

## **The House Price Effect of the Canadian Constitutional Crisis: A Comparison of the Ottawa-Outaouais Sub-Markets**

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Dynamic models of development timing show how expectations of future increases in urban rents are capitalized back into the price of land. Shoup (1970), Arnott and Lewis (1979), Capozza and Helsley (1989) show that urban land values are determined by their access attributes, conversion costs, value of expected future rent increases and the value of agricultural land rent. Land and house prices contain a growth premium equal to the present value of the expected future rate of growth in housing prices that is above the rate available in alternative investments. When expectations of future growth in demand change, current asset prices adjust to maintain normal rates of return to equally risky investment. Periods during which expectations regarding future conditions dampen will show a decline in house prices even though the current demand for housing services may stay constant.

An increase in the risk, in the variance of possible outcomes, inherent in an investment will result in a risk premium and require a higher expected rate of return to maintain equilibrium. An increase in the riskiness of a real estate investment will require that the expectation of future rates of return increase to compensate for the variation in possible outcomes. When future growth prospects dampen and when the potential variance of future outcomes increases, asset prices must fall, first, to allow the reduced rate of return to equal the rate on other comparable investments and, second, to allow the growth of a risk premium. The fall in the price of houses and land must be sufficient to allow the expected future price increases, small as they may be in absolute terms, to represent a greater rate of return on the market price of the investment. The fall in land and house prices during a period of turbulence and worsening prospects will maintain investment demand by equalizing the expected future

rates of return on equally risky investments.

Clarke and Reed (1988) show that increases in uncertainty about future conditions will delay development and increase the value of holding vacant land and, thereby, increase the price of land and of housing services relative to what they would otherwise be, given the growth prospects. Increases in uncertainty should reduce housing starts. Capozza and Helsley (1990) demonstrate that, over the long run, increases in uncertainty delay the conversion of agricultural land to urban use, reduce housing starts, increase the option value of agricultural land and raise land prices at the periphery by an irreversibility premium as illustrated in Figure 1. However, events that both increase uncertainty and foretell of a decline in future market demand will reduce housing and land prices to maintain equilibrium with other investment options. A period of increasing pessimism regarding future market conditions and increasing uncertainty will have declining house and land prices. This is the hypothesis we test. Its rejection will provide information on the way expectations are formed. Its test will tell about the link between risk and rates of return. We recognize Conway and Dale-Johnson's (1990: 23) point:

"In the current environment, assessments of risk and return in local markets is, at best, ad hoc as precise historic data does not exist and decisions tend to be driven by anecdotal information about a few individual sales or indexes that are based on median or average prices. It is ironic so little is known about housing market performance given the share of household wealth committed to home equity and the share of investors' portfolios committed to residential mortgages".

This article examines the price effect of the changes in growth expectations due to the political uncertainty created by the recent Canadian constitutional crisis. The null hypothesis, suggesting that increasingly bleak views of future prospects that reduce housing prices in the Ottawa region have the greatest negative impact on the Quebec side of the border, will be rejected. The evidence suggests that the expectations and the uncertainty that we may believe to have been created by the constitutional turmoil was either capitalized in the Ottawa region well before the study period and Meech Lake and the ensuing controversy added no new information, or that the price effect of the turmoil was too small in magnitude to be measurable. The study shows that house buyers expected similar futures on the Quebec and the Ontario side of the National Capital Region and that these futures were not bleak. The Meech Lake controversy did not change risk perceptions or belief in growth prospects differently in the Ontario and Quebec parts of the Ottawa region.

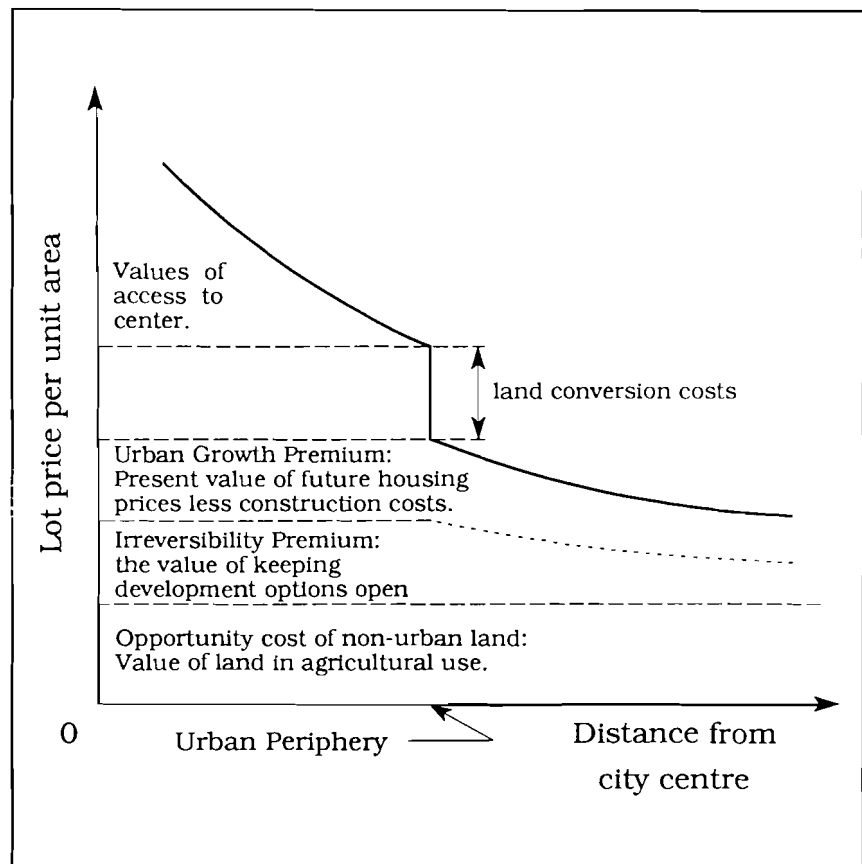


FIGURE 1 Components of Land Price

## The Situation

The Canadian constitution was brought back to Canada from the United Kingdom in 1982 despite the Quebec government's refusal to sign. In June 1987, Prime Minister Mulroney re-opened the constitutional issue, proposed a number of amendments, and secured the Meech Lake Agreement among all provincial premiers. It was to be ratified within a three-year period and a relative calm was maintained for two years to be broken in 1990 when the agreement failed in a spectacular last minute finish. A national referendum was announced and constitutional issues remained on the forefront of the public agenda as most Canadians contemplated the possibility of a "no" vote and the possible disintegration of the country. The referendum failed in 1992 and constitutional issues were preempted in much of Canada by the growing recession. The

period for this study extends from 1987 through 1992, the years of debate, failed hopes and controversy.

The National Capital Region encompasses the Regional Municipality of Ottawa-Carleton and the Outaouais sub-region of Quebec. One out of every four jobs in the region is formed by the federal government. While most federal government offices and employees are located in Ottawa, a fair share was moved to the Quebec side of the river during the last 20 years. In 1991, 47,720 Quebec residents worked in Ottawa compared to 16,340 Ontario residents commuting to the Outaouais according to the 1991 Census report, *Place of Work, Place of Residence*. The separation of Quebec from Canada would reduce the basic employment in the Outaouais sub-region and would cause a severe recession in the local real estate market. While Ottawa would also suffer as a result of a separation, it would do better than Outaouais by remaining the capital of Canada. The Quebec government's promise to maintain some government employees in Outaouais might reduce the impact, but few think that the number of Quebec employees needed to maintain a close tie to Canada would equal the number of Quebec residents currently employed by the Canadian government.

Comparative statistics for the two sub-regions are presented in Table 1. The Quebec part of the urban region has 22.9 percent of the region's population. The size of households differs slightly with Ottawa having 2.61 persons per household compared to 2.67 for the Quebec side. Larger households tend to be associated with higher demand for single-family houses. The ownership rate in Outaouais is slightly higher. While both sub-regions have about 42 percent of their dwellings in single-family houses, the remaining stock differs: Quebec offers mostly lowrise apartments, while in Ottawa-Carleton highrise apartments are the main alternative building type. The average size of dwellings on the Ontario side is 30 percent larger than in Outaouais reflecting the larger difference in the incomes of the populations. The Ontario population earning over \$70,000 a year is twice the proportion in Quebec. The Ottawa-Carleton population grew 11.8 percent compared to 10.4 percent over the five-year period since 1986.

Canada Mortgage and Housing Corporation's (CMHC) (1991) report shows that during the 1980s Ottawa-Carleton had, on average, more than three times the Outaouais housing starts, a number that roughly corresponds to the difference in household numbers. The lower overall cost of living favours the Outaouais side of the river but construction costs are higher in Quebec due to more unionized trades and a 4% provincial sales tax on new homes. The main feature distinguishing the two housing sub-markets is the persistent large difference in house prices. In the early 1970s, the price of new houses was the same in both sub-regions as reported in Association provinciale de constructeurs du Québec (1991) (see, Pilon 1993).

The vacancy rate statistics presented in Table 2 illustrate the large difference in the level of demand for housing relative to supply. The Quebec rental

**TABLE 1 1991 Population, Housing Stock and Income Distribution**

	Ottawa-Carleton	Outaouais
<b>Population</b>	678,147	201,536
percent change since 1986	11.8	10.4
Total Occupied Dwellings	259,825	75,475
Persons per household	2.61	2.61
Percent Owner Occupied	53.88	56.96
<b>Housing Stock by Type (percent)</b>	42.11	43.05
Single detached	5.84	9.49
Semi-detached	18.21	13.17
Row house, apartment, detached duplex	22.21	6.56
Apartment (under 6 floors)	11.00	25.78
Apartment (over 5 floors)		
Average dwelling size (sq. ft.)	1,628	1,252
<b>Household Income Distribution (percent)</b>		
Under \$50,000	10.6	22.9
50,000 - 59,999	22.7	28.1
60,000 - 69,999	23.8	26.4
70,000 or more	42.9	22.6

**TABLE 2 Vacancy Rates and New House Prices**

	Ottawa-Carleton	Outaouais
<b>Vacancy rates (percent)<sup>a</sup></b>		
1988	1.6	4.5
1989	1.3	3.2
1990	0.5	4.2
1991	0.7	4.9
1992	1.3	3.8
<b>House Prices<sup>b</sup></b>		
1988	\$201,620	\$ 81,129
1989	\$213,087	\$ 93,351
1990	\$230,404	\$109,248
1991	\$220,520	\$113,031
1992	\$217,829	\$115,670

Sources: Population and housing stock data from 1991 Census cat. no. 95-325. Size of dwelling and income data from CMHC, *Canada Housing Statistics 1990*, Tables 75 and 76.

- Vacancy rates in privately initiated rental agreement structures with six units or over, CMHC *Canada Housing Statistics*, 1993, Table 30.
- Average selling price in September of newly completed but unoccupied single-family detached or semi-detached dwellings.

market is stable with a 4 percent vacancy rate. The Ontario sub-market is also stable but with a much lower vacancy rate. The sub-markets do not offer substitute rental accommodation or the vacancy rate would even out. The average price of new but unoccupied houses shows a similar difference between levels of market demand (and dwelling quality and size). Ontario prices in 1988 were 2.48 times higher than Quebec prices as reported by the Association Provinciale de Constructeurs du Québec (1991). By 1992, the price ratio was only 1.89! Was the change in relative prices due to overall market reassessment of housing price levels, or was it due to a change in the type of houses built in each sub-region? To what extent is the price difference due to differences in the nature of the housing stock on the two sides of the river? The questions create the need to estimate a hedonic price model.

### The Model

The constitutional crisis of 1988-1992 threatened the political unity of Canada and foretold of possible chaos on the Ontario/ Quebec border of this region. If the country was going to "fall apart", as many politicians warned, then the Outaouais sub-region would be seriously disadvantaged despite the Parti Québécois assertion that a resident staff would be needed to maintain contact with Canada. The political furor over the Meech Lake years and the following referendum period should reduce expectations of future growth in urban rents in both Ottawa and Outaouais and lower the price of land and houses. Due to differences in the dependence of Ottawa and Outaouais on the Canadian government, the possible separation of the province will have the largest effects on the Quebec side of the urban region as a result of its higher proportional decline in its economic base. Increasing expectations of separation should reduce market activity and housing starts in both parts of the region but are expected to have a greater adverse effect in Outaouais than in Ottawa-Carleton. The growth of pessimism regarding future markets should have the greatest adverse price effect in Quebec.

Descriptive statistics do not support the belief that the Quebec situation was getting worse in the eyes of the building industry and house buyers. Indeed, the price of new houses increased in Quebec as illustrated in Table 2. The proportion of starts on the Quebec side increased dramatically during the two years following the failure of the Meech Lake Agreement as illustrated in Table 3. If the failure of Meech Lake created uncertainty and reduced expectations of future growth in demand for houses, and did so in a way that disadvantaged Quebec, then house prices in Quebec should have declined relative to the price of houses in Ottawa. Moreover, the rate of increase in housing prices during the Meech Lake controversy should have declined in Quebec relative to Ontario by virtue of the population mass of the two urban regions and its connection to the Canadian federal government.

TABLE 3 Starts in the Ottawa-Outaouais Region

Year	Total Starts	% in Outaouais
1988	10,544	21.8
1989	8,432	33.3
1990	8,169	40.5
1991	7,821	42.8
1992	8,198	28.9

Source: Canadian Housing Statistics, CMHC, Ottawa.

A log linear hedonic price equation is specified to account for differences in the characteristics of the houses built on both sides of the river. The model includes a set of variables describing general building characteristics and then two sets of categorical variables identifying the last year of the sale transaction. One set applies to all houses, the other set identifies the Outaouais houses. The coefficients for the second set show the difference in the proportional price increase on the Quebec side of the river. The date of sale variables identifies houses sold during each of the years after 1989 or later. Their coefficients, therefore, describe the rate of price appreciation during the specified year. The log linear specification allows the measure of the proportion of increase in sales price due to the sale having occurred in the specified year. The null hypothesis would be rejected by a finding of statistically significant negative coefficients for the second set of date of sale variables. Equation (1) describes the model.

$$\ln(\text{Price}_i) = a + \sum_{j=1}^m b_j \ln(V_{ji}) + \sum_{k=89}^{92} c_k * SD_{ki} + \sum_{k=89}^{92} cc_k * SD_{ki} * CUO_{ki} + \epsilon_i \quad (1)$$

$i = 1, \dots, n.$

where:

$\text{Price}_i$  is the sales price of house  $i$ ;

$V_{ji}$  is a set of  $m$  variables describing the characteristics of house  $i$  that affects its price and may systematically differ across the two sub-regions;

$SD_{ki}$  is the categorical sales date variable identifying the year of the last sale of the house. It takes the value of 1 if the house,  $i$ , was sold in year  $K$  or later. It takes

the value 0, if sold before that year. The coefficient  $c_k$  describes the rate of price increase that year;

$SD_{ki} * CUO_{ki}$  is the interaction variable identifying the sales data of the houses in Outaouais. Its coefficients  $cc_k$  measure the difference in the price increase during year,  $k$ , due to the location being in Outaouais;

$\epsilon_i$  is the error term accounting for the effects of all the other factors that are not included in the model.

The estimated coefficients,  $b_j$ , yield the price elasticities for the control variables. Since  $SD_{89i}$  takes the value 1 when the house is sold in 1989 or later, its coefficient describes the proportional change in house prices due to the sale occurring in 1989 or later. The inclusion of the  $a$  term for 1990 and for each following year acts as a control variable absorbing the effects of later years. The 1989 coefficient, therefore, describes the proportional price change uniquely attributed to the year 1989. The coefficients  $cc_k$  for the interaction term measure the deviation in proportional price changes due to the location of the sale.

The control variables used to estimate the model are defined in the Appendix. To gain unbiased estimates of the difference in price changes, only the variables that both affect the price of housing and are correlated with the variables of interest are to be included in the regression as controls. Factors such as business cycles and mortgage rates are expected to affect housing prices but are not thought to create major price differences within a region. The inclusion of these effects in the error term of the regression reduces its goodness of fit, but does nothing to the coefficients of interest. The variables included in the model are the ones on which data were available. The data were developed by the real estate boards for the two sub-markets. The variables are therefore limited by the factors that real estate appraisers consider to be relevant to explaining house prices. The available data are adequate by the standards of most published hedonic price studies.

The variable selection was constrained somewhat by the incompatibility in the information recorded by the Quebec and Ontario real estate boards. To illustrate, a variable measuring the floor space has been included in many hedonic price indexes published elsewhere but the Real Estate Board in Ontario does not require the collection of this information, and the variable could not be included in the regressions. Instead, the sum of the square footage of each of the above-ground bedrooms was used as a proxy for size of dwelling. The size of basement bedrooms was not included in the calculations of the proxy variable because the presence of basement bedrooms does not necessarily

TABLE 4 Means and Standard Deviations

Variable	All observations		Ottawa-Carleton observations		Outaouais observations	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
SALEPRIC	131284.12	32777.29	148821.73	23726.03	105100.94	26331.74
#BEDRMS	3.12	0.53	3.21	0.50	2.98	0.55
#BATHRMS	2.10	0.71	2.31	0.70	1.77	0.58
BEDRMSIZ	393.65	92.48	406.10	90.52	374.98	92.29
AVBEDSIZ	126.44	20.91	126.31	19.08	126.63	23.40
AGE	13.47	9.31	13.92	9.55	12.80	8.92
DWELTYPE	1.52	0.50	1.62	0.49	1.36	0.48
LOTSIZE	5703.47	1698.80	5250.04	1579.20	6356.29	1652.54
DIST	13.60	4.88	14.84	5.28	11.66	3.35
TAXES	2250.18	464.43	2278.40	453.35	2202.43	479.12
BASEMT0	0.25	0.43	0.29	0.41	0.21	0.40
BASEMT1	0.53	0.50	0.44	0.50	0.65	0.48
BASEMT2	0.22	0.41	0.27	0.45	0.14	0.34
PARK1	0.12	0.32	0.11	0.32	0.13	0.34
PARK2	0.45	0.50	0.54	0.50	0.32	0.47
PARK3	0.19	0.39	0.23	0.42	0.12	0.33
PARK4	0.24	0.43	0.11	0.32	0.42	0.49
DAYS	71.27	57.59	53.16	48.57	94.38	59.91
CUO	0.40	0.49				
SPRING	0.30	0.46	0.30	0.46	0.29	0.45
SUMMER	0.24	0.43	0.23	0.42	0.25	0.43
FALL	0.19	0.39	0.16	0.38	0.21	0.41
SD88	0.83	0.37	0.84	0.37	0.83	0.38
SD89	0.67	0.47	0.69	0.46	0.64	0.48
SD90	0.48	0.50	0.48	0.49	0.48	0.50
SD91	0.31	0.46	0.29	0.46	0.34	0.47
SD92	0.16	0.36	0.14	0.35	0.18	0.39
SD88*CUO	0.33	0.47				
SD89*CUO	0.26	0.44				
SD90*CUO	0.19	0.40				
SD91*CUO	0.14	0.34				
SD92*CUO	0.07	0.26				

Note: Variable definitions are in the appendix.

correlate with the size of the house. A variable identifying basement development is included in the model to capture the price effect of upgraded basements.

## The Results

Information on 2,129 transactions occurring between 1987 and 1992 was obtained from the photo books published by the Real Estate Board of Ottawa-Carleton and the Chambre immobilière de l'Outaouais Inc. The data for a total of 1,275 homes in Ottawa-Carleton, and 854 in the Outaouais region is available. A stratified sampling technique was used to reduce sampling error and help make the transfer more manageable. The stratification variables were dwelling type, age of structure, sewer type and price. Only sales of serviced single-family detached bungalows and 2-storey single-detached houses built within the last 30 years and priced under \$200,000 were included for analysis. The universe was further reduced by sampling specific Ottawa-Carleton and Outaouais districts. The regressions presented here use 1,996 cases: a number high enough to yield a statistically powerful test of the null hypothesis. Type II errors are unlikely. Means and standard deviations are listed in Table 4 and show that the Outaouais houses in this sample are smaller, less luxurious and considerably less expensive. They are built on larger lots with bigger basements but fewer garages. The samples used in the regression analysis appear to be representative of the stock in the two sub-regions.

The available data also show that Outaouais houses take a month and a half more to sell than Ottawa-Carleton homes, but caution must be exercised when interpreting the number of days on the market as reported in the photo books because some sales occur after the home has been removed from the listing and then relisted, in which case the number of days on the market can be understated. It is understated because the total number of days reported in the sales books often does not include the length of the preceding listing period. The data of last sale variables show comparable distribution of market activity across the two sub-markets. Activity in Outaouais was slightly higher in 1991 and 1992 than in Ottawa-Carleton.

Table 5 presents the regression results. The first column lists the coefficients when all the data are used from both cities. Regressions 2 and 3 were run separately on Ottawa-Carleton and Outaouais data. A test for possible heteroscedasticity induced by differences in the time houses were on the market was performed on all the data by comparing the variances of the bottom and top third of the sorted residuals from Regression 1 (sorted by number of days on the market). The null hypothesis ( $H_0: s_{top}^2 = s_{bot}^2$ ) could not be rejected at the 0.05 level of significance. An identical test was performed on the data for each sub-region and similar conclusions were drawn.

The estimated coefficients of the time dummies,  $c_k$ , measure the change in price from the previous year. In the National Capital Region prices increased approximately 19% over the five-year period since 1987, representing an annual compound rate of appreciation of 2.9%. The results show that prices increased during the five-year period but at a decreasing rate up to 1991. The coefficients of the interaction terms,  $cc_k$ , measure the difference in the average

TABLE 5 Regression Results of the Dependent Variable  $\ln(\text{SALES PRICE})^a$

Independent Variables	Regression 1	Regression 2	Regression 3
	All Cases	Ottawa-Carleton	Outaouais
CONSTANT	8.557 (67.82)	9.039 (59.60)	8.225 (39.54)
CUO	-0.373 (-27.49)		
LN(LOTSIZE)	0.221 (19.74)	0.157 (12.28)	0.228 (11.23)
LN(#BEDRMS)	0.193 (10.41)	0.248 (11.31)	0.134 (4.50)
LN(AVBEDSIZ)	0.288 (14.16)	0.254 (10.21)	0.309 (9.69)
LN(#BATHRMS)	0.084 (9.16)	0.117 (10.78)	0.062 (4.17)
LN(AGE)	-0.046 (-11.31)	-0.012 (-2.24)	-0.060 (-9.60)
LN(DWELTYPE)	0.032 (3.79)	-0.011 (-0.84)	0.124 (5.84)
LN(DIST)	-0.146 (-19.47)	-0.872 (-10.61)	-0.183 (-11.43)
PARK1	0.016 (1.73)	0.013 (1.10)	0.007 (0.47)
PARK2	0.067 (8.78)	0.041 (3.85)	0.082 (7.38)
PARK3	0.138 (13.64)	0.110 (8.39)	0.179 (11.10)
BASEMT1	0.020 (2.80)	-0.000 (-0.06)	0.036 (3.07)
BASEMT2	0.024 (3.14)	0.005 (0.59)	0.034 (2.24)
SPRING	0.016 (2.34)	0.018 (2.46)	0.005 (0.390)
SUMMER	0.027 (3.69)	0.034 (4.22)	0.015 (1.20)
FALL	0.018 (2.35)	0.019 (2.18)	0.008 (0.60)
SD88	0.076 (6.41)	0.075 (7.13)	0.050 (3.47)
SD89	0.039 (3.52)	0.034 (3.50)	0.033 (2.21)
SD90	0.044 (4.03)	0.048 (5.00)	0.078 (4.82)

Independent Variables	Regression 1 All Cases	Regression 2 Ottawa-Carleton	Regression 3 Outaouais
SD91	0.013 (1.11)	0.011 (1.05)	0.013 (0.79)
SD92	0.020 (1.69)	0.014 (1.30)	-0.002 (-0.12)
SD88*CUO	-0.023 (-1.41)		
SD89*CUO	-0.001 (-0.04)		
SD90*CUO	0.030 (1.70)		
SD91*CUO	0.002 (0.11)		
SD92*CUO	-0.015 (-0.87)		
No. Observations	1,996	1,210	785
Sum of Squared Residuals	25.90	11.91	11.36
Mean of Dep. Var.	11.75	11.89	11.52
Coeff. Variation	0.98	0.84	1.06
Adj. R-Squared	0.81	0.62	0.72

a. t-statistics are in parentheses.

price change over the previous year between the two markets. The estimates are not statistically different from zero except for 1990, when the Outaouais rates of price increase in nominal dollars exceeded the Ottawa-Carleton rates. The higher rate of price increase in Quebec during the most controversial Meech Lake year may be attributed to the increasing mortgage interest rates, making the much lower priced Outaouais homes more attractive to first-time buyers. Between 1989 and 1990, real interest rates on 5-year conventional mortgages jumped from 7.05% to 10.05% (*Bank of Canada Review* 1989, 1990). Fewer first-time buyers would have qualified for mortgages in Ottawa than in Hull and the difference in the base price of land could have contributed to the health of the construction industry in Quebec.

CMHC statistics show that, from 1987 to 1990, the proportion of completions in the Outaouais region exceeded the corresponding figures for Ottawa-Carleton. Historically, Ottawa-Carleton housing completions have been at least three times those in the Outaouais representing 75% of completions in the National Capital Region. Between 1989 and 1990, however, Ottawa-Carleton housing completions dropped by 21% (to 5,511 from 7,015) while Outaouais

completions rose by 40% (to 3,695 from 2,640) leaving Ottawa-Carleton with only 60% of total NCR completions. Housing starts reveal a similar exchange but at more moderate levels -- Ottawa-Carleton starts dropped by 13% while Outaouais starts increased by 18% (CMHC 1990: 14-15).

The coefficients for the date of sale variables in Regressions 2 and 3 run separately for each sub-region show that the total rate of appreciation for the six-year period in each market differed by only 1%: prices increased by 18% in Ottawa-Carleton and 17% in the Outaouais translating into a 2.8% and a 2.7% annual (nominal) compound rate of appreciation in Ottawa-Carleton and the Outaouais respectively. A Chow test (Kmenta 1986: 421) was performed to determine whether a significant difference in price appreciation existed between the two markets. After adjusting for the large sample size in the calculation of the critical test value as directed by Leamer (1978), the null hypothesis, asserting that the set of coefficients of the time dummies are identical between markets, could not be rejected at the 0.05 level of significance. The null hypothesis suggesting that price changes are the same in the two sub-markets could not be rejected even though a large sample was available for a high power test.

What do these findings suggest for homeowners in terms of rates of return? Given that the inflation rate was a little over 4 percent during the study period, the estimated price changes in both sub-regions are largely attributed to inflation. The markets were static. Homeowners that might have been motivated by investment considerations did not try to move and increase their real estate holdings in either sub-market. First-time homebuyers may have increased their activity and prevented the sub-markets from grinding to a halt during the unstable period on both sides of the Ottawa River.

## Conclusions

The belief that homeownership in the Outaouais offered inferior returns to homeowners due to growing pessimism and increasing levels of uncertainty induced by the constitutional crisis is not supported by the available data. The results show that both markets offered comparable rates of appreciation, after market differences and the enduring price differential are accounted for. Arbitrage profits could not be earned by moving between the two markets during the constitutional crisis.

Political pronouncements warned of an increase in the downside risk to homeownership in Quebec and an expectation of a fall in Outaouais house prices. The regression results presented here suggest that the price of comparable dwellings did not fall on the Quebec side of the border and lead us to conclude that the expectations of future rates of return held by homebuyers and investors in the two parts of the metropolitan region were quite uniform and were not affected by the political furore. The effects of a possible separation

may have been capitalized before the study period when the prospect of an independent Quebec first became a reality and are already accounted for by the large price differential but this is beyond the present study. This does not mean that actual separation will not significantly lower Outaouais house prices below their current value. The expectation of future price changes is the product of the effects of likely growth and the probability that the growth occurs. The probability would disappear by the fact of a separation. After separation becomes a certainty, house prices will drop from their current levels to the extent that separation is not recognized in current prices and to the extent that market demand drops below the expected level. If the people buying houses today think that separation would drop house prices by, say 30 percent, but that there is only a 50 percent chance of separation, the current price of houses would be about 15 percent lower than they would be without the possibility of separation. Should separation become certain, and if the expected market impact of a 30 percent drop proves to be true, then prices within a market not jarred by panic would drop by another 15 percent. If buyers and sellers panic and form their expectations of future prices by looking at current trends, then separation will take the proverbial bottom away from the market.

The results of this analysis show no downside adjustment occurring during the 1988-1992 constitutional crisis due either to changes in belief regarding the effects of separation or beliefs regarding the probability of separation. The findings are consistent with the belief that the public debate and controversy over the Canadian constitution did not change expectations of future growth in rents in Quebec and Ontario. The analysis shows the real estate market of the National Capital Region to have remained remarkably sober during these years of turmoil. This finding is surprising given the nature of the political environment at the beginning of the 1990s and it tells us about the way expectations form in apparently stable markets. Our research findings tell of a market ignoring the apparent information that was being generated by the Meech Lake and the referendum failure. Case and Shiller (1988) and Anas and Eum (1986) document the imperfection and inefficiency of single-family house markets and measure the time lags in price adjustments. Muth (1986) shows that adaptive expectations of price changes fit housing market data well while the rational expectation hypothesis does very poorly. People appear to form long-run price expectations by looking at recent trends. Skaburskis (1988) shows that the Vancouver house price bubble of 1981-1982 continued to grow for months after transactions dropped.

In the case of a possible separation of Quebec, the expectations of the likely investment losses were slow to form and appear to have been ignored entirely. Buyers and sellers did not appear to use the information generated by the political process to adjust their long-term outlooks. That there would be costs should separation become a reality is not a challenging question.

The findings of this research are consistent with the view that expectations do not adjust in response to rational assessments of future prospects but change

slowly until a major event forces sellers and buyers to recognize the distant reality. The stability of the 1988-1992 Outaouais market suggests that buyers and sellers of houses, developers and consumers, simply ignored the information contained in the political debate. Self-deception can be of value in our personal lives by extending the time over which we discover and adapt to unpleasant truths. With investments, it's another matter.

### *Appendix: Definition of Variables*

SALEPRICE	Sale price of dwelling in current dollars
#BEDRMS	Number of above-ground bedrooms
#BATHRMS	Number of bathrooms
BEDRMSIZ	Gross square footages of all above-ground bedrooms
AVBEDSIZ	Average bedroom square footage
AGE	Age of dwelling
DWELTYPE	Dwelling type: 1. bungalow, 2. two-storey
LOTSIZE	Area of lot (square feet)
DIST	Distance from CBD (kilometres)
TAXES	Total property tax bill (municipal, regional and school board taxes)
BASEMTO*	Unfinished basement
BASEMT1*	Semi-finished basement
BASEMT2*	Finished basement
PARK1*	Carport
PARK2*	Single attached or detached garage
PARK3*	Double attached or detached garage
PARK4*	No garage or carport
DAYS	Number of days on market
CUO*	Outaouais
SPRING*	April, May or June sale
SUMMER*	July, August or September sale
FALL*	October, November or December sale
SD88*	Sale date occurring in or after 1988
SD89*	Sale date occurring in or after 1989
SD90*	Sale date occurring in or after 1990
SD91*	Sale date occurring in or after 1991
SD92*	Sale date occurring in or after 1992



SD88*CUO*	Outaouais sale occurring in or after 1988
SD89*CUO*	Outaouais sale occurring in or after 1989
SD90*CUO*	Outaouais sale occurring in or after 1990
SD91*CUO*	Outaouais sale occurring in or after 1991
SD92*CUO*	Outaouais sale occurring in or after 1992

\* Indicates categorical variables taking on values of 0 or 1.

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