.9	39.1	36.3	35.3	30.3	32.3	38.6	41.6	32.0	40.0	34.8	33.3	37.9	43.5	46.8	39.5	47.1	43.9	60.8	37.9	32.4
1986	38.8	36.7	39.5	45.3	37.6	41.1	35.1	35.8	30.6	33.0	35.9	42.6	33.4	43.4	36.0	35.2	39.0	43.4	48.7	39.3	49.8	48.1	54.7	37.6	37.6
1987	40.6	37.7	43.8	44.8	41.3	41.1	33.3	37.8	29.8	32.7	37.2	43.7	34.5	46.8	40.1	37.1	43.8	43.9	55.6	39.0	50.9	49.1	47.1	41.2	40.5
1988	45.4	44.1	46.3	48.4	45.1	51.0	37.7	46.0	32.4	36.8	42.0	49.7	37.7	52.2	41.9	39.6	45.3	48.9	64.6	41.5	55.7	57.6	47.9	45.2	43.4
1989	54.7	53.3	58.0	56.3	52.1	66.6	46.5	55.9	42.3	42.8	48.3	56.3	44.1	65.3	49.1	45.3	57.3	52.3	72.5	51.6	62.4	62.6	55.2	51.9	51.8
1990	66.5	65.6	71.2	65.6	61.0	81.9	51.4	71.3	54.4	57.6	52.8	62.4	54.2	69.1	56.8	50.6	75.5	57.5	78.5	59.3	75.9	72.5	63.1	61.0	61.6
1991	77.7	77.1	83.1	75.5	70.4	90.4	54.1	86.5	61.1	72.4	56.7	75.8	64.2	83.5	70.9	59.5	86.4	67.7	82.0	73.7	82.7	83.0	66.1	69.6	73.8
1992	90.0	88.7	99.8	85.9	78.0	104.6	71.2	101.5	74.0	80.9	61.3	81.8	76.8	96.1	79.8	65.2	106.1	76.3	80.9	87.0	92.2	88.6	74.0	77.4	80.9
1993	94.0	92.5	103.7	88.5	85.2	103.6	79.3	104.6	79.6	82.1	70.8	87.5	84.0	93.7	82.2	68.6	112.5	79.5	80.7	87.6	96.5	99.6	76.2	84.9	84.8
1994	91.1	89.9	97.7	86.6	86.7	102.7	79.4	91.6	79.2	84.3	80.4	88.1	85.8	93.9	88.6	70.6	102.6	83.8	85.5	80.7	94.6	94.8	85.2	86.6	86.4
1995	91.4	90.9	96.6	86.9	87.9	104.6	83.6	89.7	80.4	86.1	84.7	85.8	90.4	92.2	84.4	75.3	101.5	86.4	84.6	82.0	94.7	95.0	81.7	87.7	87.0
1996	93.7	93.7	96.1	93.2	89.6	97.3	90.3	94.8	92.9	89.8	88.1	92.2	94.8	97.0	94.2	84.4	97.5	89.3	91.5	89.2	95.0	96.1	104.3	88.7	92.6
1997	96.8	94.3	102.0	96.1	96.9	93.3	86.6	95.9	94.6	91.3	100.1	93.2	94.4	98.7	97.3	90.7	105.2	93.8	92.8	96.5	96.6	93.9	96.2	97.0	94.5
1998	95.5	94.2	97.8	95.2	97.3	92.2	90.1	94.6	95.4	93.7	100.7	94.3	93.5	96.3	99.9	94.6	99.1	96.4	92.8	93.5	96.5	94.3	96.1	97.2	97.0
1999	96.3	95.8	96.4	96.7	97.5	95.1	97.0	95.9	96.9	95.1	99.0	95.5	95.9	97.0	100.1	95.7	95.6	98.1	93.9	97.0	96.9	95.6	94.6	97.2	97.5
2000	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
2001	106.0	106.3	106.5	105.2	105.3	105.5	106.4	107.3	104.0	107.3	105.3	108.3	104.3	106.8	105.8	104.6	106.9	104.5	106.6	102.9	107.5	106.3	105.6	105.2	105.3
2002	119.3	119.9	121.1	117.8	116.1	119.7	116.0	119.8	116.0	120.7	119.0	127.1	117.0	121.3	117.0	117.2	122.5	116.4	117.9	114.4	119.7	120.3	123.7	116.0	116.3
2003	128.2	127.7	136.3	125.8	118.2	128.7	117.4	127.8	119.2	128.3	125.1	134.8	125.3	138.0	119.6	122.3	140.7	120.2	118.9	126.3	127.2	123.7	128.1	116.8	124.4
2004	137.0	135.5	150.7	132.7	123.5	131.3	125.7	137.2	124.7	140.3	131.7	141.5	132.7	152.8	129.3	131.9	156.5	126.3	123.7	132.1	136.4	130.3	133.3	121.9	129.9
2005	148.7	144.5	165.2	147.4	135.4	138.4	133.4	147.3	131.3	150.0	140.1	152.1	141.0	168.0	139.2	145.8	171.3	132.6	134.2	152.7	150.4	130.7	145.0	132.1	150.6
2006	157.5	150.3	178.2	156.7	146.9	141.1	138.7	153.7	142.3	155.6	146.6	160.5	145.7	180.3	141.5	156.5	187.0	138.7	143.1	163.0	159.2	137.9	157.0	142.8	164.2
2007	165.3	155.6	186.3	168.4	157.6	147.6	144.0	160.0	145.9	162.2	150.4	165.0	148.6	186.7	146.5	163.2	197.0	144.3	158.3	176.9	170.0	142.8	172.0	154.3	171.2

Sources: Based on Bank of Italy, *Il Consulente Immobiliare* and Istat data.

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