NATIONAL HOUSING STATISTICS AND CONSTRUCTION MARKET RESEARCH - A VIEW ON DATA INTEGRATION

Luiz Fernando Heineck, Ph.D. Senior Lecturer,
Department of Production Engineering, Federal University of Santa Catarina, Brazil

Ana Augusta Ferreira de Freitas, Msc. Doctorate Student,
Department of Production Engineering, Federal University of Santa Catarina

Abstract

The Group of Studies on Construction Management of the Department of Industrial Engineering (GECON) of the Federal University of Santa Catarina, Brazil, have been conducting a series of marketing surveys dealing with the characteristics and desires of potential apartment building buyers in several major Brazilian Cities. Demographic data like age, marital status, size of the househol and source of family income are presented, together with information about the number of bedrooms, number of garages, and the relationship between average monthly income and value of the intended new home. The paper argues that a great proportion of this sort of information is already available through national housing statistics , making not necessary to include such sort of questions in the marketing questionaries. On the other hand, national statistics are also useful to create macroeconomic models that might predict demand and supply of new homes in the near future.

The paper concludes by asserting the need to carefully integrate all sort of marketing information in the housing market, in order to increase the capability of predicting the total volume of construction and their share according to families income and status.

Key Words: Real Estate, Marketing Research, Housing Estatistics

1. Introduction

Total Quality Programs applied to the Building Industry in the last five years not only cast some light on the need to improve internal operations of the construction company but also highlighted the importance of marketing research before any new development is envisaged. In order to cater for this need of the housing sector of the industry, the Group of Studies in Construction Management of the Postgraduate Program in Production Engineering of the Federal University of Santa Catarina developed and applied marketing surveys in ten different major cities in Brazil. Some 300 questionaries were applied to potential buyers during Sales Fairs. These sales fairs were normally held in Shopping Centers gathering the majority of real estate agents of each city. Each interview with a potential buyer took around 20 minutes, with a total of some 100 questions, that range from socio-economic characteristics like age, number of children, income, personal savings, to

attributes that the new homes shall present, like number of bathrooms, bedrooms, garages, size of living spaces, condominial facilities and the like.

The major objective is to predict the size of the housing market, the share of the various income brackets and the housing characteristics that each bracket should present. During the course of the analyses of the data bank now available it become clear that there are different sources of statistics that might help to produce the same sort of information. If this is true, not only it is possible to abreviate the lenghty questionaries, but also to check information according to various sources. Moreover, the literature is prone with references on research work deemed to predict housing stocks, new starts, and housing prices based on macroeconomic aggregate data, such as family income, population growth, rate of families formation, housing costs, mortgage availability and interest rates. This paper discusses how all these data might be put into use in order to assess the major characteristics of the housing market.

2. A Macroeconomic Model of the Housing Market

Balarine (1995) conducted an in depth examination of the housing market of Porto Alegre, a capital city in the south of Brazil with 1.300.000 inhabitants. He was able to produce a model for this market from 1970 to 1991 using available statistics like the housing stock, total population, permanent income, income concentration index (Gini's coefficient), interest rate, inflation rate, construction cost, selling prices of houses, renting prices, availability of mortgages and indexes of manufacturing industry activity. Multiregression analyses yield models that might explain housing stock or housing prices.

A major research undertaking would be to produce information on housing prices, stocks and startings not only to the city as a whole but also to each one of its market shares, like 2 or 3 bedrooms, different neighbourghoods in the city , houses for starting families, retired couples and families with youngsters. Macroeconomic models that are intended to predict housing aggregates at the general level are not without error and innacuracy in their predictions. It is not expected that disaggregated models as proposed in here will do any better in terms of accuracy. Instead it is maintained that putting together all the information available in the market it will be possible to qualitatively judge probable market shares with much more reasoning. Information that is available in the Brazilian Housing Market is presented in the next sections.

3. Typical Examples of Information Produced by Gecon Marketing Surveys.

The tables present in this section put forward the sort of information that is now available for cities like Belém, Natal, Recife, Vitória, Florianópolis, Blumenau, Porto Alegre and Santa Maria. Data were compared in order to evaluate if there is not a common figure for all cities, irrespective of their economic and social background. It is not expected that average figures for the 300 hundred questionaries in every city will be of any help for building developers to define their marketing strategies. In actual fact, through manipulation of the data bank with Sphinx Software it is possible to produce information at any level of detail, like by income, age, size of the family, desired neighboroughood and number of bedrooms. The purpose here is to show that the same sort of information might be available elsewhere, in particular in national housing statistics.

Time (years)	Recife	Natal	Blumenau	Vitória	Belém
< 1 year	17	15	18	17	9
1 - 4	28	27	29	23	27
4 - 7	16	18	15	18	14
7 - 10	9	10	2	10	7
> 10	30	30	32	32	43
Total	100%	100%	100%	100%	100%
Average	7.1	7.0	7.0	7.3	8.6

Table 1 - Time of residence in the present house

Present Residence	Curitiba	Recife	Natal	Blumenau	Joinville	Vitória	Belém
House	65	53	33	60	63	28	68
Apartment	35	47	67	40	37	72	32

Table 2 - Type of the present house

Condition of the Present House	Curitba	Porto Alegre	Recife	Blumenau	Vitória	Belém
own	72	80	60	67	80	84
rented	22	16	40	27	16	14
borrowed	6	4	-	6	4	2

Table 3 - Condition of the present house

Mortgage on present house	São Paulo	Curitiba	Porto Alegre	Vitória	Belém
No mortgage	70	70	75	68	88
Still with mortgage	30	30	25	32	12

Table 4 - Mortgage on present house

Age (years)	Porto Alegre	Recife	Natal	Blumenau	Santa Maria	Vitória	Belém
up to 25	12	14	13	15	28	10	14
25 - 35	41	44	45	44	35	46	40
35 - 45	27	23	28	20	26	22	32
more than 45 years	20	19	14	21	11	22	14

Table 5 - Age of the potential clients

Source of Income	Recife	Curitiba	Natal	Blumenau	Vitória	Belém
Public Employee	19		41	14	33	15
Private Employee	45	47	22	39	27	26
Self Employed	30	42	28	36	30	42
Others	6	11	9	11	10	10

Table 6 - Source of income

Future Residence	Curitiba	Porto Alegre	Recife	Blumenau	Vitória	Belém
House	60	36	34	20	9	44
Apartment	35	64	66	80	91	42
Indifferent	5	3	-	-	-	-

Table 7 - Type of the desired residence

Number of Dwellers	Curitiba	Porto Alegre	Recife	Blumenau	Vitória	Belém
1	7	18	47	52	43	65
2	11	22				
3	28	22	37	37	41	
4	29	20				31
5	17	13	15	7	10	
6	5	5				5
7 or more	3	-	1	4	3	-
Average	3.6	3.0	2.8	2.8	3.0	3.0

Table 8 - Number of dwellers in the desired house

Number of Children	Curitiba	Porto Alegre	Recife	Florianópolis
None	22	30	29	37
One	23	22	22	18
Two	27	26	27	29
Three	20	14	14	13
Four or more	8	8	8	3

Table 9 - Number of children

Number of Bedrooms	Curitiba	Porto Alegre	Recife	Blumenau	Vitória	Belém
1	3	10	3	-	2	4
2	21	33	34	31	32	55
3	61	35	51	64	53	39
4	15	22	12	5	13	1

Table 10 - Number of bedrooms

Number of Garages	Curitiba	Porto Alegre	Recife	Natal	Florianópolis	Blumenau	Vitória	Belém
0	6	5	8	-	-	-	2	-
1	37	56	52	26	51	40	45	67
2	50	36	34	66	45	57	52	33
3 or more	7	3	6	8	4	3	1	-

Table 11 - Number of garages

Capitals Goods	Frequency	Average Value
Own Residence	32%	U$ 52.000,00
Another Residence	18%	U$ 53.000,00
Cars	14%	U$ 10.000,00
Telephone	6%	U$ 2.200,00
Saving Account	25%	U$ 22.000,00
Retiremen Fund (FGTS)	26%	U$ 12.000,00
Others	8%	U$ 15.000,00

Table 12 - Value of the avaible capital goods that might be used as adown payment

Graph 1 - Monthly Income x Housing Value
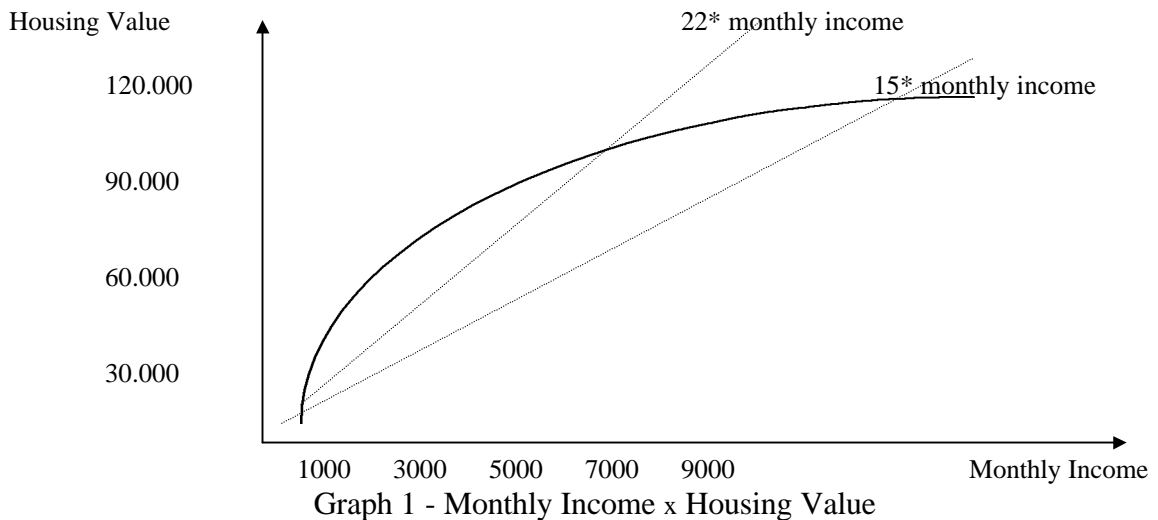
4. National Housing Statistics

Five major sources of housing statistics might be used by prospective developers:

4.1 Supply-side Surveys by Estate Agents and Builders Associations

Recently Real Estate Agents and Builders Associations started to produce statistics about the number of houses on sale by neighbourghood, floor area, number of bedrooms and selling price. Accepting that the housing market might be modelled by time series this information is potentially of great help to predict supply and demand in the near future. It is normally taken by academics that supply and demand in the long run are in equilibrium; supply in the past equals demand, supply in the near future (say 2 to 3 years) also equals demand. Moreover, this information is vital when comparing new developments with existing stocks on sale in every location of the city. Unfortunately time series produced by these associations are still too short, not more than five years for the majority of cities. Provided that these statistics are representative of the whole housebuilding industry in every city they might be used to produce cross sectional studies relating supply to macroeconomic characteristics of each city.

4.2 Local Authorities Starts and Finishes Statistics

Local Authorities in charge of approving house building projects in every city maintain records of licences to build (starts) and licences to occupy (finishes). During the years of 1970 to 1986 when the housebuilding construction industry experienced a steady

stream of finance through a National Housing Lending Bank (BNH), a comprehensive inquiry was made in connection with every project in what was called "Monthly Inquiry of Construction" (Inquérito Mensal das Edificações). Even with the BNH bankrupticy, that was used to finance this inquiry, some local authorities keep on collecting data using the same data structure. Apart from number of houses, their size and location it is possible to find qualitative information regarding these starts, like building quality, provision of services and number of storeys. Not all local authorities in Brazil are sufficiently well structure in administrative terms to maintain these statistics reliable.

4.3 National Census

Every 10 years a comprehensive census is held in Brazil by an organization called IBGE, National Bureau of Statistics. The last one was done in 1991 and contains statistics about the number of households, its nature in terms of being owned or let, house or apartment, number of bedrooms, number of bathrooms, services like water supply, sewage and garbage disposal, number of dwellers per household, age, level of instruction and monthly income. These informations can be broken down to the level of neighboroughood in every city. This is of valuable importante, because National Census Data is extremely geared to cover low income population statistics, that are of no interest for house building markets governed by liberal and private rules: statistics related to the more refined neighboroughs in the city might provide the information that is needed to evaluate average and high income markets. Alternatively it might be used only disagregate data concearning the upper monthly income level of the National Census, that in fact is very low, in the region of U$ 2.500,00 per capita.

4.4 National Household Sampling Survey

Every five years the same IBGE conducts a sampling survey that contains the same sort of information than the previous one plus a more detailed account of household belongings or durable goods incorporated into the household like cooker, radio, color tv, fridge, freezer, laundry washing machine and telephone. Moreover, some qualitative information on building occupation is given by the number of dwellers per bedroom and the availability of a maiden that lives in the household. This information is very similar to what is normally used to classify every household according to status (upper class, middle class, lower class): the National Association of Marketing Research Consultants uses a screening grid that takes into consideration the number of bathrooms, number of cars, number of radios and tvs, level of instruction and the like to classify every family into classes A, B and C (upper, middle and lower).

4.5. National Survey of Family Budgets

This database was established in 1987/88 and a second survey is due to appear in 1997. Among other useful informations this database investigates durable goods possession in each household, acording to monthly income. A detailed list of durable goods is presented comprising itens like air conditioning, vacuum cleaner, one or two cars, bicycle , cooker, fridge, freezer, laundry washing machines, dishwasher, tv sets, toaster and stereo sets. These information might prove valuable in correlating monthly income with possession of goods, an indirect strategy used in marketing research to classify families according to their social class, without relying on direct information on salaries and sources of incorme.

The latter information is usually not disclosed easily by the families as they are freightened by inland revenue inspections.

This source of information also produces information on how families spend their budgets, according to broad categories as food, clothing, body care, medical assistance, education and leisure. Moreover it brings to light how much each family spends buying, updating, maintaining and paying monthly installments in connection with their homes. Again, using this information it may be possible to assess how much money can be grought to the housing market according to family's income.

5. Conclusions

The variables presented in this paper and the sources of information analysed herein can be organized in the table below:

Macroeconomic Variables	Supply-side Surveys	Local Authorities Stars and Finishes	National Census	National Household Sampling Survey	National Survey of Family Budgets
Housing Stock	-	X	X	X	-
Total Population	-	-	X	X	-
Personal Income	-	-	X	X	X
Interest Rate	-	-	-	-	-
Inflation Rate	-	-	-	-	-
Construction Cost	-	-	-	-	-
Selling Price	X	-	-	-	-
Rents Prices	X	-	-	-	X
Mortgage Availability	X	-	-	-	-
Marketing Research Variables	Supply-side Surveys	Local Authorities Stars and Finishes	National Census	National Household Sampling Survey	National Survey of Family Budgets
Time of Residence	-	-	-	-	-
House/Apartment	X	X	X	X	-
Own/Rented	-	-	X	X	X
Mortgage - Existing House	-	-	-	-	X
Client Age	-	-	X	X	X
Source of Income	-	-	X	X	-
Desired Home	X	X	X	X	-
Number of Dwellers	-	-	X	X	X
Number of Children	-	-	X	X	-
Number - Bedrooms	X	X	X	-	-
Number of Garages	X	X	-	-	-
Durable Goods for Down Payment	-	-	-	-	X
Monthly Income x Housing Value	-	-	-	-	-

Research shoul be continued to evaluate what are the best sources of information to cater for the information needs associated with every variable. The final aim is to establish na equilibrium equacion for supply and demand in the various brackets of the housing market.

6. Bibliography

BALARINE, O.F.O.. Derterminação das Variáveis Sócio-Econômicas Formadoras do Estoque Habitacional de Porto Alegre, Tese de Doutorado, UFSC, 1995;

BOLETIM de Indicadores de Velocidade de Vendas. SINDUSCON/PE, ADEMI/PE, Fevereiro, 1997;

BOLETIM de Indicadores de Velocidade de Vendas. SINDUSCON/CE, Dezembro, 1996;

HEINECK, L.F.M, FREITAS, A.A.F. Relatórios de Pesquisas Mercadológicas, Florianópolis, Natal, Recife, Belém, Curitiba, Vitória e Blumenau, 1995/1996;

IBGE. Censos Demográficos, 1960/1970/1991;

IBGE. PNAD. Pesquisa Nacional de Amostragem por Domicílios, 1975/1985/1995;

IBGE. Pesquisa de Orçamentos Familiares, 1987/1988;

OSEKI, J. H.. Algumas Tendências da Construção Civil no Brasil. FAUSP, São Paulo, 1982;

RELATÓRIO da Pesquisa Imobiliária. Fiepa, IDEPAR, SINDUSCON/PA, ADEMI/PA;

RELATÓRIO da Pesquisa Imobiliária. ADEMI/ES.