Real Estate Speculation Cycle

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Resumo: Nos últimos anos, a especulação imobiliária tem sido comum nos mercados residenciais em todo o mundo. O risco de estourar a bolha imobiliária é elevada e o risco resultante não é calculável. O ciclo de mercado e de diversas variáveis, tais como a quantidade de transações e dos preços de aluguel, pode dar um *insight* sobre a situação do mercado imobiliário. O estudo de 101 municípios de dez países, com o objetivo de explicar o ciclo do mercado imobiliário da especulação residencial, através de indicadores econômicos e os indicadores de habitação. Foram obtidos dados de oito variáveis utilizadas na análise de ciclo de mercado, que pode ser capaz de explicar a existência de especulação e do ciclo do mercado ideal. O resultado mostra que muitas das variáveis começam a diminuir enquanto que os preços dos imóveis está ainda no pico. Apenas a quantidade de transações chega no pico durante o ano seguinte. A bolha imobiliária pode estourar em três maneiras diferentes. Finalmente, é possível determinar que as mesmas variáveis podem fornecer uma visão clara para a especulação imobiliária no ciclo imobiliário.

Palavras chaves: Especulação residencial, Ciclo de vida, Mercado imobiliário

Abstract: In recent years, real estate speculation has been commonplace in housing markets all over the world. The risk of bursting the real estate bubble is high and the resulting risk is not calculable. The market cycle and several variables, such as the quantity of transactions and rent prices, can give an insight into the situation of the housing market. The study of 101 municipalities from ten countries, aimed to explain the housing market cycle of housing speculation, using economic indicators and housing indicators. We obtained data from eight variables used in market cycle analysis, which may be able to explain the existence of speculation and the ideal market cycle. The result shows that many of the variables begin to decrease while housing prices peak. Only the quantity of transactions peaks during the following year. The housing bubble can burst in three different ways. Finally, it is possible to determine that the same variables can provide clear insight into real estate speculation in the real estate cycle.

Keywords: Residential Real Estate Speculation, Life Cycle, Real Estate Market

1 Introdução

Mello and Spolador (2004) say that modern real estate speculation had its beginning in the 1970s and early 1980s in the south eastern United States and in southern California. The effects of falling prices were felt all over the U.S. and Mexico. The Japanese bubble, which occurred between 1986 and 1990, was one of the most well-known of this crisis period. At the peak of prices, one square meter in Tokyo cost $ 1.5 million. In 2004, however, one square meter in the financial district cost just one hundredth of the price of one square meter in the residential district and only one tenth of what it was worth in 1990. For the Japanese economy, this crisis was very difficult, causing the bankruptcy of many companies (SHIRATSUKA, 2008). At the end of the real estate crisis, the country had lost 41% of the wealth of its population (ZEIT, 2005). Between 1991 and 1996, there was a case of real estate speculation in the former East Germany, as a consequence of the reunification of Germany and the entry of capital from West Germany into the market. When the bubble burst, many banks and companies had problems such as the entrepreneur Schneider - one of the most famous speculators of this time in East Germany. Schneider operated in the market through developers, brokers, real estate, etc., speculating with real estate prices and rent prices. He filed for bankruptcy with a total loss of 1.4 billion Euros (LEIPZIGER VOLKSZEITUNG, 1998).

Since 2000, the list of real estate speculation cases has become extensive. Such cases include: Brazil, 2000 to present; the U.S., between 2002 and 2007; Russia, between 2004 and 2006 (IRN, 2010); China, from 2002 to present; India, 2001 to present; Spain, between 1997 and 2007 (MÜLLER, 2011); and Poland, 2002 to present. Between June 2006 and June 2007, the growth of real estate values in Poland was over 50% (OFERTY, 2011). Werneck and Rottke (2006) explain in a simple way how the cycle of the real estate market works, particularly in relation to high (baisse) and low (hause). The cycle is an important factor for companies in this industry; however Phyrr et al. (2003) drew attention to the fact that, until now, there is no common knowledge, but only common terminology and methodologies used by academia. However, these authors only speak about the cycles in general without discussing speculation.

This paper is an empirical, exploratory and descriptive study that aims to explain the normal cycle for a single family including real estate speculation, using 101 municipalities in ten countries, such as Germany, USA, Brazil and Australia. The selected period is between 1990 and 2005. This discussion is needed in order to clarify which variables are useable to determine the real situation on real estate markets, especially during a phase of speculation. The variables used are building permits, land price, quantity of transaction, housing market volume, house price, rent, GDP and population. Within this study only housing speculation in urban areas (cities) will be analysed because rural housing areas are not present in all countries and will not create a speculation bubble.

2 Cycle of the Real Estate Market

Every building has a useful life in the market according to the influence of the market on the building. Each real estate sub-market - such as the market for apartments with three bedrooms, balcony, kitchen, and garage with two parking spots - is very specific and depends on the demand of buyers or tenants. The characteristics required for real estate change constantly, so that the life cycle of the real estate market can be divided into four parts: initial, consolidation, maturity and fall on.

2.1 Initial Phase

The initial phase of the real estate market is often characterized by a new technology or product. At this stage, it is difficult to predict the companies and products that will emerge as leaders in the industry (LYNCH; ROTHCHILD, 2000). Some companies will be extremely successful while others will not survive; therefore, there is considerable risk in the choice of a specific company within the industry. However, in sectoral level, sales and profits grow rapidly, as the market for a new product is not yet saturated (BODIE et al., 2002). An example of this process is in closed condominiums and houses or apartments that offer quality, security, leisure and attractive terms of payment for the market within the Brazilian states (GORAYEB, 2008).

2.2 Phase of Consolidation

After the product is stabilized, the leaders of the sector begin to emerge (LYNCH; ROTHCHILD, 2000). Bodie et al. (2002) explain that the survivors of the initial phase are present in a more stable phase, which makes it easier for them to participate in each sector. Thus, the performance of the surviving firms will track

the general performance of the sector. The surviving firms continue to grow more than the economy as the product enters the market and is more commonly used (BODIE et al., 2002).

2.3 Phase of Maturity

At this stage, the product has reached its full potential for use by consumers. Increases after that phase usually consist of a simple monitoring of the growth of the economy. The product at this stage has become more standardized and producers, in this context, are forced to compete on price, resulting in lower profit margins (BODIE et al., 2002). Sometimes at this stage, firms are characterized as “cash-generating,” a concept that defines companies with a reasonably stable cash flow, but they offer little opportunity for profitable growth (LYNCH; ROTHCHILD, 2000). In such cases, it is more advantageous to take out the money rather than reinvest.

2.4 Phase of Fall On

At this stage, the real estate market can grow less than the economy does, or it can even decline. This can result in the obsolescence of the product, new product by competitors or low competitor prices (BODIE et al., 2002).

3 Housing Cycle With Speculation

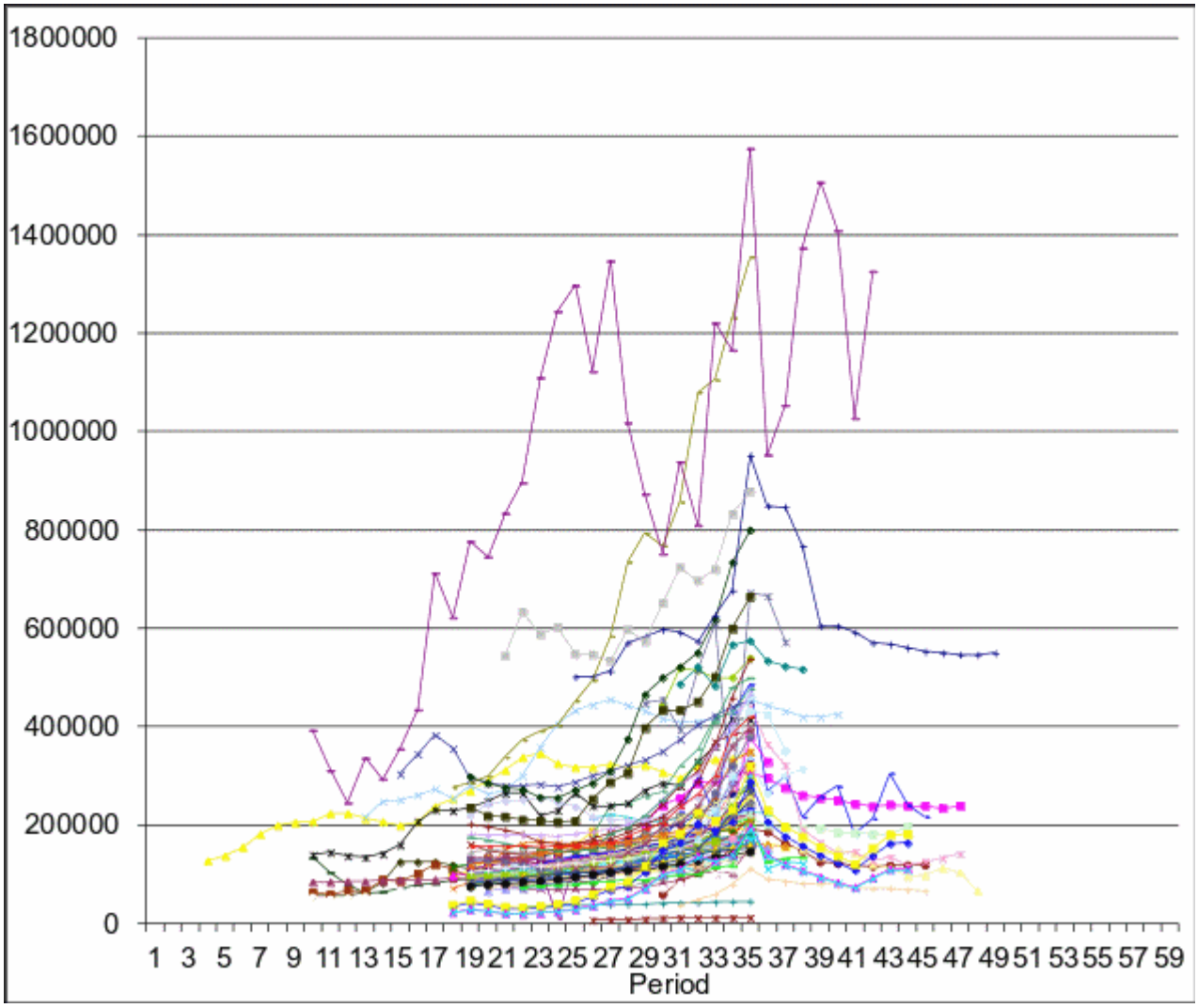

Figure 1 : Cycle of absolute house price of municipalities
Source: data research

Based on the theory of Chapter 2 (Cycle of the Real Estate market) and the data of the municipalities, the cycle of speculation will be explained, describing the four stages - initial, growth of the bubble, peak of the bubble and the bubble burst. The same form of data processing used in Figure 1 was also used for the distribution of prices of all municipalities. The maximum prices were aligned in column 33 (33 MP – maximum point) in Figure 1 to verify the development of prices before and after the peak. Subsequently the distribution of prices is shown in Figure 1 (Cycle of absolute price of municipalities). Many municipalities only provide data up to a year or two after the price caps. This happened because real estate speculation also occurred in several cities, as in Brazil, or the municipalities have not provided data for 2007 and 2008 to protect their own market. Moreover, in some cities such as in Brazil, it is not clear if real estate speculation has already begun, if it exists, or if it has already reached the maximum prices. The curves vary with the municipal real estate cycle. There are different maximum prices, different behaviors of growth and different behavior of falling prices, as can be seen in Figure 2. However, the curves are similar in all municipalities. Therefore, an average house price was created for all municipalities.

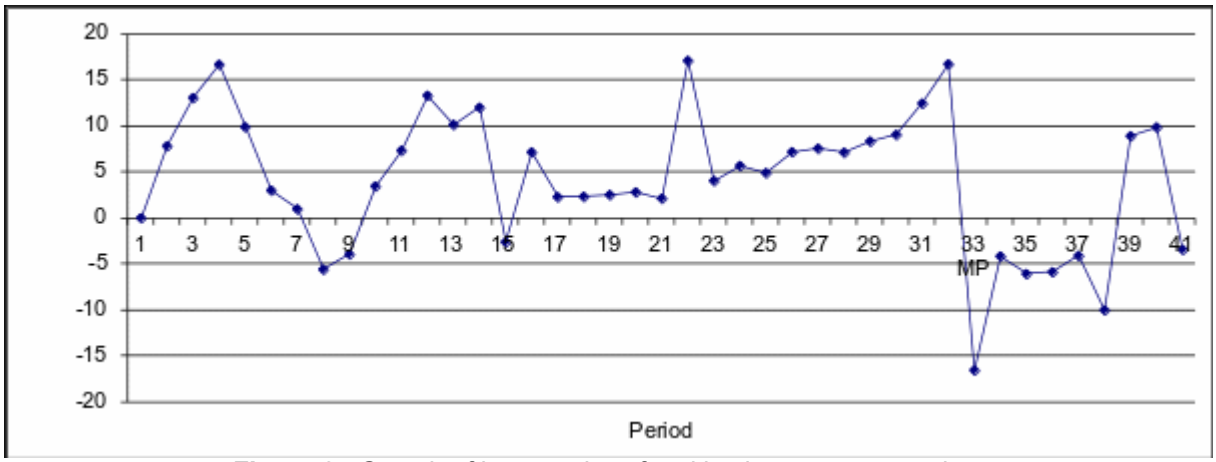

Figure 2 : Growth of house prices for cities in percentage points
Source: data research

At the beginning of the data records, the price levels are different within the same country, starting with prices from less than 100 to more than 1200 currency units per square meter. These variations are dependent on local and regional real estate markets, the economy, etc., and influence the following phases: initial, consolidation and maturity. Figure 4 show that the price growth increases as the peak approaches. Some municipalities like Ostrava (Czech Republic) have two price peaks, the second of which is ten years after the first. Some cities, like London (Great Britain), have a very sharp decline after the beginning of the price decrease. This will be discussed in Chapter 3.4 (Bursting the Bubble). A simple analysis of prices is insufficient for a proper analysis of speculation. However, an annual review (represented in percentage points) of the development of land and construction prices, the real estate price, the quantity traded and the total housing market volume during the four phases of the cycle, allows for a more robust analysis. In Figure 2, one can see the phases of the cycle with real estate speculation based on prices and the growth rate of prices. We see high volatility shortly before the peak in year 33 varies significantly—that is, initially we see an average growth of 17%, and later, an average drop of 10%. This indicates that the profits of one year are the losses of the following. However, it is important that the whole cycle of speculation is analyzed.

3.1. Initial Point

The specific causes of the beginning of a growth cycle in real estate can be new products, new technologies and/or general growth of the economy. Some causes of speculative growth are foreign investments, subsidies or cheap financing. The beginning of the growth cycle appears to be normal, and the growth rate varies between 3% and 6%. However, there may be some annual increases above these values, as seen in Figure 2. At this stage, prices are still at a lower level, depending on the location, the size of the city, the economic power, etc.

3.2 Growth of the Bubble

After the initial phase, the market enters the growth phase of the bubble, assuming that there is real estate speculation. At this point, the growth in real estate prices starts to accelerate. The survey results show an increase of 10% to 17% in real estate prices. In this phase, cities can be divided into two groups that define the behavior and the growth rate of real estate prices (PC). The first group has the highest growth rate a

year before the peak. During the year before the peak, the average growth rate in this group was 16%. The second group consists of cities where the formation of the bubble is also the year of the peak (e.g. Bern, Switzerland) and had an average growth rate of up to 14%. Regardless of these groups of speculation, this phase usually lasts for two years.

In the growth phase of the larger bubble, the growth rates are:

- Building permits (AC), between 3 and 78% a year, with an average of 24%
- Land value (VT), between 13 and 71% a year, with an average of 14%
- Market volume (VM) that ranged between 13 and 138%, with an average of 30%
- Rent (A) with variations between 0 and 24% and an average of 8%
- GDP that ranged from 0 to 30% with an average of 9%
- Population (P) that grew between -0.3 and 4.5% per year, with an average of 0.9%

From the analyzed data, only the quantity of transactions does not achieve the maximum growth in this phase, with rates between 11% and 25%. This variable has its maximum growth only during the peak of the bubble. All variables in Figure 3 show growth only during this stage. The other variables show contradictory behavior, which means growth and decline during the same phase of speculation do not allow for a proper representation of the results. The figure below shows the growth levels of the variables during the growth of the bubble in different countries.

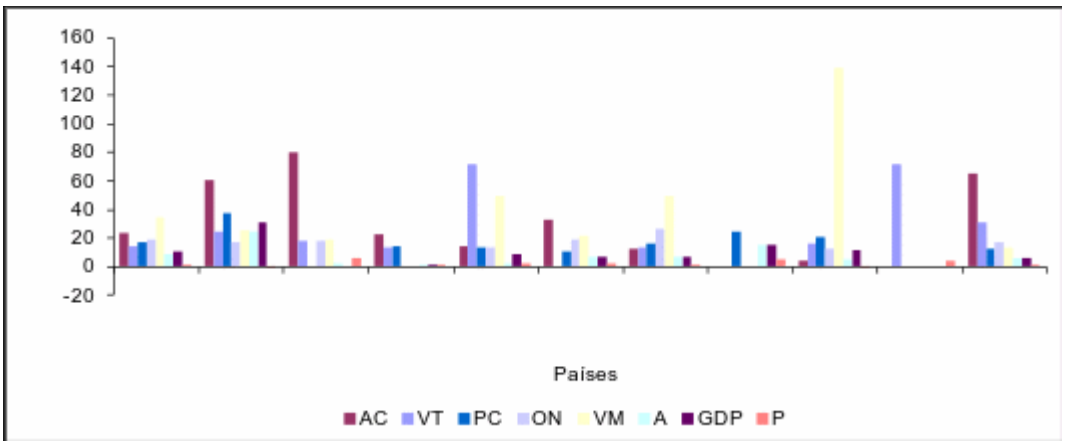

Figure 3 : Levels of growth during the growth of the bubble
Source: data research

3.3 Maximum Point of the Speculation

The maximum point of a real estate bubble is exactly at the point where real estate prices have the maximum before the decrease. In this period, the growth stops and the prices start falling (negative growth rate). As the data is collected annually, half of the countries have their highest growth rate at this stage. The percentage increases between 8% and 40%. This is because the municipalities have strong growth caused by real estate speculation at the beginning of the year, which decreases to 0% during the course of the year. This phase lasts up to one year. During the peak, the total percentage of growth in relation to the maximum price (since the beginning of speculation) is determined. This can result in more than 1650% as seen in the cases of San José (USA) and Curitiba (Brazil). At this moment, the traded quantity also shows the largest growth between 1% and 143%. The other real estate variables such as building permits, land value, market volume and rent had the largest growth in the previous year. A study on how long the maximum point lasts does not yet exist and was not the objective of this study.

3.4 Bursting the Bubble

All cycles show that after a boom, the real estate prices start to decline or remain stagnant. The burst of the real estate bubble usually causes a recession in the local economy. In general, there are three possibilities of how a bubble burst can occur. In the first case, the growth rates of other economic variables cause the bubble not to exist. The second option is a slow decline of the bubble and the third one is a sudden and very rapid decline. The last two possibilities have the negative effects of decreasing real estate prices and the impact on the general economy, which also leads to losses by less government revenues from taxes.

3.4.1 Economic Variables that make the Bubbles disappear

This phase does not consist of a decrease in real estate prices. In many countries that are in this development process, you can see an annual increase of all economic indicators that are useful to control inflation. Increasing wages, among other factors, can cause the common indices to show that the bubble has dissolved and will eventually disappear. During this research it was not possible to collect sufficient data for one single city to prove this hypothesis. Perhaps government incentives may also create new demand, and finally cause the bubble not to burst. At least this could postpone the burst, so that no one in the economy and the government (no individual or juristic person) would incur losses.

3.4.2. The Slow Decline of the Bubble

The second possibility of a burst is through a slow decline in real estate prices. Cities that had this type of burst were state capitals and major economic centers such as Winterthur (Switzerland), and is presented in Table 1.

Table 1 : Data of the municipality Winterthur (Switzerland)

	2000	2001	2002	2003	2004	2005	2006	2007
Building Permits	801	735	820	901	872	886	857	794
Land value	560,00	549,00	536,00	649,00	616,00	618,00	569,00	559,00
Quantity [un]	60	31	51	90	81	68	52	65
Market volume [millions	336,00	170,19	273,36	584,10	498,96	420,24	295,88	363,35
Population	91.243	92.041	92.875	94.081	95.482	96.144	97.732	99.307
GDP [billions]	26,54	27,34	26,78	26,84	27,13	27,91		
Income	71.201,75	73.094,15	68.126,59	71.911,40	69.782,44	73.803,81	72.147,95	
Vacancy rate	532,00	223,00	159,00	99,00	300,00	147,00		
Construction costs	541,71	566,38	566,79	549,64	555,98	569,68	538,75	563,64
Inflation	183,80	185,60	186,80	188,00	189,50	191,70	193,70	195,10
Rent	1.133,33	1.166,67	1.200,00	1.233,33	1.200,00	1.266,67	1.300,00	1.333,33
Real Estate price	487.000,00	522.000,00	483.000,00	567.000,00	575.000,00	534.000,00	523.000,00	517.000,00

The decline in Winterthur lasted until the end of the survey data. The period of decline in Munich (Germany) and Salzburg (Austria), however, lasted for four years. Later, the real estate prices, once again, increased. The building permits do not show typical development. Salzburg did not provide any data, Munich provided a scenario that showed two years of decline in the number of permits, while in Winterthur (Switzerland) you can see a high amount of permits one year after the decrease. An explanation for this adverse behaviour could not be found. While in Winterthur the value of land started to increase again one year after the peak, it took about 4 to 5 years in Munich and Salzburg. It was not possible to determine a timeline for the decrease because of the quantity of transactions. The market volume starts to increase again between 2 and 3 years after the peak. These three cities show increasing rent prices only one year after the peak of real estate prices.

3.4.3 The sudden and fast Decline of the Bubble

The worst and most well-known scenario that may occur is the rapid decline of a bubble, with high percentages of decrease. If this happens there is no possibility to prevent it or for governmental interventions or actions by individuals or companies to take place. The fast decrease is presented in smaller cities like Rostock (Germany) in Table 2 (Note: Rostock is not a large metropolitan area). The data from Rostock (Table 2) shows that from 1997 on, the real estate prices started to fall, and that only in this year prices fell by almost 20%. This decrease in prices continued until the end of the data records (2006), except for 2004 when there was a small growth, which means a total decrease of almost 40%. The average value of land fell from 1997 to 2003 like the real estate prices. The traded real estate quantity reached its maximum value of 431 in 1998. In the same time the volume of the housing market reached its maximum with € 1,396.45 million, and at the same time the decrease of the total market started.

The lowest volume was recorded in 2006 with € 208.64 million. The market volume fell by a total of 85% compared to its highest value. Rostock exemplifies that the losses are very high during a bubble burst where, the lowest value shown in Table 2 have been the lowest ever. The cost of construction increased until the year 1996. Then there was a phase of decline until 2000, followed by a new phase of growth. The other economic variables such as GDP, rent and wages grew during the period from 1992 to 2006. For all municipalities which had a high decrease, it was not possible to determine a trend in the economic variables, for either positive or negative growth.

Table 2 : Data of the municipality Rostock (Germany)

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Building Permits	102	159	187	233	791	631	459	452	445
Land value	38,54	123,91	61,88	41,55	115,50	94,08	88,16	84,92	83,62
Quantity [un]	145	97	106	155	185	136	431	336	409
Market volume [millions]	1.192,04	957,20	877,15	747,28	1.327,10	537,67	1.396,45	766,83	1.262,06
Population				227.535	221.029	212.715	207.431	203.279	200.506
GDP [billions]	2,68	3,25	4,10	4,46	4,62	4,46	4,43	4,78	4,79
Income				11.287,00	11.929,00	12.091,00	12.444,00	13.087,00	13.364,00
Construction costs	1.159	1.207	1.243	1.279	1.282	1.261	1.246	1.236	1.233
Rent	346,20	367,57	382,53	391,08	400,34	408,17	418,86	425,27	433,10
Real Estate price	37.446,00	48.651,00	60.123,00	80.370,00	112.221,00	91.409,00	85.657,00	82.509,00	81.467,00
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Building Permits	459	452	445	399	381	421	443	323	325
Land value	88,16	84,92	83,62	80,96	63,45	83,44	85,26	89,33	69,20
Quantity [un]	431	336	409	389	203	79	134	241	132
Market volume [millions]	1.396,45	766,83	1.262,06	444,47	638,62	441,43	446,34	312,21	208,64
Population	207.431	203.279	200.506	198.964	198.259	198.303	198.993	199.288	199.868
GDP [billions]	4,43	4,78	4,79	4,61	4,62	4,60	4,87	4,98	5,05
Income	12.444,00	13.087,00	13.364,00	13.734,00	13.965,00	14.173,00	14.204,00	14.142,00	
Construction costs	1.246	1.236	1.233	1.235	1.245	1.246	1.241	1.233	1.244
Rent	418,86	425,27	433,10	442,36	455,90	463,02	470,15	480,12	491,52
Real Estate price	85.657,00	82.509,00	81.467,00	78.662,00	71.649,00	71.071,00	72.024,00	69.581,00	67.236,00

4 Perfect speculation cycle

Finally the question remains, what is the ideal cycle of real estate speculation really? Since only 101 municipalities in 10 countries were analyzed, the ideal cycle presented here is a result of this range. As mentioned in Sub-chapter 3.1 (initial phase), the speculation begins with a slight increase in absolute and relative prices. Prices vary depending on the absolute price level of the primary city and the growth in real estate prices is low. The behavior of variables for the ideal cycle is shown in Figure 4. Also, as shown in Figure 4, during the growth phase of the bubble, relative prices in percentage peaked up to 17% per year. In the year of peak values, the growth in real estate prices fell to approximately 13% average growth, and subsequently, prices stop growing and begin to fall, which can be characterized by a slow decline or a rapid fall. At the growth stage of the bubble, the number of transactions was low with an annual growth of 18%. However, in the year of the peak of real estate prices, the traded quantity increases even more, reaching 20%. Later, the number of transactions also starts to fall, first slowly, then faster (Figure 4). As you can see in Figure 4, the volume of the housing market during the bubble's growth increases by 34%. In the year of the peak, this growth is reduced to 20% and the following year, the process of decreasing volume of the real estate market began.

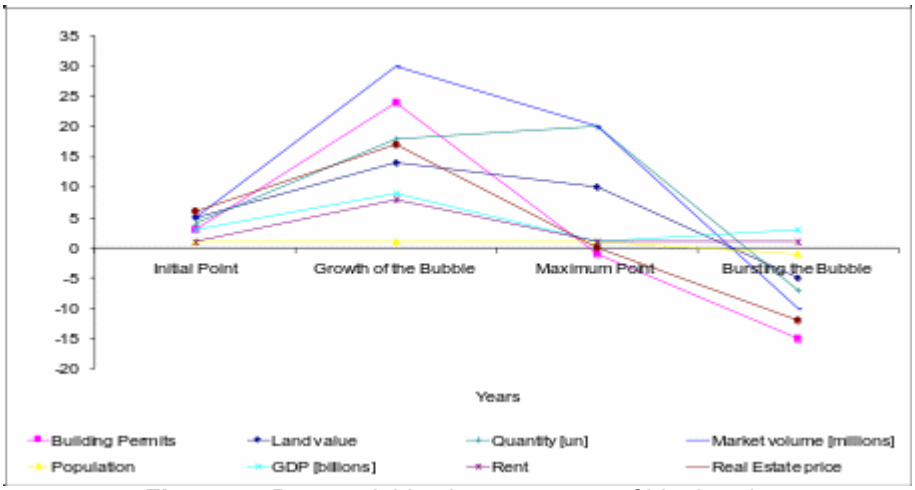

Figure 4 : Data variables in percentage of ideal cycle
Source: data research

The rent during the growth phase shows low growth rates of 8%, and during the peak it has growth of only 1%. The construction permits in the growth phase of the bubble show a large increase of 23%. However, before reaching the maximum value, the prices start to fall, slowly in the beginning by less than 1%, speeding up later, falling by 15% (Figure 4). The average land value also had its largest growth with 14% per year during the growth phase of the bubble. During the peak, the land value begins to decrease with rates of 10%. After this peak, the land value begins to fall.

5 Conclusions

The market cycle with real estate speculation is divided into four phases: initial phase, growth of the bubble, peak of the bubble and the bubble burst. The empirical data showed that in the initial phase, the growth in real estate prices is slow, with values between 3% and 6%. The other indices also show a small growth at this stage. During the bubble growth, real estate prices rose between 10% and 17% a year, with some municipalities showing the largest growth at this stage. For construction permits and land value, the growth rate varies by more than 70%. The market volume has an annual growth of up to 138% and the rent, GDP and population vary widely, with increases between 0% and 30%.

The municipalities that had not yet reached the highest rates of growth in real estate prices reach it during the peak of the bubble. For those that had already reached the highest rates before the peak, the growth rate now begins to decline. However, the traded quantity amongst all municipalities reaches the highest growth at this stage. The other variables are now influenced by declining growth rates. The burst of the bubble occurs in three different ways. First, the bubble does not burst, the economic variables have changed and the bubble just disappears - that is, the growth of some variables was so large that the housing market stabilized. The second way the bubble bursts is a slow decline of real estate prices, with low percentages. The third way is a sudden and rapid drop of prices. If this happens, a decline can also be seen in building permits, value of land, traded quantities and the market volume. The ideal market cycle, which is determined by the real estate data, shows that many of the variables begin to fall before the peak. Therefore, it is possible to know if the bubble is at the beginning of its burst when other real estate variables begin to fall. The results of this paper should not be generalized for other municipalities and countries because the housing market depends on offer and supply, and the behavior of owners and speculators. It also does not confirm that all variables have the same development and percentage rates in every stage.

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