

ANÁLISIS DEL CRECIMIENTO SOSTENIBLE DEL SECTOR DE LA VIVIENDA RESIDENCIAL EN ESPAÑA (1940-1960)

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Esta ponencia analiza el desarrollo del sector de la vivienda tras la guerra civil española (1940-1960) a través del análisis de los indicadores que permiten identificar un crecimiento sostenible que garantice un aumento moderado de precios acorde con las necesidades de viviendas en el largo plazo.

Se compara el desarrollo en dicho periodo del stock de viviendas en relación con la población, los precios, la inflación y el coste laboral, con el experimentado a principios del siglo XXI. El periodo objeto de estudio se inicia con una necesidad elevada de viviendas familiares, un crecimiento de la población y una incipiente aceleración de los precios de la vivienda. Esta situación difiere de la de comienzos del presente siglo, en la que el desarrollo inmobiliario fue favorecido por una burbuja financiera.

Se muestra como el seguimiento de estos parámetros sirve de alarma para predecir desequilibrios en el sector que puedan desembocar en una crisis.

Palabras clave: vivienda, precios, burbuja, 1950, construcción

A BALANCED GROWTH OF THE SPANISH HOUSING INDUSTRY IN THE POST CIVIL WAR CRISIS (1940-1960)

This paper analyses the development of the residential industry in Spain (1940-1960) through the key variables that determined a balanced growth to guarantee moderate prices and business sustainability in the long run.

The evolution of the growth in the stock of residences in relation to the population, prices, inflation and cost of labour is compared with the development at the beginning of the 21st century. The period analyzed started with a shortage of stock of residences, increase of population, and a fast price increase, that required a speed up in the construction industry, that could offer to Spain's growing population affordable residences. This situation differs from the current development, pushed by a financial bubble.

The follow up of these parameters is a key factor to predict disequilibrium in the sector that can lead to a possible crisis.

Key words: Housing, house-price, bubble, 1950, construction

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MODELATION FROM TEST OF THE ELASTO-PLASTIC BEHAVIOUR OF THE SLO NODE FOR THE CALCULATION IN A SECOND PLACE OF THE SECURITY FACTOR AGAINST A GLOBAL BUCKING IN THE SINGLE LAYER ESTRUCTURES

House pricing is one of the most relevant expenditures of the Spanish families and its affordability determines to a large extent the life quality of the families. The stock of homes also determines, not only the price, but also the possibility to build new houses, pushing up the economy and the employment. A proper balance between stock of houses compared to population, speed and quality of construction and home prices is a key factor in the sustainability of the economic growth.

Within this context, the current crisis, largely affected by the real estate price bubble, has been a good example of unbalanced growth. In the early years of the XXI century, the construction industry has experienced a strong boost, which pushed the economy into a virtuous circle; a speed up in the construction and the stock of residences has created abundant employment receiving good salaries. This growth in employment has moved up the demand for more residences and the consequently price increases. This

financial crisis hit the financing of new residences and when the stock of unsold residences started to grow. The consequence has been a freeze in the construction industry, the loss of employment and a severe price reduction in the housing industry, paying the excesses of the unbalanced growth. The way out to the crisis is still unknown.

The current crisis is not the first one that affects largely the Spanish residential sector and the early years of the XXI century are not the first with a strong increase in growth pattern. In 1939 Spain ended a three-year civil war, which had severely damaged a good part of the main cities. After this period, Spain lived an economic autarky, isolated from the rest of Europe, which was involved in the Second World War from 1939 until 1945.

It is in this context, in the early 1950's, soon after the Second World War, that Spain began to undergo a period of reconstruction. Spain needed a balanced plan for a massive reconstruction, which could provide inexpensive and enough housing to its growing population. In addition, this reconstruction would have to be approached in a difficult financial environment, driven by the scarcity of lending due to a weak banking system, as well as by the fact that Spanish citizens could only afford inexpensive homes due to a drop in family savings after the civil war.

Construction was also relevant, as it was one of the engines, along with transport and energy, of the national economy, and certainly one of the most labour intensive, which might help the reduction in post war unemployment. The development of new techniques, allowing an increase in productivity and a reduction in the cost of building, was a must in an economy experiencing a severe economic crisis and a drop in savings that needed to scale up its number of residences. (Velarde, J. 2009)

Those years, and the sustainability of a healthy construction industry in the residential sector area for several decades, far from the excesses experienced in the recent years, are the focus of this study. This publication coincides also with an extensive research conducted on the work of the Instituto Torroja in 1949 and the decade of the fifties. This research is based on the documents recently found relating to an International Contest which entailed planning the annual construction of 50,000 residences in Spain. The contest aimed to advance in the standardization of production processes, as well as in the normalization of materials for large-scale developments with the objective of reducing the costs of construction and time needed for building homes. This contest needs to be understood in terms of the economic environment that existed throughout Europe, and in Spain in particular, in the post war era. The economy, as well as European living standards, was undergoing a restructuring.

The aim of this research is to ponder the development of the residential sector on a sustainable manner in the context of the economic environment in Spain in 1949, by analysing the state of home construction and the concern about cost management to be able to build affordable housing for the lower to middle classes. All has been analysed in comparison to the developments of the early stages of the 21st century. To begin with, the evolution of housing prices has been studied, as well as the growth in housing stock compared to the growth in population. An analysis was then carried out on the role of the Instituto Torroja as an engine to the development of the sector. The study includes an overview of main materials used and a specific research on the state and evolution of labour costs.

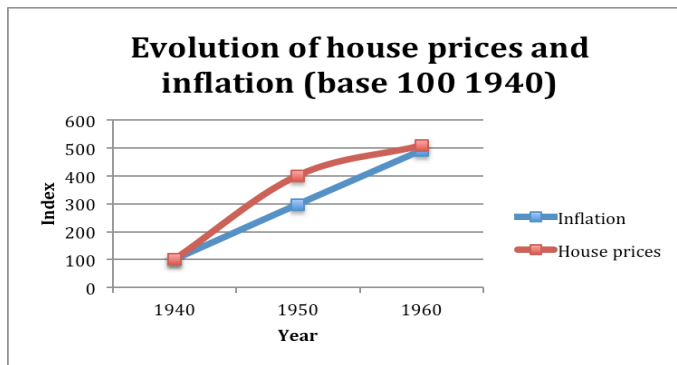
Evolution of the price of housing in Spain. Two different profiles

The 1940's started right after the end of the Spanish Civil War. It was a period with a strong need for the construction of new housing due to a shortage, and as a consequence, houses prices soared. House price increases need to be compared to the overall inflation figures, as well as with the trend during the 1950's, in order to assess the impact of the increase in the construction industry.

The price of an average home evolved from 24,000 pesetas in 1940, to 51,700 pesetas in 1945, and to 96,600 pesetas in 1950, which represents a 300% increase in the decade. The 1940's were an inflationary period with a compounded Consumer Price Index of 11%. Graph 1 shows that in the 1940's house prices went up much faster (300% in 10 years) than the average cost of living (197%). (Instituto Nacional de Estadística 1940-1960¹).

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Graph 1: Evolution of house prices and inflation (CPI)² 1940-1960

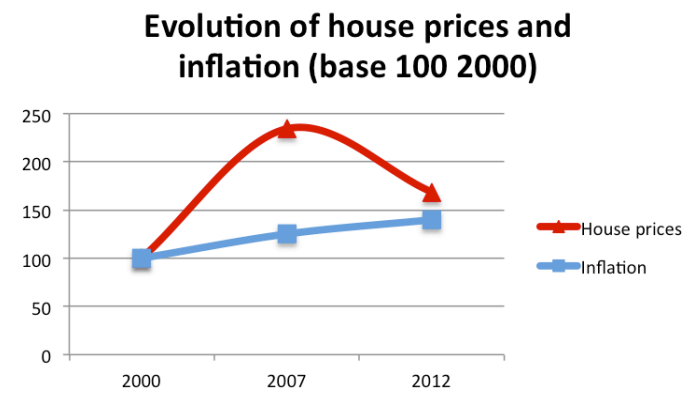


Source: Own analysis based on the Historical Data Bases of the INE

This trend started to reverse in the 1950's. Housing costs went up a modest 27% during this period versus the 300% rise in the previous decade. An increase in the cost of living due to inflation was also less dramatic, increasing only 65% in 10 years. Nonetheless, the increase in housing prices was very low in absolute terms, as well as in comparative terms, as it was less than half of the low inflation rate of the decade.

The growth in new housing due to an increase in supply was a key factor in moderating prices during the 1950's. A slow down in prices took place in the early 1950's (right before a boom in the construction industry) as the price rally was already exhausted at the beginning of the decade.

Graph 2: Evolution of house prices and inflation (CPI) 2000-2007



Source: Own analysis based on the Historical Data Bases of the INE

This situation is completely different to the one recently experienced as it is reflected in graph 2. Between 2000 and 2007 house prices increased 134% compared to an overall price increase of 25%. Contrary to what happened 50 years before, the price bubble took place at the same time in which Spain experienced a record in construction, while in the 1950's the price increase was less than inflation thanks to the increase in supply.

As a consequence, the recent boost, and again contrary to 50 years ago, proved to be unsustainable. During 2007 and 2012 home prices went down a 28% almost eliminating the effect of the previous years. As it will be described afterwards, this price reduction came with a severe contraction in the industry.

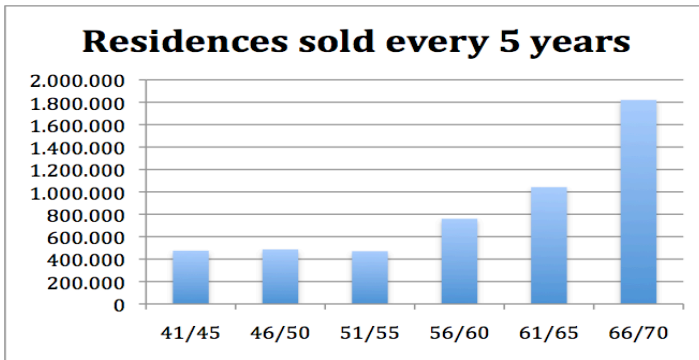
Overall, the first decade after the Spanish Civil War (the 1940's) suffered a home pricing bubble, due to shortage of houses, which was overcome by a constant increase in supply since the early 1950's leading to a sustainable industry growth. On the contrary, the early years of the 21st Century experienced simultaneously an increase in construction and a price bubble, leading to an unbalanced growth, which ended in a deep economic crisis and a 28% price reduction in 5 years.

Evolution of housing stock and population growth

The strong increase in housing necessary to meet the demand after the Spanish Civil War did not occur immediately. In fact, housing sales increased from the year 1955 onwards

Graph 3 shows the trend in residences sold in 5-year periods starting from 1941/1945. During the first 3 periods analysed, the sale of residences remained unchanged, reflecting the paralysis in the industry provoked by the war. However, in the second lustrum of the 1950's, there was a notably increase in housing sales, which rose by nearly 61%. This upward trend accelerated in the decade of the 1960's. In fact, between 1961 and 1965 the number of houses sold was twice as high as it was in the 1940's, while in the period 1966/1970, almost four times as high. (Carreras de Odriozola, A et al. 2006).

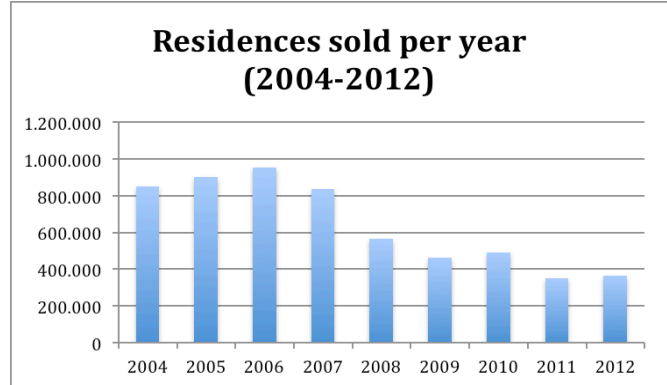
Graph 3: Residences sold in Spain from 1940 to 1970



Source: Own analysis based on data from "Estadísticas Históricas de España: Siglos XIX y XX"

The sustainability of the industry was maintained for decades of growth, but it suffered a serious turn down in 2007. Sales of residences had its all time high in 2006 with 955,186 transactions in one year. Since then, as shown in graph 4, the industry suffered a down trend caused by its unbalanced and excessive growth experienced the years before.

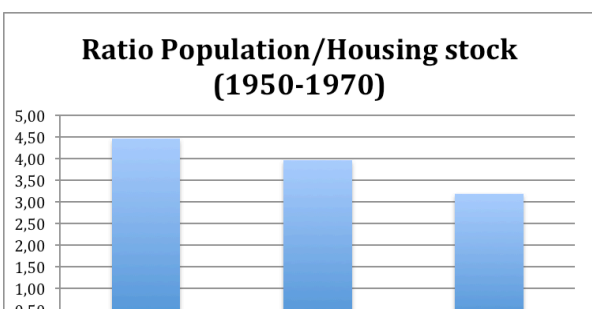
Graph 4: Residences sold in Spain from 2004 to 2012



Source: Own analysis based on data from ministerio de Fomento (Ministry of Public Works)

Another reason to explain the strong difference between the two periods is the real need for homes of the population. Graph 5 shows the ratio of total population per stock of residences. The stock in 1950 was relatively high reflecting the need to increase the rhythm of construction of new houses. In the following years there was an overall reduction of 30% (from 4.45 to 3.18). The reduction experienced during the 1960's, which began with a ratio of 3.95 inhabitants per residence and dropped to 3.18 at the end of the decade, is remarkable.

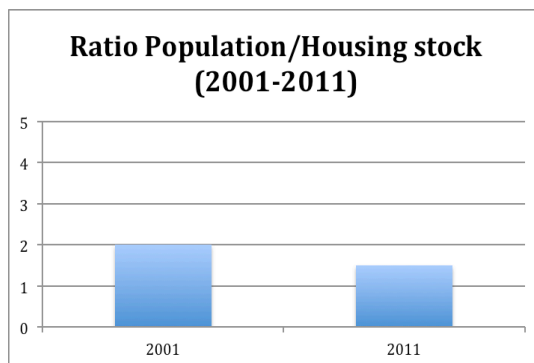
Graph 5: Evolution of population ratio to housing stock in Spain from 1950 to 1970



Source: Own analysis based on data of the official

The situation at the beginning of the 21st century was very different. Graph 6 shows the data of 2001 and 2011. This period experienced a 24% increase in the number of residences from 21 million to 26 million, while the population remained nearly flat. As a consequence, the ratio was reduced from a low starting point (2 habitantes per residence) to a very low 1.5 in comparison with other countries. The growth in the recent years, not only has been the highest ever, but there was no real need for it. Instead, it was based on speculation. As a consequence, its sustainability was nearly impossible.

Graph 6: Evolution of population ratio to housing stock in Spain from 2001 to 2011



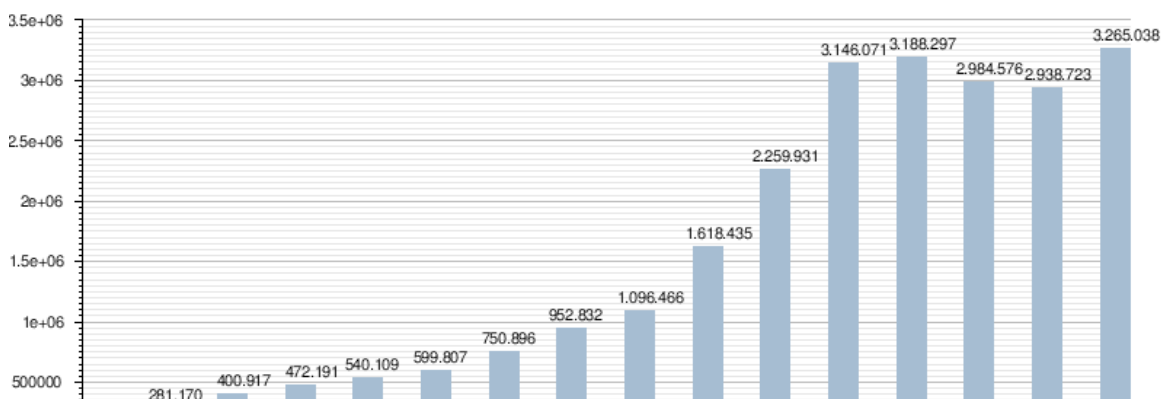
Source: Own analysis based on "España 2012. Un balance" Colegio de Economistas de Madrid

Madrid can be used as a very significant place to illustrate the difference between the two periods that are compared. Starting with the post civil war era, house pricing in Madrid, the largest city in Spain with 1.6 million inhabitants in 1950, were not only dependent on the speed of construction, but also on a high demand for housing due to a large wave of immigration to the city from rural areas. However, even without immigration, there would still have been an increased demand for new housing. At that time, 5% of the residences had shared restrooms, and 3% did not have any restrooms.

In 1949, the percentage of the population employed in the construction industry in the two biggest cities, Madrid and Barcelona, was 2.3% and 2.2%, respectively. These figures were above the country's average of 1.5%, but significantly lower than those of smaller cities, such as Zaragoza (3.5%) or Sevilla (3.2%) (Historical data base from INE). Among the cities in Spain, Madrid and Barcelona received the most immigration from rural areas in the following years, which was expected to boost the demand for social housing. Satisfying this demand required efficient planning and a qualified labour force, which in turn set the standards for future building in the construction industry. Insight on this issue can be obtained by reviewing the International Contest.

In fact, in graph 7, a sharp increase in population in Madrid in the 1950's can be seen, which was a consequence of an increase in births, but more importantly due to the immigration mentioned. Between 1940 and 1950, the population increased by around half a million people, which was a clear sign of what was to happen in the 1950's, when Madrid grew by an additional 640,000 inhabitants.

Graph 7: Population growth in Madrid from 1942 to 2011



Source: INE

Comparing the two periods analyzed, this is another factor that determined the sustainability of the growth in the post war decades with growth adapted to the real needs of the population, while the increase in activity in the construction industry in the recent years played a good role in the growth of the economy, but was excessive to be sustainable.

The role of the Instituto Torroja in the 1950's: The first publications referring information on cost components in the construction industry and the relevance of the International Contest

Building a large and more affordable number of residences required, not only better processes, but also a better knowledge of the costs of components that could support the construction companies in optimizing prices.

The Consejo Superior de Investigaciones Científicas³ through the Instituto Técnico de la Construcción y del Cemento⁴ began publishing periodic, in-depth research, which lent technical support to the construction industry. The research included costs of materials used in the construction industry determined by statistical data for low cost residences.

The first publication was called "Precios de la Edificación –Cuaderno N°. 1- Valores medios durante los años 1948-1949 por L. Moralejo"⁵. The publication details prices for 300 different materials used in construction projects, with "viviendas protegidas" used as a reference, which is social housing built under governmental programs with capped prices.

The Cuaderno N°2, released in December 1951, was the first publication to cover details of the construction processes. This information made it possible to estimate the complete cost of a building project, which included material, workforce and depreciation of machinery. Work or labour force refers to the number and qualification of staff needed for a specific project. It also took into account the location of different projects as it would alter the necessary transport costs.

The publication was released quarterly starting in 1952 and served as a point of reference for budgeting and planning processes in the construction industry in the subsequent years, giving more details of the different components of construction, such as costs of energy, transport and labour.

The ambition of the Instituto is reflected in the data of the International Contest, which encouraged projects that would create a sizeable number of new homes -50,000 per annum-. This number of homes projected by was equal to 79% of the total number of homes being built at that time. It is also almost 1% of the total stock of residences in the country.

Factors of production in the construction industry. Focus on cement and labour

The economic situation after the civil war and the period of autarky did not lead to advancement in the supply of construction materials, as occurred in other European countries. Said autarky is reflected in the contest's brochure in the sections regarding the use of different materials. For instance steel was "sufficient for national needs, though with certain limitations", suggesting a moderate use of this material. As a matter of fact, some proposals were rejected due to the excess of steel planned, which could compromise the moderation of prices. Aluminium, for example, was a fast growing industry, although the level of production was so limited that it could not be used for large-scale construction. Other materials, such as ceramics and wood, were used extensively. Nevertheless, in this last case, there is a warning on the variability in quality and price.

With respect to cement, excess was produced in Spain to meet needs and was of good quality. The purchase of cement is a good indicator of construction activity, not only in the residential sector, but in other sectors -specially infrastructures- as well. Graph 7 shows the growth in ten-year periods in the use of cement (in tons) in Spain compared to the growth of homes sold. It demonstrates how the Spanish economy was

³ Scientific Research Major Council

⁴ Construction and Cement Technical Institute

driven by an overall increase of construction of any kind –homes, infrastructure and others- between 1940 and 1970.

Graph 7: Increase in the use of cement compared to homes sold in Spain from 1940 to 1970

(percentage increase)	Use of cement	Residences sold
1950 vs 1940	69%	17%
1960 vs 1950	128%	85%
1970 vs 1960	192%	172%

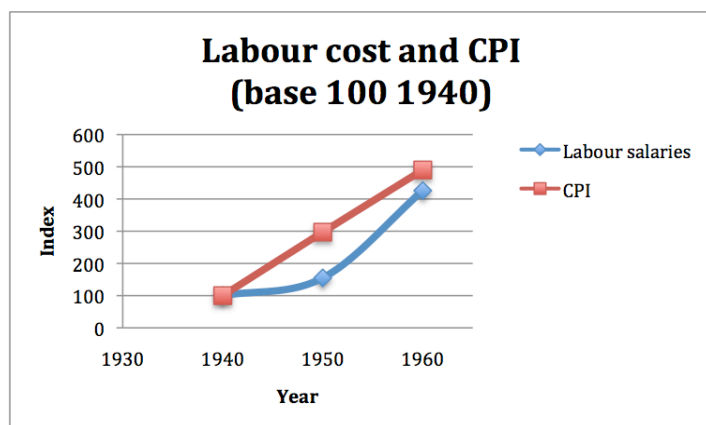
Source: Own analysis based on data from “Estadísticas Históricas de España: Siglos XIX y XX”

Labour costs have evolved also in a quite different manner in the two periods analysed. The mid of the 20th century was characterised by a clear influence of supply and demand on the labour cost dynamics. Instead, at the beginning of the 21st century labour costs are a quite inflexible cost component. It is essentially linked to inflation due to the labour collective agreements between unions and companies. This is another factor influencing sustainability due to the impossibility to adapt costs with a sector inn crisis.

In 1950 there were in Spain plenty of skilled construction workers. Unskilled labourers were abundant and generally a sufficient number of them could be found at any time. The evolution of labour costs varied significantly in the period 1940-1960, especially when compared to the cost of living.

The data shown in graph 8 reflects the evolution of the base salary in the construction industry of a skilled worker compared to the increase in the cost of living. There is a clear change in pattern between the 1940’s and the 1950’s, which are the decades before and after the contest.

Graph 8: Evolution of labour costs compared to inflation from 1940 to 1960

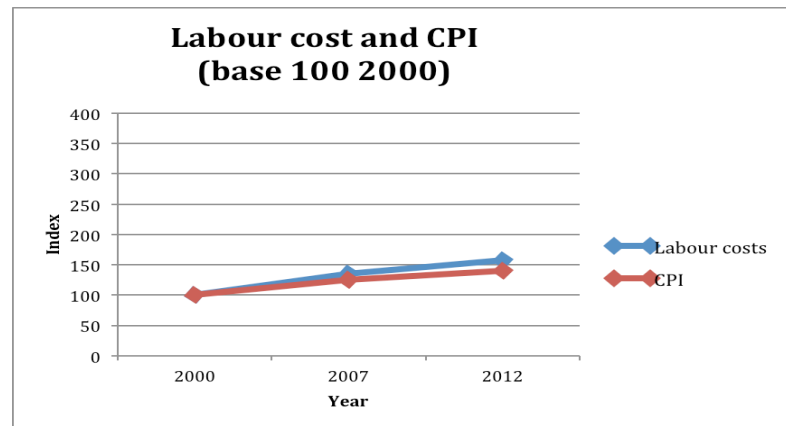


Source: Own *analysis* based on data from Historical database from the INE

In the period of 1940-1950, right after the end of the Spanish Civil War, salaries increased moderately (55% in 10 years). This is most notable when compared to the evolution of the cost of living, which went up by 197% (11% annual compounded CPI). In the following 10 years, the situation was completely reversed. Growth of the construction industry soared and the strong demand for construction labour made its cost increase far beyond CPI. In fact, in a much less inflationary period (65% in 10 years or 5% per annum), the cost of labour strongly increased by 174%. All in all, in the period 1940-1960, the cost of labour increased to

close to that of inflation. Nonetheless, the difference between the two decades clearly shows the intensity of the industry's activity before and after 1950.

Graph 9: Evolution of labour costs compared to inflation from 2000 to 2012



Source: Own *analysis* based on data from database from INE

The beginning of the 21st century, instead, reflects an evolution of labour costs detached from the development of the economic sector and much more linked to inflation. Graph 9 shows two different periods. From 2000 to 2007 there was the strongest economic boom in the history of Spain ever. In that period, cost of labour grew by 36% versus an inflation of 25%. Comparing this period to the 1950's, in which labour cost grew 3 times inflation (174% vs 65%), we can conclude that labour costs in the recent years are driven by an inflexible system linked to inflation instead of the sector momentum. This is confirmed by the fact that in the period between 2007 and 2012 during the severe recession in the construction industry, labour costs grew 16%, slightly higher than inflation.

Conclusion

The first decade after the Spanish Civil War that ended in 1939 experienced a shortage in house construction and a housing price bubble, which deepened the need for social housing. This period was characterised by the need to re-build the country economy and infrastructures, as well as to develop a sizable stock of social housing to allow the access of proper residences to an economically weakened population.

The years to follow (1950-1960), experienced a balanced growth with a strong moderation in house prices. It was also this decade, the one in which Spain started the strong development envisioned in the end of the 40's. The residences sold in the second half of the fifties were 62% higher than five years before, which contributed to the moderation of prices and to the reduction of the ratio population over housing stock from 4.45 to 3.95 inhabitants per residence.

This period of sustainable growth compares largely with the growth experienced at the beginning of the 21st century. During these years two different periods can be observed. From 2000 to 2007 there was the strongest growth in the residential sector in Spain. As a consequence, house prices soared 134% vs 25% inflation and in the peak year 955,000 homes were sold. These excesses were paid between 2007 and 2012, in which the sale of homes went down to one third, while prices reduced 28%. In summary, a non-sustainable growth based on speculation, as the ratio population/homes was at a low 2 in year 2000.

In the early 1950's, the Instituto Torroja played an important role in the development of the residential sector in Spain with two major contributions. On one side, it launched an International Contest in 1949 to respond to an economic situation that demanded the development of a big number of new residences at more affordable prices. It searched for new and standardized building processes to achieve a reduction in time and cost. It was an ambition contest aiming for 50,000 homes per year, equivalent to 79% of the total amount of residents being built. Contemporary to the Contest, it started an innovative publication of costs of building activities. It supported the construction companies through the publication of statistical research about the different components of the price of hundreds of building activities

Another important factor for sustainability is the workforce, whose productivity was to be key in the possibility to build more and at a lower cost. In fact, labour costs in the construction industry during the 1940's

scaled up, that salaries soared as the cost of labour increase 174% in 10 years vs. an inflation of 65%. This evolution is a clear reflection of supply and demand. Instead, in the recent years, labour costs are influenced mainly by inflation. As a matter of fact, labour cost increased a moderate 36% (versus 25% inflation) in the fastest growing years in the residential industry in Spain (2000-2007), while labour costs grew also slightly above inflation in the biggest recession (2007-2012). The lack of flexibility in the later years is another factor that determines the unsustainability of an excessive growth.

The increase in housing construction in the 1950's, as well as the moderation of prices was achieved providing a proper balance between increased stock, client real demand, moderate price increases and long-term business continuity. Instead, the excessive growth between 2000 and 2007 based on speculation, together with an unprecedented price increase and the lack of flexibility of the labour market, have proven to be the ingredients for a non sustainable business with severe consequences over the sector.

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