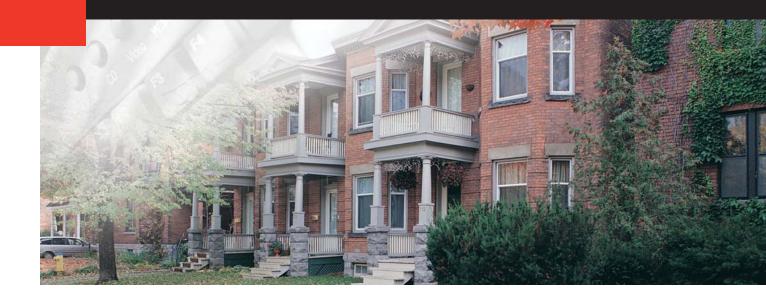# RESEARCH REPORT

Investment in Residential Rental Housing
in Canada: Lessons Learned from Studies
and Research

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INVESTMENT IN RESIDENTIAL RENTAL HOUSING IN CANADA:

LESSONS LEARNED FROM STUDIES AND RESEARCH

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PREAMBLE

This report represents a review of recent literature on the rental housing
market and was prepared to facilitate a better understanding of the factors
which could influence investment in the real estate sector in Canada and to
suggest research avenues. The documentary sources scanned are, first of
all, scientific magazines specialized in the area of housing or urban
economics. Financial and economic magazines of a more general nature were
also consulted as well as research papers recently published in major
Canadian universities. Research on the ECONET base, on the NBER WEB site
and the WEB sites in a number of Canadian universities was also conducted.
On these latter sites, I paid particular attention to the list of recent
publications by a few researchers working with these universities and who
usually deal with the area of housing. Thus I became aware of the
existence of the following two documents by Mr. Steele: "Residential Rents
and Residential Construction", Chapter 8 in M.C Urquhart and
Associates'Gross National Product in Canada, 1870 to 1926: Derivation of
the Estimates (Kingston: McGill-Queen's University Press, 1992) pp.
526-598, and "Inflation, the Tax System, Rents and the Return to Home
Ownership" in Gavin Arbuckle and Henry Bartel (eds.) Readings in Canadian
Real Estate, second edition (Toronto: Captus University Publications, 1992)
pp. 119-133. These are the only pertinent documents whose existence has
been confirmed but which I was unable to consult. Other documents most
certainly exist of which I am unaware.

Although the specific subject matter is residential investment and its role
in an investor's portfolio, it seemed impossible to me to disregard the

determinants inherent in the demand for rental housing. Investors in fact

project this demand to properly identify the market's strengths or

weaknesses. Hence this review also touches on the demand for rental

housing.

TABLE OF CONTENTS

At the present time, the rental real estate market in Canada is characterized in a number of regions in the country by low rents and an exceptionally low level of housing starts. This spells out "excess supply". Certain changes made recently in the economic and fiscal environment can explain the appearance of this excess supply of rental units. Four points come to mind immediately as being most important. First of all, the economic situation in Canada has deteriorated substantially since 1990. Secondly, in 1992, the capital gains tax exemption was eliminated as pertains to gains made in real estate.[1] As the taxable portion of capital gains had been increased from 1/2 to 2/3 in 1988 and further to 3/4 in 1990, the complete elimination of the capital gains exemption meant that the effective tax rate on capital gains is now higher than it was before the initial exemption was introduced in 1985. The third point is the low interest rates that have prevailed since 1991 which, together with the very sluggish real estate market, virtually preclude any hope for capital gains in this sector. Lastly, age structure changes, in particular, the decline in the 19-34 year old category, may also contribute to explaining the decline in the rental housing sector.

Investments are made in the residential rental sector for two major reasons. The first is expectations for a high return rate. A related reason is that residential real estate has a good risk profile, i.e., low risk and a diversification effect.[1] It is the portfolio approach which makes it possible to simultaneously capture both dimensions of an investment decision. Section 2 reviews a few studies applied to this real

estate approach before presenting some current measures taken by a few institutional investors.

The expected return for residential rental real estate has already been studied, moreover, especially from the cost of capital angle. Section 3 briefly presents the housing market model. The emphasis is put initially on the link between the rent, the asset price and the construction cost. Here, the crucial importance of the cost of capital on the investments is highlighted, with investments representing the bridge between the short and long term adjustments. This makes it possible subsequently to explain how the inflation rate, real interest rates and taxation influence the cost of capital. This section is applied directly in Section 4 where the emphasis is put, first of all, on legislative and cyclical economic changes which have caused the cost of capital to fluctuate in Canada. Then, there is a description of the Tax Reform Act (TRA) on 1986 in the United States and certain articles analysing its impact on the rental housing market. This makes it possible to weigh the merits of the approaches which could be applied in Canada. As for the fifth section, it focuses on two, more specific questions, i.e., the market's dynamic adjustment and demographic shocks. Dynamic adjustment is important for two reasons. It is the benchmark for estimating the sensitivity of investment to unbalanced situations. This is also the adjustment which makes it possible to estimate the empirical impact of various factors which have modified the rental housing market. Section 6 concludes this document with recommendations on research orientations to be pushed.

2. Real Estate in an Investor's Portfolio

2.1 Measuring the Return on Real Estate

Gyourko and Keim's study (1992) presents a good overview of the empirical problems to be faced to be in a position to accurately measure the return on real estate and studies how stock exchange data can compensate for deficiencies in other return measurements. Determining the real estate return with proper accuracy is far from easy as the volume of properties changing hands is but a small fraction of the housing stock. If the properties changing hands are not a representative example of the housing stock and if there are a few extraordinary transactions (due, in particular, to financial distress), the transaction prices do not reflect just appraisals of the value of the housing stock. Determining an indicator for real estate return is thus not an easy task. This is illustrated, for example, in the behaviour of Russell-NCREIF Property Index[3], an appraised value which presents such a small degree of volatility in relation to its average high return that the indicator becomes practically implausible. Data from Equity Real Estate Investment Trust, called REIT) are another measurement of real estate return. The "trust" status makes it possible for these corporations to avoid the tax laws applying to companies with the return being distributed directly to the investors in the fund.

These data are widely used by financial analysts but are viewed with suspicion in real estate circles as they behave more like stock exchange assets than real estate assets. In spite of everything, the article re-examines the stock exchange returns for the REITs and then compares this with the returns using the Russell-NCREIF indicator and with the price of

existing houses to determine the quality of these stock exchange data. The main points here are the correlations at different time lag to establish the advance for stock exchange returns.

On a descriptive level REIT has a contemporary correlation of only 0.10 with the Russell-NCREIF indicator whereas its correlation is 0.41 with the house price variation and 0.65 with the S&P500. In comparison, the Russell-NCREIF indicator has a contemporary correlation of only 0.16 with the house price variation and -0.04 with the S&P500. This low contemporary correlation with the Russell-NCREIR indicator is explained by the fact that this indicator is estimated and the results are not often reviewed. Tests show that this indicator can be forecasted statistically by the house price and by the REIR indicator and this is particularly true in the fourth quarter lag. This occurs because the Russell-NCREIF indicator is, in fact, an estimate of annual return. Finally, the authors use other stock exchange information, in particular, the price of construction and real estate development companies' shares, to estimate the return for the real estate market. The main difference to be pointed out is that the REIT indicator has a much lower market bêta than for construction companies. This is explained by the fact that the REIT indicator is representative of the real estate asset stock whereas the indicators for construction and development companies are sensitive mainly to the flux of real estate investment which is much more volatile.

In conclusion, the REIT indicator seems to be a useful source of information on real estate risk and return as this indicator is the precursor of other real estate indicators. Moreover, it seems to be

representative of the stock of real estate properties. To more accurately
define the contribution by real estate to portfolio return and risk, REIT
appears to be a good candidate.

2.2 Effects of Real Estate Diversification

Grauer and Hakansson (1995) study the effect of real estate on portfolio
return and risk. To do this, a comparison is made between bond and share
portfolio return and risk, with and without real estate. Real estate is
divided into three categories: residential, agricultural and commercial.
The impact of residential real estate diversification is estimated with
returns generated by a dynamic investment model in discretionary time. The
model is calibrated on returns realized in the United States and in the
world between 1955 and 1988. Domestic U.S., as well as international
portfolios are analysed and financial leveraging is allowed.

The results presented are average returns with typical spreads for an
8-year investment horizon. Empirically, real estate appears as a low-risk
investment. During the period 1955 to 1988, the average residential real
estate return in the U.S. was 8.1% and the typical spread was only 3.4%.[4]
The average return figures for long term U.S. bonds during the same period,
for comparison purposes, was 4.9% with a typical spread of 9.6%. The
figures for stocks are 10.4% and 15.3% respectively. In spite of its
attractive risk and return figures, adding real estate to portfolios does
not have an evident effect on return if an equally weighted hands off
strategy is adopted. This conclusion applies equally to domestic
portfolios and to internationally diversified portfolios. However, the

gain obtained by adding real estate to U.S. portfolios is rather large if investor follows a hands on approach aimed at protection against risk. Applying the same strategy to a internationally diversified, bond and stock portfolio, however, the addition of real estate does not make it possible to significantly reduce the risk. In conclusion, the authors wonder whether these properties will remain valuable for the nineties. In fact, during the seventies, the stock market was not very dynamic whereas real estate hit some interesting peaks between 1970 and 1990. The current decade seems to be following a different scenario.

Hartzell, Hekman and Miles (1987) are also interested in the effects of real estate diversification but strive, in particular, to verify the ability of real estate to protect investors against expected and unexpected inflation. This issue is all the more pertinent in that the stock market return reacts negatively to inflation. A negative correlation can thus be anticipated between the stock market return and the real estate return. The data for measuring real estate return are generated by an internal real estate fund in a large U.S. bank. Returns are estimated quarterly based on transaction prices. Property values are estimated quarterly by an appraiser from outside the bank. The estimate period covers 40 quarters from 1973 to 1983.

The authors then develop a series on the anticipated inflation rate and on the real interest rate and go on to estimate the return for a portfolio including real estate in addition to Treasury Board bonds. It is found that the return on a diversified portfolio provides complete immunization against anticipated inflation and reduces by 20% the risk associated with

unanticipated inflation. An attempt is then made to verify which type of
real estate, industrial, office building or commercial) offers the best
protection. The industrial and office building sectors provide complete
protection against anticipated and unanticipated inflation. This result is
attributed to the fact the rental contracts are short and often contain
clauses linking the rent to company sales. In conclusion, the authors
point out the difficulties involved in accurately measuring the return on
real estate investments. "...the use of appraised value and difficulties
with the return calculation continue to be troubling issues." (Hartzell,
Hekman and Miles, 1987, p. 635). Moreover, it is to be regretted that the
study was not conducted also for residential real estate. At the very
most, one can presume that, due to generalization of 1-year rental
contracts, residential real estate should have inherent protection against
a good portion of unanticipated inflation.

2.3 Review of a Few Institutional Stakeholders

To get a better idea of the perception of institutional stakeholders on the
role of real estate, I read a sectorial study on the future of real estate
conducted in October by Shelly Cooper, Chief Economist at Nesbitt Burns.
The crucial point made in her study is that due to our aging population and
to the decline in the number of young households, the resale market is
likely to remain saturated for many years to come. The problem will become
particularly serious when most of the baby boomers reach the age where they
decide to sell their houses. On the other hand, the stock market should
continue to be very vigorous over the next 15 to 20 years. This market
will, in fact, be stimulated by the savings accumulated by the baby boomers

who, once their mortgages are paid off will then have to save up for

retirement and will have to invest their money somewhere. We should point

out that these forecasts by Cooper reiterate, for the most part, the

theoretical conclusions drawn by Manchester (1989).

I consulted two mutual fund managers who offered real estate funds, i.e.,

Groupe Investors and Trust Royal.[5] Trust Royal had opened its real estate

fund in 1991 with $20 million which was invested in commercial real estate

and office buildings. This fund was closed in January 1996 and is

currently being liquidated. Lack of interest by clients together with poor

performances by the fund led to this decision. After 5 years in operation,

the value of the fund had only managed to increase from $20 million to $21

million, i.e., an average gain of only 1% per year. As for Groupe

Investors, for over ten years now it has been offering a real estate fund

targeting commercial and office buildings. This fund's performance has

also been poor as it has has just barely been able to avoid losses.[6] In

both these cases, it was indicated to me that the regulations governing

real estate funds made it possible to make investments in residential real

estate. I was not able, however, to find our exactly why the residential

real estate component had been neglected.

Moreover, I had the opportunity to meet with Mr. Michel Nadeau, Assistant

General Manager and First Vice-President of the "Grands Marchés" at the

Caisse de dépôt et de placement du Québec. I asked him whether a sectorial

analysis of residential real estate had been conducted by the Caisse de

dépôt. The reply was no. I then asked him what the current investment

strategy was for this sector. The Caisse de dépôt is not investing

anything at all in residential real estate in Canada at the present time as the prices are too high. The rationale for this is as follows.

At this point in time, investors are looking for a return in real estate which, excluding capital gains, is at least equal to the return on government bonds, i.e., 8%. In Canada, at the present time, it is difficult to show returns of over 4% in residential real estate. Consequently, real estate prices should continue to decline. The Caisse has found a few investment opportunities in the residential sector in the U.S. because the prices have gone down more there than in Canada but, he explained to me, even in the U.S. these opportunities are rare. In Canada, the commercial and office building sectors are the only ones still offering any investment opportunity at the present time.

In this sector, the conclusion is that no study using Canadian data seems to have to analysed the effect of real estate diversification in general without even talking about the residential component in particular. In the U.S., the potential contribution of real estate to risk reduction could be termed not insignificant if these investments are limited solely to domestic assets. On the other hand, this contribution seems to be much less significant in terms of diversified international portfolios. The studies mention the problem, however, of obtaining reliable data on real estate returns which forces the authors to fall back on stock market indicators or estimated returns. Finally, a brief overview of a few current investors shows total disinterest in Canadian real estate due to the sector's very low return.

3. Rental Market Investment and Return: The Theory

3.1 Cost of Assets, Rents and Short and Long Term Adjustments

Rental housing is a partially reproducible asset[7] which provides services to resident households. There are two balancing relations which come into play on this asset. On a free market, the rent R, is set at a level which makes it possible to balance the supply of units with the demand. As for the asset price P, it is set at a level providing an anticipated return on the asset to the owner of building comparable to the return rate prevalent on the market for investments with a similar risk level.

On the short term, the rent is determined by the demand and the supply of rental units. Demand depends on the price of the residential property, on household income, on the number of households and on the demographic mix. In practice, it is observed that households tend to become homeowners at an average age which varies in the various urban centres from 28 to 35 years old and tend to remain homeowners until retirement. It is also observed that family households are more apt to be homeowners than non-family households. The supply of housing represents, on the short term, a constant equal to the housing stock. The construction pace for new units does not, in fact, make it possible to modify the total housing stock in any year by more than 2% to 3% so that the impact of new construction on supply is negligible on the short term. It should be noticed here that the housing asset price is not a variable which affects the rent on the short term.

Housing asset price must be such that it generates a competitive rate of return. Rent is the only source of current asset revenue. A potential buyer of a property must project, over the property's useful life, rent and vacancy rates. Similarly, he must project how the various expenses will evolve: maintenance, local improvement taxes, public services and depreciation. This will make it possible for him to anticipate net revenue for each future period. Lastly, the investor anticipates the price at which he could sell the property. The price is then equal to the current value, discounted using the interest rates for each future period, of the net revenue and the sale price.

The asset value thus calculated is not, as a general rule, equal, on the short term, unless by coincidence, to the reproduction cost RC. It is supposed, in general, that the spread between P, and PC which affects construction activity. The following rental residential real estate investment function can thus be enunciated: (........) with f> 0 and f(1)=0 This equation indicates that the housing stock increases when the asset price is greater than the construction cost, decreases if it is below the latter cost and remains the same if the costs are equal.

The investment function creates the link between the short and long term adjustments. If, during a given period, given the interest rates and other expenses, the rent and the anticipated sale price are sufficiently high, the asset price will be more than the reproduction cost. A high price will stimulate the production of new units, gradually increasing the supply of housing. Downward pressure will thus be put on rents which will have the effect of reducing the asset price of the units. The process continues

until a point is reached where the asset price coincides with the unit reproduction cost. This is the sign that the market has reached a point of long term equilibrium.

Whereas the short term supply is virtually fixed, the long term supply must be anticipated in a practically horizontal manner. In fact, it is the evolution of long term average minimum costs which determine whether long term supply is positive or nil. Two elements determine this slope, i.e., economies of to scale and the presence of fixed factors. It appears difficult to conceive of the presence of economies of scale in the production of housing, thereby rendering plausible a supply over a long horizontal period. On the other hand, the presence of land as a fixed factor makes a positive long term link between housing demand and the cost of producing each unit probable. In low density markets, far from large centres, in particular, the price of land represents a small fraction of the total cost which renders the effect of land price increases negligible. This effect is significant, however, in higher density areas where available space is becoming increasingly rare and where land price is the major component of house prices. The Vancouver market provides an example of such markets. Depending on the type of market, the long term impact of an increase in the demand for housing on the asset price and on rent is negligible or positive. Empirically, Follain (1979) cannot reject the perfectly horizontal long term supply in the United States.

How much variation is necessary in the capital stock to allow a rent adjustment sufficient to restore long term balance when a change occurs in the cost of capital? To set a maximum limit, suppose that long term rental

housing supply is perfectly elastic. The percentage variation in the capital stock is thus approximately equal to the percentage change in the rent divided by price elasticity of the demand for rental units.

3.2 Taxation, Inflation and Cost of Using Capital

In a world where capital revenue would not be taxed at all, the gross return rate which rental housing should produce, after taking into account the physical depreciation of the capital, would simply be the real interest rate. Taxing capital revenue changes the scenario in a number of ways. As investment revenue is usually taxed, the net after tax return on residential real estate must be comparable with the after tax return on competitive investments. In real estate, certain particular provisions apply which mean that to equalize the after tax return rate with other classes of investment, investors will require a lower before tax return than if there were no tax on any of the assets. On the long term, this increases the stock of rental units and lowers the rents. This is looked on as an implicit grant to rental housing. This implicit grant exists for two reasons: a capital cost deduction and a lower effective capital gains tax. A description of how rental properties are taxed shows the rationale of this.

Revenue from rental units is taxable whereas nominal mortgage interest, various maintenance expenses and local taxes are deductible. As the other investments are also, as a rule, taxable, there is no tax benefit likely to produce an implicit grant for rental housing.

The owner of a rental structure may claim a capital cost deduction, the statutory rate for which is not directly linked to the real rate of property depreciation. This statutory rate applies initially on the acquisition cost and then, once the amortization has started on the capital, on the unamortized portion of the capital (NPOC). Since real depreciation is usually less than the capital cost deduction, when the property is disposed of, there is usually a positive spread between the economic value of the structure (its sale price) and the NPOC. Two situations are then possible, depending on whether the building's sale price is lower or higher than the purchase price. If lower, the owner must add to his taxable revenue for the year during which the property is sold, the difference between the sale price and the NPOC. On the other hand, he can claim a capital loss equal to the difference between the sale and the purchase prices. In the other case, where the sale price is higher than the purchase price, the difference between the purchase price and the NPOC will be the subject of a tax recovery, taxed as a regular revenue, whereas the difference between the sale price and the purchase price will be taxed as a capital gain. The amount of the capital cost deduction in excess of the structure's real depreciation may be seen as an interest free loan from the government to the owner of the building. This represents a tax benefit for the person owning property to which an investor holding securities is not entitled. The value of this benefit is not exactly easy to establish, however. It increases as the ownership period extends since the recovery is made at the moment of sale. Moreover, the current value of this benefit is greater when interest rates are higher. Finally, as the capital cost deduction depends on the purchase cost of the structure, the real value of the capital cost deduction is negatively linked to the inflation rate.

Inflation remains an advantage, in general, nevertheless, for investors in rental real estate. This occurs because nominal interest rates are completely deductible from the owner's current property revenue whereas only a fraction of the capital gains is taxed when the property is sold. To understand how this is an advantage, take the example of a structure with a total value of $100,000 the price of which increases with inflation. Suppose, in addition, that the real interest rate is 4% and that the inflation rate, initially zero, increases to 5%.[9] On the long term, the increase in the inflation rate should mean a 5% increase in the nominal interest rates. Annual interest expenses, both on the mortgage as well as on the equity, thus increase by $5,000. Disregarding taxes, there would be no effect whatsoever on inflation on the cost of capital. In fact, the increase in annual interest expenses would be compensated by a $5,000 increase in the value of the property.[10] Factoring taxes into this equation, our conclusions change. To give the reader an illustration, suppose that the owner of the property is taxed as a marginal rate of 50%. As the interest expenses on the mortgage are deductible and as the capital used in other investments would have been taxed, the after tax interest costs increase by only $2,500 yearly. On the other hand, 3/4 of the capital gains are taxable. Suppose, to simplify the situation, that the property is sold at the end of the year, the owner has to add $3,750 to his taxable revenue. With the tax on this being $1,875, the capital gain after taxes is thus $3,125. Consequently, the increase from 0% to 5% in the inflation rate decreased the after tax capital cost by $625, i.e., the difference between the $2,500 increase in net interest expenses and the $3,125 net capital gains. As a percentage of the value of the structure, this represents a reduction in capital cost of 0,625%.[11]

As we explained in section 2.1, a variation in the cost of capital, on the long term, produces a modification in the capital stock sufficient to bring net real estate capital profitability up to where it once more becomes comparable with other investments. In the example, the 5 percentage point increase in the inflation rate increases net profitability by $625. Thus the rent will have to decrease sufficiently so that net profitability once again becomes equal to that of other investments. As rental revenue is taxed at 50%, such an adjustment is completed once the annual rent has decreased by $1,250.[12]

The last point in this section is implicit in the preceding action and must now be rendered explicit. The more a person is highly taxed on the margin, the greater the tax benefits of lower taxes on capital gains and on the amount by which the capital cost deduction is greater than the physical depreciation become. Thus, the most highly taxed people are the ones most willing to pay the most to acquire rental buildings. The pertinent tax rate to calculate the cost of using capital is thus the marginal rate on that portion of revenue in the highest tax bracket.

4. Variations in Cost of Capital: Role of Inflation and Taxation Changes

4.1 Cost of Real Estate Capital in Canada

Despite the crucial role of the cost of capital on investment in rental housing, there have not been a large number of studies on this issue in Canada. And this is not because there has not been any changes in the source of capital cost, on the contrary. In reaction to taxation changes

introduced in the U.S. in the mid-eighties,[13] the marginal tax rates on

the highest revenues in Canada were reduced so that the combined federal

and provincial rates are now in the 50% vicinity. The other most

significant change in the Canadian tax scene is the life-time exemption on

capital gains introduced in 1985. This exemption, which initially was

$20,000, grew to eventually become $100,000. Real estate gains were

excluded from gains covered by the exemption in 1992 and the exemption was

cancelled in 1994, except for farms and small businesses.[14] At the same

time, in 1988, the portion of capital gains taxable was increased from 1/2

to 2/3 and eventually to 3/4 in 1990. Thus, when the life-time exemption

on capital gains was eliminated, the tax rate on these gains was higher

than in 1985.

Moreover, starting in 1990, the macro-economic context in Canada has

changed substantially. The recession was worse in Canada than in the U.S.

and the recovery much less energetic. Only in the west, and especially in

British Columbia, did Canada manage to escape the last recession, welcoming

many more immigrants than usual which served to spur economic development.

One of the consequences of this recession period was a reduction in the

general rate of inflation. What then were the effects of these changes on

the rental market?

Based on capital cost models reflecting the lowest capital gains tax rate,

Fortin (1991) and Steele (1993) share the same view that the tax system has

interacted strongly with inflation in the seventies and eighties to produce

a tax advantage for homeowners and for rental housing. Fortin (1991)

simulates the impact of a certain number of variables on the cost of

capital for homeowner housing and rental housing. These simulations using Canadian data show that when inflation decreases, the cost of capital increases more for rental housing than for homeowner housing. Although a number of investors benefitted in addition from the capital gains exemption, the rapid disappearance of capital gains expectations during this period meant a substantial increase in the cost of capital.[15] Moreover, the simulations show also that high real interest rates make homeowner properties relatively more attractive than rent properties for households who can mortgage their homes a little. Steele (1993) also believes that inflation makes rental properties more attractive. He points out that this effect was particularly evident on the feverish Ontario market in the eighties due to high anticipated capital gains. He uses this context to develop an original analysis of the conversion of condominium stock into rental units. The estimate of the conversion volume is based on the difference between the number of housing starts by housing type and the variation in the number of tenant and homeowner households. The conversion is thus, by definition, the variation in the number of units occupied or rented which cannot be explained by new construction. One of the most important results is the fact that the condo-rental conversion movement was particularly strong in the late eighties whereas the real estate boom was still underway in Canada. A report prepared by Clayton Research, Hurtubise and CicySpaces (1991) also highlights the role that taxation played in the construction of residential rental units at the end of the eighties.

The "Canadian Public Policy Analyse de politiques", in November 1995, published a special edition on the life-time capital gains exemption experience. McKenzie and Thompson (1995) study the impact that this

measure could have on the cost of capital by analysing the daily price fluctuations in company shares when this measure was announced. They base their findings on two separate samples, one made up of all shares for which the total return and the dividends were available and the other made up of companies having both common and preferred shares. The analysis was conducted separately for the various industrial groups. The conclusions would seem to support the idea that the exemption created an abnormally high stock market return in industries with high capital gains. The study reveals that it was in the real estate industry where the abnormal return was the highest. "Globally, this result indicates then that the exemption seems to have reduced the effective tax rate, which should normally produce an increase in investments.[17]

Davies (1995) studies the income tax declarations to determine the parties making capital gains and which took advantage of the capital gains exemption. In 1990, those in the "$50,000 to "100,000" and the "$250,000+" income brackets declared the largest portions of capital gains. Moreover, the portion of taxpayers declaring capital gains increases with income. For incomes under $50,000, the fraction is under 4%. This fraction then increases rapidly to over 31% for those earning $250,000+. Moreover, the largest portion of taxpayers with capital gains (13,4%) and those taking advantage of the exemption are found in the "Investors and Property Owners" group. In addition, 75.5% of all capital gains declared and 75.5% of the exemption granted were to this same category.

Mintz and Wilson (1995) try to estimate the impact of the measure on the capital gains earned and the related tax losses. Studying the impact that

this measure had on the public debt is not part of our topic. It suffices, for our purposes, to notice that they found that the measure had been an incentive to make latent capital gains and that the cumulative value of the gains declared between 1985 and 1991 was $72.76 G, of which $36.22 G was in real estate. As for the tax "expense", i.e., the loss in income tax revenue generated by this measure, this amounted to $9.34 G. Generally then, we can interpret from this figure that the capital cost deduction reduced the tax revenue collected from real estate owners by $4.65 G over 7 years, i.e., a decline in expenses for real estate owners of approximately $664 million per year. In the absence of more accurate data, it is not possible to extrapolate the portion of this which involved residential real estate. It would seem, however, that the exemption was an incentive in real estate. In the absence of empirical data on this precise topic, we cannot, however, quantify the impact on housing starts.

To complete this overview of Canadian studies on the rental housing market, we should point out that by Miron (1995) which presents an informative historical overview of the Canadian rental housing situation since 1945. The study is for the most part descriptive and reproduces, in a synthetic form, a number of major housing market indicators and household tenure types by age and type of household. This study also contains a review of government initiatives which could influence rental housing.

Poterba (1990) compares the evolution of rental housing construction in Canada and in the U.S. He justifies the pertinence of this comparison by the fact that Canada experienced macro-economic economic conditions similar to those in the U.S. without being affected by the same tax changes. He

finds a significant decline in residential construction activity at the end

of the eighties in the U.S. He does not seem to have considered the

capital gains exemption measure introduced in Canada as a possible

explanation of the different trends in these two countries.

4.2 Tax Reform Act in the U.S.: Facts and Probable Consequences

Poterba's study introduces the reader to the large volume of U.S.

literature which for ten years has dissected the impact of the Tax Reform

Act (TRA) of 1986, the most important change in U.S. tax law in at least

one generation. The TRA of 1986 introduced numerous major changes in the

U.S. taxation system. As for company income tax, the main changes

pertinent to our paper are the 46% decrease in the statutory tax rate on

profits and the elimination of investment tax credits. The capital cost

deduction was also modified by increasing the useful life of residential

properties from 15 to 27.5 years and by imposing a linear depreciation

method as opposed to the constant rate regressive balance method. These

changes greatly reduced the tax benefits associated with the capital cost

reduction.[18] As for personal income tax, the main point to retain is that

the capital gains exemption was abolished, that losses on properties were

no longer deductible from other categories of revenue and that the maximum

tax rate margins were substantially reduced. As was shown in the preceding

section, these changes increase the cost of rental housing capital.

However, if general direction of the effect seems to be known, the extent

of the impact has yet to be identified and there is also the need to

distinguish between the effect of increasing the capital gains tax rate and

the extension of the tax amortization period and, finally, the decrease in

the marginal income tax rates for individuals. This represents the most difficult task.

The methodology most commonly used to simulate the impact of the reform on the cost of capital is the partial equilibrium analysis, often referred to as project analysis. Such a model presupposes an exogenous real before tax interest rate and analyses how the cost of capital is modified by the tax changes. To do so, it is assumed that a representative investor exists in the rental real estate area, usually the party with the highest marginal tax rate. Subsequently, the effect of changes in the cost of capital are broken down among the asset price and the rent for different time scenarios in line with presumed elasticity of supply and demand. Handershott and Ling (1984), in particular, used such an approach as well as Rosen (1989). She anticipates rather dramatic consequences of the TRA on the rental housing market. For example, in the case where rents would not adjust, the asset price would have to decrease by 15% to re-establish an acceptable return rate. On the long term, the asset price should rise again and rents should increase by nearly 20%.

Moreover, Ling (1992) notes that although the cost of capital depends on the general inflation rate, as it influences the nominal interest rate, it is the depreciation rate of the price of housing which determines the extent of capital gains. This latter variable is determined, in part, by national inflation but also by local conditions. It thus studies the interaction of tax changes with local housing market conditions. In particular, it is interested in the interaction between variations in the asset price, changes in capital gains tax rates, the growth rate for rental

housing demand and the degree of imbalance between supply and demand as measured by the spread between the current rent and the balanced market rent on the long term. The capital cost model predicts that the sensitivity of the housing asset price to capital gains tax rates rises with the excess supply. Moreover, this price sensitivity is greater in local markets with low demand growth rates. It is interesting to note that the Clayton Research, Hurtibise and Cicy Spaces (1991) report finds that the impact of taxation on rental housing construction was very variable in the various urban centres in the country, an observation which supports Ling's local approach.

4.3 Models of Partial or General Equilibrium?

The partial equilibrium approach likely overestimates the negative impact of the TRA on the housing market. In fact, the hypothesis that the real interest rate remained insensitive to tax changes is not very likely for the United States. In a context where the tax rate is lowered on all revenue, including investment revenue, we should really expect a decline in before tax interest rates. In fact, by reducing the tax rate on all investment revenue, the reform should increase global savings in the economy. To capture this effect, two avenues are open. One possibility, adopted by Follain, Hendershott and Ling (1987), is to assume an adhoc decrease of 100 basis points in the real before tax interest rate. Such a decline accounts for nearly half of the increase in capital cost directly produced by the TRA tax changes. In such a scenario, the asset price of rental units thus decreases by only 5% whereas the increase in long term rents is only 10%. The second way of capturing the reaction of interest

rates to fiscal changes is to adopt a general equilibrium approach. This is the choice made by Berkovec and Fullerton (1992) and by Henderson and Won (1992). Such models, as we shall see, have a number of strengths but also some weaknesses.

The general equilibrium models are, at first glance, much more rich than their partial counterparts. In fact, these models capture the interactions between the decisions of the various agents. For example, subsequent to the TRA in 1986, certain households change their minds about moving up to homeownership, and this influenced the demand for housing. In addition, these models make it possible to analyse portfolio decisions as well as variations in the cost of capital.

Calibration is a crucial stage in these models. The Berkovec and Fullerton model (1992) is calibrated on data generated by "Survey of Consumer Finance - 1983". It predicts that the cost of rental housing capital would not increase greatly following the reform as the decrease in the marginal tax rate on the higher revenues is offset by a decline in the real before tax interest rate of 5% to 3.7%. In addition, the model predicts a decline of only 3% in the rental housing stock. This small decrease camouflages a wider range of individual reactions. Whereas the more well heeled households reduce their residential holdings by 34%, the other groups of households increase their assets in this sector. The lesson to be learned here is that the models of partial equilibrium, by classing the marginal investor only in the higher incomes levels, tends to highly overestimate the negative impact of the 1986 reform on rental housing.

The Hendershott and Won model analyses the same decisions as did Berkovec and Fullerton. This is an adaptation of the model developed initially by Galper, Lucke and Toder (1987, 1988) to introduce the risk of investing in housing and to endogenize the type of tenure decision. The calibration is based on the Treasury Department 1983 file on households. The model is used to simulate the impact of the 1986 reform. As in the Berkovec and Fullerton model, the first impact to identify is the decrease in the before tax interest rates. However, the decline is smaller in Hendershott and Won's model, i.e., approximately 1%. These impacts are slightly reduced if we assume a correlation of 0.5 between the return on the units occupied by the owner and rental units. When the model takes into consideration that the U.S. economy is an open one, the results change substantially. The authors suppose that, as the U.S. represents approximately 25% of the world economy, an increase in U.S. savings which would have brought interest rates in closed economies down by 1%, would only bring interest rates down 0.25% in an open economy. The decline in the before tax interest rate is thus four times less and the after tax cost of rental housing capital is thus increased significantly.

The general equilibrium model thus eventually produces a conclusion similar to that produced by the partial equilibrium model. Because the economy is open, the 1986 reform caused a substantial increase in the cost of rental housing capital for investors at the top of the income scale. This should reduce residential construction activity. The only element which could invalidate this conclusion would be if, in a closed economy, investors with lower incomes invested in this area.

In spite of their methodological superiority, it is not clear that general

equilibrium studies are preferable for practical purposes. First of all,

due to the exogenous of the real interest rates in Canada, there is no need

to build models for the possible reactions of real before tax interest rate

to changes in the rate of saving. Here the main reason for using the

general equilibrium model in the analysis of the fiscal changes on rental

housing is lost. It remains a pertinent point in analysing these models,

that of showing that the withdrawal of the higher income groups of the

population from the rental market is offset by increased investments from

households with more modest incomes. This is an important conclusion which

a partial equilibrium model in not able to capture. However, general

equilibrium models are not without weaknesses. Thus, they are very

sensitive to calibration. Comparing Berkovec and Fullerton (1992) with

Henderson and Won (1992), two very thorough studies in terms of methodology

or even a comparison of the results from the same model using different

hypotheses as to the correlation of the different assets or the degree of

"openness" of the economy, will prove sufficient to see this. Moreover,

due to the number of parametres to be estimated, it is necessary to reduce

the number of industry-specific characteristics. In so doing we lose

certain data which the partial equilibrium models capture better. Follain,

Herdershott and Ling (1987) summarized this issue as follows:

"Common practice these days is to criticize the partial equilibrium

model in favor of a general equilibrium (GE) analysis. This practice

is badly misfocused. To see this, consider the gains and losses

associated with the use of a GE model that are relevant to the impact

of tax reform on rents. The gains from a GE model include the change

in the level of debt rates and possible other market parameters, such

as the market risk premium affecting the required return on equity.

the losses are the failure to capture the impacts of industry specific

tax changes Not only is the latter list (of the losses) longer than

the former, but, more importantly, GE responses can be easily factored

into the partial analysis model: if GE considerations led one to think

interest rates will decline by a percentage point, a one point decline

would be used in the calculation. The practical choice, then, is

whether to use the corrected partial analysis model with GE responses

incorporated or to use GE models that ignore much more interesting

nitty gritty. In our view, the former will produce better estimates

of tax reform's impact than the latter." (Follain, Herdershorr and

Ling - 1987, p. 369).

5. Adjustment Dynamics and Demographic Shocks

5.1 Dynamic Adjustment of Housing Market

Studies by Follain, Leavens and Velz (1993) and by Poterba (1992) present

interesting overviews of empirical facts as well as studies on the impact

of the TRA on U.S. rental housing. Here, among other facts, we find

highlighted that the construction activity for multiples was low at the end

of the eighties and in the early nineties. This is compatible with the

predictable effects of the 1986 TRA, but the Savings and Loans catastrophe

and the none too positive economic conditions which prevailed may also have

contributed to this deterioration in construction activity. As indicated

by Peterba:

"The early evidence on rental construction since 1986 supports the
view that investing in rental housing has become less attractive.
Multifamily housing starts, which ranged between 300,000 - 400,000
units annually prior to the 1981 reform and peaked at 515,000 units in
1985, fell sharply after the 1986 Tax Reform Act. Starts were 241,000
in 1990 and only 140,000 in 1991. Despite decline in rental
construction, real rents have increased by less than 2 percent since
1986. This increase is much smaller than the 2 percent/year increase
in the four years leading up to the 1986 reform, when rental
construction boomed. This slow increase is widely attributed to the
lagged effects of substantial overbuilding and the weak national
economy of the last two years. The rental vacancy rate for apartment
buildings with more than five units, which was 8.8% in 1985 and 10.4%
in 1986, rose to 11.4% in 1988 and was over 10% in 1991. Of course,
it is somewhat inconsistent to cite the decline in new construction as
evidence for the effects of tax policy, while attributing the slow
rise in rents to other factors which could also discourage
construction. The difficult in identifying the partial effect of the
Tax Reform Act on rental construction highlights the absence of an
empirical model for the dynamics of the rental housing market. Such a
model is crucial to assess how tax changes affect rents, which in turn
affect rental housing demand and, ultimately, tenure choice"(Peterba -
1992; p. 241).

The identification of the different effects is particularly complex as the
1986 TRA impacts demand as well as the supply of rental housing. In fact,
the decline in the marginal tax rate on individual income tax, combined

with lower inflation, made homeownership much less attractive.[19] That

should push up the demand for rental housing. The fact is that various

observations on the rental market are contradictory. If reform had been

the only factor, we should have observed a sudden decline in the price of

housing assets in 1986 and in residential construction. A progressive

lowering of the vacancy rates together with a steady increase in rents

should also have occurred. The fact is that only residential construction

behaved as projected. The observations on the asset price are very partial

but would, nevertheless, lead one to believe that there has been a slight

gradual decline in price (Follain, Leavers and Velz, p. 283). However,

starting in 1987, an increase in vacancy rates and decline in rents was

noticed. In fact, all these facts are more coherent with a decline in

demand for rental housing than with a drop in supply or even with a

simultaneous decline of both supply and demand of housing.

The model in Section 2 indicates that the housing market's short term

adjustment is very different than its long term counterpart. Poterba's

quotation clearly highlights the necessity of taking into consideration the

adjustment dynamics, the passage from short to long term, if we want to

properly estimate the impact of various changes on investment in rental

housing. Certain studies have recently dealt with modelizing the dynamics

involved here.

On a theoretical level, Alm and Follain's article (1994) develops a model

combining the discounted cash flow approach with a structural model of the

rental market including four dynamic difference equations. The model

accommodates different hypotheses as to anticipation or equilibrium and

produces very different solutions. This article thus shows the difficulty

of predicting the reactions of real estate prices and investments

subsequent to a change in the tax system or to other disruptions. IN fact,

this reaction depends heavily on the hypotheses as to the rapidly with

which rent adjust and as to the formation of anticipations.

On an empirical level, DiPasquale and Wheaton's article (1992) represents

an initial reply to the questions raised by Alm and Follain. First of all,

they provide us with an overview of studies analysing the impact of the

1986 TRA on the rental housing market to show the absence of studies

dealing specifically with adjustment dynamics. Subsequently, they estimate

a rent adjustment function in terms of vacancy rates and inflation. In

principle, the vacancy rate should influence the real rents and inflation

should not. On the contrary, we find that inflation reduces the real rent

value. This could reflect the fact that an increase in inflation lowers

the cost of owner-occupied housing, which reduces the demand for rental

housing. At the same time, the cost of using rental housing capital

decreases, which pushes up the supply. An equation estimated for

residential construction shows that the latter reacts positively to rent

whereas the cost of capital, vacancy rate and surplus of asset price over

reconstruction cost, all three, reduce construction activity. It is pointed

out that the elasticity of new construction to the cost of capital is very

pronounced. A permanent 1% increase in the cost of capital would reduce

construction activity by 14%, which suggests a vigorous reaction by supply

both to rent and to the cost of capital which converts it into asset price.

Finally, the housing demand equation indicates a positive effect of the

number of households, income[20], and a negative effect on rent and on the

price of homeownership. The rental housing demand elasticity measured in relation to rent is -0.60, a value similar to those found in other studies. A 1% increase in the cost of homeownership increases the rental housing demand by 0.9%.

The last analysis consists in simulating the effects of the TRA. It is found that for the years 1987 and 1988, if the reform had not been implemented, the number of multiple housing starts would have bee 50% to 75% higher that the levels observed. In terms of 1999, it is projected that the TRA will reduce housing starts by under 10%. Cumulative construction data over 13 years, from 1986 to 1999 are 20% below what they would have been without the TRA, with an impact on the housing stock of approximately 4%. The impact on rents is initially negligible but subsequently increases substantially to 8% in 1999. We should note, in conclusion, that the dynamics estimated by DiPasquale and Wheaton are stable and monotonous. They projects a substantial adjustment in construction which no doubt explains the convergence.

Hendershott (1996) estimates another element in the dynamics involved, rents. He attempts to improve the traditional equation in which rent is dependent on the spread between the actual vacancy rate and the natural vacancy rate. Such an adjustment equation poses three problems: 1. it predicts the variation in rent but does not suggest any stationary value to rent; 2. it suggests major overshooting on the short term; 3. it cannot be applied simultaneously for rental contracts with varying terms.[21]. To get around these difficulties, he estimates a more general equation in which rent variation depends not only on the spread between the actual vacancy

rate and the natural vacancy rate but also on the spread between the rent and its natural level. With such an equation, the vacancy rate shows much less overshooting as the anticipation of a possible return to an equilibrium is a factor which brings rents up even before the vacancy rate reaches its natural level.

Such an equation was estimated for the office building real estate market in Sydney, Australia for the period 1970-1992. This market was characterized by the sudden appearance between 1989 and 1992 of a major imbalance with the vacancy rate soaring from 3% to 23%. The data required for estimate purposes are: anticipated rent profile, required rate of return, operating expenses rate, depreciation rate, natural vacancy rate profile and future vacancy rate profile as anticipated by market stakeholders. The equation as estimated has a R( ) of 0.65, more than twice that in the equation which does not include the actual rent/natural level spread. After having been calibrated, the equation makes it possible to make flow forecasts. The calibration is bases on a relation V RC = 0.435 in 1992. According to the model, the rents will continue to decline until 1998 due to the large surplus of supply at the present time. As for the V RC relation, it continues to slip until 1996 to approx. 0.20 before it starts rising again. We should note that real estate prices are increasing in 1996 despite the fact that the cost of rent continues to fall because the period where rental prices will start to rise again is approaching. The shift back to a balanced market will occur gradually until 2003.

5.2   Impact of Demographic Shocks

A number of authors have studied the possibility of a link between demography and the demand for housing. Mankiw and Weil (1989) report a link between age structure and house prices in the United States. The appreciation in the real house prices in the seventies is chalked up mainly to the massive arrival of the babyboomers all at household forming ages. Engelhart and Poterba (1991) and Holland (1991) disagree with Mankiw and Weil's conclusion. They see the main cause of major price fluctuations as being macro-economic conditions or legislative changes. Holland underscores that since demographic changes are predictable, they should particularly influence the investments made in the sector. As for the prices, they should be more sensitive to unpredictable changes and especially to inflation and to changes in taxation. Moreover, Poterba (1991) shows that the real price of housing in Canada is different from that observed in the U.S. in spite of the fact that the demographic changes were similar in both countries.. This casts doubt on the demographic explanation for changes in house prices.

The link between the homeownership rate and demography has not been studied as much. In the U.S., Rosen and Rosen (1980) and Kent (1984) analysed, using aggregated time series, the empirical determinants of the homeownership rate. The explanatory variables are real revenue, the determinants of the relative price of rental housing and of homeownership, i.e., interest rate, inflation rate, investment revenue tax rate and finally, demography. A similar study by Benda (1990)was carried out for Canada. The demographic variable used by Rosen and Rosen is the proportion of people 35 to 64 years old in relation to the over 15 population. Kent uses, in addition, the proportion of under 18 to capture the effect of

children on the homeownership rate. As for Benda, he uses two demographic variables simultaneously: first of all, the number of people under 19 yrs. old divided by the number of households and, secondly, the number of people in the 30 - 54 yr. age category divided by the number of people over 15 yrs. old.[22] The empirical results of the demographic variables on the homeownership rate are not conclusive. Whereas Kent finds an impact produced by demographic variables in the U.S., Rosen and Rosen find nothing. As for Benda, he found a positive and very significant impact by the 35-64 yr. old group on homeownership. She finds a negative impact, however, as for the number of children per household on homeownership rate, an observation that runs counter to those of Steel (1979),

Two key elements must be retained from this section. To estimate the impact of the various changes likely to impact the equilibrium on the housing market, a model is necessary which reflects the adjustment dynamics. Moreover, the impact of demographic modifications on housing demand is far from conclusive.

6. Conclusion and Recommendations

The first reason for the study was to analyse the role played by rental real estate in investors' portfolios. This review of the literature has made it possible to highlight, first of all, the lack of reliable data on real estate return. Without this data, the empirical properties of this type of investment and, in particular, its diversification effect, cannot be determined accurately. The absence of Canadian studies on these

properties is also noted. Grauer and Hakansson (1995) provide an interesting research methodology. As pointed out by Gyourko and Keim, however, the excessively low volatility of estimated real estate return rates makes the validity of these returns suspicious. Ultimately, all of Grauer and Hakansson's results are compromised by this criticism. An acceptable substitute is stock exchange return for real estate companies. This leads to the first recommendations:

1. Promote the development of data bases on real estate investment returns. In particular, explore the capacity of stock exchange data or possible data on mutual fund returns to adequately measure the return on rental real estate investments.

2. Subject to the availability of data over a rather long period, i.e., at least 20 years, promote residential real estate studies using a portfolio approach. These approaches should take into consideration the various diversification universes possible. It would also be necessary to attempt to establish the correlation between the rental housing return rate vs. the owner-occupied housing return rate. This is important as the main residence often represents the largest asset in a household's portfolio. The analysis of the diversification effect must reflect this.

Recent research continues to emphasize the cost of capital as a determinant incentive for investing in real estate. Even if the partial equilibrium approach (project analysis) approach has been widely applied over the past 20 years, it still seems preferable to the general equilibrium model. The difficulty in correctly calibrating and the necessity to omit industry

specific details detracts from the quality of the results of the general

equilibrium models. In addition, the open economy context in Canada

reduces the motivation to take into consideration interest rate reactions.

Moreover, Davis (1995) shows that the typical real estate owner is clearly

subject to the maximum tax rate which renders the possibility that

investors taxed at lower rates would move in to replace the higher taxed

group when tax rates are reduced unlikely.

Recent Canadian studies show that investors, and especially real estate

investors, made wide use of the life-time capital gains exemption. A large

volume of U.S. literature has rather convincingly documented the fact that

variations on the cost of capital have had a definite influence on

investment in rental housing. At the present time, no study on the impact

of the life-time exemption on capital gains in rental real estate has been

carried out. And worse: no empirical assessment seems to have been made in

Canada on the link between housing construction and variations in the cost

of capital. As is the case with inflation rates, the appreciation rates

for rental structures in various centres and the real interest rate have

all varied substantially, although the variations in the cost of capital

were not negligible. Moreover, such a study should take into account the

interaction between local conditions and the taxation changes underscored

by Ling (1992). This means that real estate investment in the various

regions of the country would not have reacted uniformly to the taxation

changes which influence the cost of capital.

Recommendation 3; To promote the development of impact analyses of the

changes in the cost of capital for rental housing using partial equilibrium

models to study the link between variations in the cost of capital and investment in this sector. It is highly recommended that these studies take into account local conditions which interact with the taxation changes.

The demographic changes did not receive sufficient attention. The main recent studies dwelled on the link between the baby boom and the price of housing. The impact on rental housing demand seems to have been neglected. In particular, not enough consideration is given to the impact of current economic conditions on the household formation rate. Steele (1979) showed that unemployment has a negative impact on household headship rate. His study was based on Census data but the aggregated consequences speak loudly. When economic conditions deteriorate, the household formation rate lowers and this decline impacts directly on young households. The younger set, in fact, do have the option of going back to live with their parents or to share units with others. As they are at an age where rental tenure is dominant, deteriorating economic conditions further shrinks the demand for rental housing. These are demand-related conditions, of course. However, anticipated housing demand is a factor which affects investments in real estate which helps in understanding housing start variations in the different regions in the country.

Recommendation 4: Study, on a provincial basis, the link between demographic mix, economic conditions, household formation rate and the demand for rental housing.

Despite a number of studies conducted in the U.S., the distinct role of the cost of capital and of demographic changes has not been elucidated. IN other words, it is difficult to distinguish between variations in supply and demand. The main empirical difficulty highlighted in literature is that dynamic adjustments in the housing market are not taken into account. Herdershott's methodology (1996) could prove interesting. To apply it, data on vacancy rates and on rents in the different local markets are necessary. The series currently available on CANSIM on vacancy rates seem short whereas the data on rents should be available over rather long periods. This would make it possible to better grasp market adjustment rates as they shift toward long term equilibrium. The structural approach adopted by DiPascale and Wheaton (1994) also provide interesting empirical developments.

Recommendation 5: Promote empirical studies on the adjustment dynamics of the rental market. Such studies would seem to be a pre-condition to be in a position to identify the impact of fiscal changes on rental real estate investment.

The last section of the report clearly indicates the current state of residential real estate market. Owners of real estate are reluctant to accept capital losses which means that prices are being kept too high at the present time. Government policies designed to sustain residential construction activities, such as the assisted homeownership plan and the Home Ownership Down Payment Assistance Program (commonly referred to as AMI in French) implemented by the Québec government, did reduce the demand for rental housing. In the current context, institutional investors are leery

of real estate in general. This indifference vis-à-vis rental residential real estate, however, seems to have lasted for a long time.

Recommendation 6: To study in greater depth the lack of interest by institutional investors in residential real estate.

1: Lifetime exemption was abolished for the other types of investments in 1994 except for capital gains realized for farms and small companies.

2: The effect of diversifying an asset increases as the correlation of its performance with that of the other assets increases beyond 1. The diversification effect is expressed by the asset's capacity to reduce the portfolio's risks.

3: NCREIF: National Council of Real Estate Investment Fiduciaries

4: This low variability together with a high return was criticized by Gyourko and Keim (1992) as this is an estimate of real estate return rate as opposed to an exact measurement. If the criticism is pertinent, the empirical results produced by Grauer and Hakansson lose much validity.

5: The volume of real estate mutual funds is very low and most were closed recently.

6: I was recommended to invest in the stock market, with the forecasts indicating that real estate will remain a difficult sector up to the year 2000.

7: A unit uses structures on the ground. The structures are reproductible as wished at a price which, on the long term, is determined by the average minimum production costs. It may be assumed that this cost is constant on the long term. On the other hand, land is not reproductible so that a higher long term price for land must be factored in when demand is strong.

8: The purchase price of residences is the main element explaining the difference in average homeownership ages from one urban centre to another. The lower the price, the easier homeownership becomes and the earlier this occurs in the life cycle. When prices rise, households must put together a larger downpayment and they thus have to save over a longer period of time which postpones the homeownership age.

9: Canada is a small open economy with mobile capital. In such a context it has to be assumed that the real interest rate is invariant in relation to the inflation rate. It should be pointed out that the result indicated in the example is valid for any inflation rate.

10: Although the cost of capital is not influenced, the increase in the inflation rate creates possible liquidity problems since current interest expenses increased whereas capital gains will only be realized at the moment of sale.

11: This is a minimal limit to the tax benefit procured by capital gains. The further away the unit sale is, the greater the tax benefit.

12: In fact, for the new rental revenue to decrease by $625, the gross revenue has to decrease by $625 (1-__) where __ is the tax rate for the owner of the structure.

13: Section 3.2 explains in detail the changes in U.S. tax law as a result of the Tax Reform Act of 1986.

14: For structures purchased before the exemption was abolished, and sold afterwards, a portion of the gain remains eligible for exemption, i.e., that presumed to have been realized before the exemption was abolished.

15: If the anticipated inflation of real estate prices were to go from 5% to 0% per year, investors taxable at 50% and eligible for the capital gains exemption, face an increase in the cost of capital which may go as high as 2.5% is the units are sold at the end of the year. The exact value of the change in the cost of capital depends on the real interest rage, on the length of time the property is owned and on the change in the anticipated capital gains.

16: Using the price/dividend ratio, high capital gains industries can be inferred. This ratio was 4.10% for all the stock exchange over the period studies, i.e., between April 2, 1984 to May 18, 1985. For the real estate sector, the dividend was only 1.36%, one of the lowest at the stock exchange. This indicates then that a larger fraction of the real estate sector return rate is generated by capital gains.

17: The most convincing results are obtained for the second sample. The authors explain that the securities in this sample are less often listed on other international stock exchanges. The presence of numerous investors, not subject to Canadian taxes, may prevent the stock exchange from reacting to such an announcement even is the Canadian investors benefit from it.

18. It should be pointed out that, in 1981, the useful life of buildings was reduced to only 15 years and the losses on buildings were deductible from other classes of income. This made investments in rental housing very advantageous and this explains a part of the real estate boom posted in the early eighties.

19:This result has been widely documented over the last fifteen years. It was shown again recently, for example, in Poterba (1992) or in Berkovec and Fullerton (1992). Intuitively, the main tax benefit for a homeowner comes from the fact that the implicit return on the real estate capital is not imposed and the exemption of capital gains on the main residence. The higher the marginal tax rate, the more important tax benefits become. The fact is that the decrease in the highest marginal tax rate was spectacular in the U.S., going from nearly 70% in the mid seventies to 30% after the 1986 reform. Besides, as all the nominal investment income is taxed, these bax benefits are exacerbated by inflation. The transition to a less inflationary system during the eighties also contributed to increasing the cost of being a homeowner. It should be pointed out that in the U.S. mortgage interest is deductible from taxable incmoe so that this tax benefit is generated by the whole unit. Fortin (1991) shows that as mortgage interest is not deductible in Canada, the tax benefit is only on

the equity invested in the main residence. Moreover, capital gains on main residences in the U.S. are taxable in the U.S. except where the vendor of the residentce purchases another residence or if said vendor is over 55 years old.

20: As drawn to our attention by the authors, this is a demand equation for the number of rental units. The expected sign for the income coefficient is thus not clear.

21: The inability of this model to characterize the adjustment on the different rental terms by the fact that the contracts covering various periods reflect the approximate average of rents anticipated for one period. With rational expectations, an imminent increase in rents means that the rent for contracts covering many periods start to go up even before the vacancy rates reach their balanced levels. Consequently, the adjustment equation cannot be validated at the same time for contracts covering one or a number of periods.

22: Benda retains the 30 to 54 year proportion as opposed to the 35 to 64 year group for the following reason: Even if the family household homeownership rate remains high up to 65 years of age, the proportion of non-family households declines towards the end of the active life period. This is due to divorces, death of spouses and to the departure of children. Due to these changes, the homeownership rate declines before the age of 65. See Miron (1995) for a description on homeownership rate by type of household by age in Canada.