FINANCING HIGH-RISE

RESIDENTIAL CONSTRUCTION

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ABSTRACT

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The objective of this technical report is to analyze
the methods available for the financing of a high-rise
multiple unit residential building and to determine the
impact of various mortgage designs on cash flow. The
report traces the evolution of the mortgage, examines the
sources of funds, types of ownership, government involve-
ment, the behavior of mortgage interest rates, and mort-
gage designs. The report concludes with a case study which
makes extensive use of a micro-computer to perform the
detailed financial analyses. Computer printouts and mort-
gage tables are presented.

To Sandra, Wendy, Elisa, and Daniel

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CHAPTER 1

1.1 INTRODUCTION

When expounding his need theory in 1943, Abraham Maslow highlighted the physiological needs of food and shelter as the priority requirements of individuals. Regardless of the stage of development of a nation, its inhabitants strive to have their food and shelter needs met before they seek to satisfy their safety, social status and self-actualization needs. Because of the requirement of accommodation by all individuals the supply of housing units has become a major preoccupation of family providers, private enterprise, and governments.

As shelters evolved from the cave to the modern high rise, high technology complex, the means of attaining and retaining these shelters have their corresponding developments. Where the ownership of a dwelling once depended upon the physical strength of its inhabitants, ownership is now dependent upon a combination of personal financial strength, risk taking, the state of the economy, and environmental considerations.

The need or desire for ownership of a dwelling is now not the only source of the demand for residential units. As societies developed and communications and transportation systems advanced, people became more mobile and often sought employment in new locations. Because of their intention to relocate for temporary periods they sought "tem-

porary homes" which they would abandon in later moves.

Although this phenomenon of "temporary" accommodation exists across Canada, it is most predominant in the Province of Quebec. Originally a small farm oriented province, Quebec had many farm children who travelled to the big city, like Montreal, in the hope of earning the "big buck". Although their intention was to return to the farm several years later, in many cases, these people found the city too economically and socially attractive to leave and their intentions of returning were never realized — they remained in their rented premises in the city. As a result of the foregoing and other social considerations, Quebec eventually developed into the province with the highest ratio of rented to ownership occupation.

This conclusion is reinforced by the Canadian Housing Statistics 1981 report produced by the Canada Mortgage and Housing Corporation. The report shows that of the 924,635 dwellings in Montreal in 1976, 61.8% were rentals.[1] For Quebec City, of 164,600 dwellings, 53.8% were rentals. In the twenty-one other Canadian Metropolitan areas, the rental percentage varied from 27.8% in St. Catherines-Niagara to 48.5% in Ottawa-Hull (partially in Quebec). Toronto's rate was 44.2% of 909,530 units. The high demand for rental units in the Province of Quebec and specifically in the Montreal area continues and is further illustrated in more recent CMHC reports.

For the purposes of this report, multiple unit housing is defined as a residential project consisting of one or more structures containing a combined quantity of six or more individual dwelling units. These structures may be in a form varying from a simple six unit building to town, row, or garden houses, to one or several high-rise residential buildings of 300 or more units each.

The housing industry provides more than physical accommodation. In the 1976 report of the Howe Institute, the writer states the following:

> Housing performs at least four quite different functions in our society. It is a consumer good, providing shelter; it is an investment good, the only major investment of most families; it is an industrial sector, providing jobs and income for many; and it is a social good which governments attempt to provide for all income classes.[2]

Because of the general requirement for rental units in Canada and the limitations of direct government involvement in housing construction, private enterprise fills the need. However, private enterprise will not entertain production of rental units unless a forecast profit acceptable to the investor is seen to be realizeable. Of the several factors influencing the desireability and profitability of a given multi-unit residential building, the most predominant are financing and rent control legislation.

The restrictions and side effects of either of these two factors can be sufficient to deter construction. Although rent stabilization and controls are important, they will be treated only superficially, as the focus of this

report is the financing aspect of high-rise residential construction.

The report will:

(1) trace the history and development of mortgage financing;

(2) explore the sources of funds and types of ownership;

(3) consider the effects of government intervention in financing and rent stabilization areas;

(4) examine the available mortgage financing mechanisms; and

(5) present a case study using the illustrated mortgage financing mechanisms which can be applied to the high rise residential market.

Since detailed consideration and analysis of all the factors affecting the financial feasibility of a residential project is beyond the scope of this report, the case study will deal primarily with the impact of mortgage design on operating cash flow and return on investment.

1.2 METHODOLOGY

The factors which affect the decision to build a multiple unit residential building have been changing more and more frequently. Unfortunately, developments in mortgage financing systems have been relatively retarded for three key reasons. These include the lack of a comprehensive understanding of the real effects of inflation, the

complexity of some of the new financing concepts, and the conservative nature of lending institutions.

The mortgage sector in Canada particularly has lagged behind advances in innovative financing techniques now in limited effect for single family housing and industrial/commercial projects. Because recent developments have been responding to current money market and inflation circumstances, the availability of textbooks on the subject is limited. In fact, most books published deal with types of ownership and less with new and generally accepted financing techniques.

Canada Mortgage and Housing Corporation which rarely participates directly in financing itself, maintains statistical data pertaining to both owner occupied dwellings and rental units. CMHC's Canadian Housing Statistics annual reports have been used extensively for statistical matters relating to financial institutions, housing starts, sales, floor areas, etc.

In order to gather information on the latest techniques used in Canada, references include current newspaper, magazine, and journal articles. In addition, interviews were conducted both by telephone and by visits to the offices of notaries, mortgage companies, bank officers, and CMHC. A seminar on "Mortgage Financing at Today's Economic Crossroads" was attended by the author in the hope of gathering relevant information.

In obtaining information through personal contact, both verbal and non-verbal communication conveyed personal perspectives which primarily reflected the depressed multi-unit development market. Some of the information gathered and presented often reflects the personal prejudices and interpretations of those immediately involved in the financing and development aspects and relate to political, social, and emotional considerations. The writer has attempted to isolate fact from feeling in documenting the knowledge gained.

In order to demonstrate the cash flow impact of various mortgage designs for a typical residential development, a case study will be presented. The case building is located in Montreal and includes operating costs relating to the region for a typical multiple unit complex.

The complex nature of the mortgage designs applied to the case building renders a manual 25 year mortgage calculation and cash flow projection and analysis extremely tedious. Changes made to the basic data would require the entire process to be repeated. To minimize manual data manipulation and analysis, the author developed a series of computer programs. These include six programs capable of preparing mortgage tables for the seven mortgage designs applied to the case building and one program which performs a cash flow analysis of the operation of the building. In addition, a plotting program is used extensively to present graphical interpretations of input and output data.

1.3 HISTORY OF MORTGAGE FINANCING

When an individual borrows money, the lender may ask him to provide security in the form of a moveable or an immoveable. If no collateral is provided by the borrower, then the lender must depend on the goodwill and the promise of the borrower to repay the loan. In cases where the amount of money borrowed is well in excess of a person's net income or worth, a lender will require a guarantee which may take one of two forms. The first form would transfer the ownership of the security to the lender and if the borrower does not default on his commitments, the security is redeemed. The second, a more recent development would allow the lender to benefit from a forced sale of the security in question.

The concept of current mortgage practices dates back to the feudal era of the twelfth century. Feudalism was

> ...a state of society in which the chief fea-
> tures were protection and service, the weak man
> serving the strong man, and the strong man pro-
> tecting the weak man. The main basis for this
> mutual relationship was land tenure - the hold-
> ing of land.[3]

In the feudal system, title had to be transferred to the (land)lord or suzerain since the law did not recognize the principle of security. Initially, two types of mortgages existed, the vivium radium (live pledge) in which income derived from the property was used to offset the debt, and the mortuum vadium (dead pledge) where the mortgagee retained the property income and the mortgagor had to raise

funds elsewhere.

The mortuum vadium mortgage was seen as being in contradiction with the laws against usury. Initially the laws concerning mortgages were very harsh in that if the mortgagor was late in making his mortgage payment, even by one day, the mortgagee could assume the ownership of the property while the mortgagor would continue to remain responsible for the complete discharge of the debt. As the two tier common law and chancery court systems developed in England, the latter found the common law rulings to be unjust and limited the claim of the mortgagee to the interest due as the result of the late payments and allowed the mortgagor access to the profits obtained from the land. Although the mortgagee retained the right to take legal possession of the property, he would now gain little or nothing by doing so.

The chancery courts, also known as the courts of equity, allowed the mortgagor to re-acquire his property at the termination of the agreed upon amortization period even though the debt repayment may have been in default. The mortgagor would still have the obligation to repay the loan but the mortgagee could have to wait long periods of time before receiving all or any of the payments due. Eventually, the chancery court introduced a foreclosure procedure in which the mortgagee could advise the mortgagor of the default and would allow the latter a fixed period of time to clear the default. The mortgagor could not obtain title

to the property during this period. However, the mortgagee
could take free and clear possession of the property if the
debt had not been cleared within the delay.

The English Judicature Act of 1873 combined the common
law and chancery court systems and provided for one judge
to preside over both jurisdictions, as is the case under
the present common law system. The Act maintained "the
concepts of equity of redemption and the foreclosure ac-
tion".[4] Current laws also limit the mortgagor's right to
redeem his equity. His rights could have been cancelled in
any one of the following ways:

(1) inordinate lapse of time to exercise his right;

(2) the statute of limitations;

(3) power of sale as per mortgage terms; and

(4) a court decree.[5]

A common law mortgage effectively transfers a property
to the mortgagee until the debt is paid. Following full
and final payment, the mortgagor has the absolute right to
redeem. By common law, title to a property can only be
transferred (or used as a security) once in obtaining a
first or common law mortgage. However, the equity which
the lender has acquired in the property may be transferred
an unlimited number of times. The mortgagee retains his
rights against the original mortgagor.

Any mortgages subsequent to the first are known as
equity mortgages. Equity mortgages represent a charge
against a given property but do not give the mortgagee the

right to the title in case of default. The mortgagor can redeem his property only after all mortgages have been discharged.

.As we can see from the above discussion, prior to 1900 the lending of capital and the right to enjoy property were confused. Current practices in mortgage lending involve solely the financing of capital requirements. As in today's times, a purchaser in the feudal period seldom had an income which would allow him to obtain a property outright. During that period, however, the vendor carried what is now referred to as a "balance of sale" which not only entitled the vendor to retain the title deeds, but also allowed him continued access to and use of the property until such time that full and final payment of the purchase price and interest was made. It is quite clear that the feudal mortgagee or vendor-financier maintained the advantage over the mortgagor.

Since the turn of the century, the development of mortgage lending practices concentrated to a greater degree on the methods of repayment rather than legal rights. For the first thirty or so years, mortgages were of long terms with capital repaid or refinanced at termination. Only interest was paid periodically during the mortgage term and any periodic payments of the capital were rare. Because of the stable property values, interest rates, and inflation rates, this financing technique proved satisfactory.

The Depression years led to modifications to the conditions of mortgages. During these years, purchasers were unable to realize their anticipated revenues and could not continue the interest payments to the vendors who frequently carried the balance of sale as a first mortgage. Vendors who themselves required an improved cash flow to help them through the difficult times were stuck with not only defaults on interest payments but also with outstanding capital which could not be recovered. Even if interest payments had been met, the outstanding capital itself was not recoverable. In the cases of default, there was no security to be gained by reclaiming the property since little revenue was being generated by it. The vendors suddenly became aware of the risks and unfavourable characteristics of the "interest only" mortgages which left them without capital.

The Depression, therefore, caused mortgage lenders to re-evaluate their approach. They developed the repayment plan which fully amortized the capital over the term of the agreement to assure a consistent cash flow of capital and interest. The term of the mortgages remained long. For some thirty-five years this type of plan was the rule in mortgage financing.

Because of the diversion of the country's resources during World War II, there was little activity in the housing market. In order to stimulate activity in this sector, the federal government initiated indirect correc-

tive measures. Since the British North American Act re-
stricted the government's direct involvement as money len-
der in the mortgage market the government decided to guar-
antee mortgages under the National Housing Act (NHA). As a
means of stimulating the demand for and the supply of
residential units, the government effectively lowered the
risk of private mortgagees who were then able to provide
mortgage loans at lower interest rates. Still, in light of
the stability of the economy, interest rates and inflation,
the long term fully amortized mortgage remained a viable
mechanism of real estate financing.

A new economic environment developed in the late
1960s and early 1970s. Those factors which influence eco-
nomic instability — inflation and the demand for money —
began to fluctuate. Interest rates began to rise as the
demand for money increased. For the first time, long term
money lenders became exposed to a yet undiscovered risk —
the risk that the interest paid on the lenders' money
supply would exceed the interest earned on money loaned.
Lenders were locked into the fixed long term rates which,
by the very nature of the mortgage terms, were not follow-
ing current market rates. For example, in 1969 new mort-
gages at 8.5% for 25 years were commonplace. The mort-
gagees were bound to these low rates although recent rates
reached a peak of 21.5% — an increase of over 153%!

The lost opportunity costs to the lenders were as-
tounding. Often lenders would sell or trade packages of

low interest rate mortgages at discounted values (similar
to some transactions in the bond market) resulting in large
net losses of capital. Other lenders continue to hold some
of the low rate mortgages and are being constantly penal-
ized by the discrepancy with the current high cost of
obtaining money from their sources and the return from
these low interest mortgages.

Reacting to this situation, the lenders began to limit
the duration of their commitment to five years and obtained
the majority of their funds via the guaranteed investment
certificate (GICs). At the end of the five year term, the
balance of the capital, calculated in accordance with a 20
year, 25 year, or other amortization period, had to be
refinanced at the then current rate. At this time the
mortgagor had the option to liquidate the outstanding bal-
ance.

By the late seventies, the five year mortgage commit-
ment became excessively long because the volatility of the
interest rates caused the average GIC purchaser to become
increasingly reluctant to lock up his cash for a fixed five
year term at predetermined and fixed conditions. Figure
R-1, a graphical representation of the conventional mort-
gage interest rates for the last 30 years, illustrates the
recent rapid rate changes which caused both lenders and
borrowers to have uncertain feelings about the future. The
rates are allowed to float freely in accordance with the
market and under government policies on the establishment

CONVENTIONAL MORTGAGE INTEREST RATE
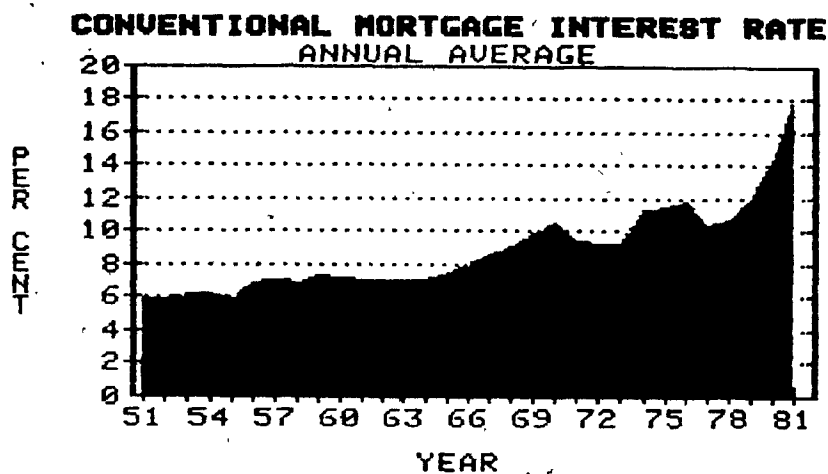
FIGURE R-1

of prime interest rates. By 1980-81, three, two, and one

year mortgages were commonplace. Even six month mortgages

are now being offered. In February 1982, one bank declared

that it will no longer issue five year mortgages stating

that the maximum term will be of three years. By July

1982, most if not all banks would not issue five year

mortgage terms. However, the lower interest rates of late

1982, led again to the introduction of the five year mort-

gage (at 13.5%) by at least one bank, Scotiabank, in

January 1983. This once again demonstrates the volatility

of the mortgage market.

As long as the economic factors which influence inter-

est rates remain unstable, there will be pressure on the

borrowers to adapt to changes implied by the shortening of

mortgage periods. Eventually, perpetuation of the recent

instability may compress mortgage periods or the frequency

of interest rate adjustments to monthly periods. As soon as the laws concerning mortgages permit, long term mortgages based on continuously adjusted interest rates may be commonplace. The variable rate mortgage which is a kind of extension of the minimum term standard mortgage based on continuous (monthly) adjustments to the mortgage interest rate is now developing as one of the possible solutions to the financing dilemma.

Seeing that the average wage earner has little control over the amount of his income, and even less control over the interest rate, the variable rate type of mortgage can result in a increased debt ratio to the extent that at some later date he may have to default on his mortgage commitment and lose his property and possibly the accumulated equity.

Because of the latest economic developments and the uncertainties which they bring, individuals are presently reluctant to take the risk of investing in residential real estate.

1.4 SPECIAL CONDITIONS OF A MORTGAGE

A mortgage agreement cannot restrict the right of a mortgagor to redeem the property following the discharge of the conditions stipulated in the agreement. Any clause which removes the borrower's right to take free and clear possession of the property in question upon discharge of the debt would be declared null and void in a court of law,

thereby allowing the mortgagor to assume possession as though the clause(s) had never appeared in the agreement. The intention of this legal restriction, applicable only at the time that the mortgage agreement is made, is to prevent the mortgagee from bringing to bear this severe type of pressure as a precondition to the granting of the mortgage. That is, a mortgagee cannot include in the mortgage agreement a clause with an option for him to purchase the property. If, however, such an option is negotiated subsequent to the the signing of the mortgage agreement, legally valid documents would then exist.

Certain mortgage agreements may include clauses which require that the mortgagor favour the mortgagee in ways other than interest on the debt. A mortgage agreement may include a condition that the mortgagor purchase products (such as heating oil) from the mortgagee. The question as to whether or not such collateral advantage is binding after the discharging of all the other terms of the mortgage agreement is not clear. Nevertheless, such collateral advantages cannot clog the mortgagor's right to redeem the property.

1.5 THE MORTGAGE IN QUEBEC

All provinces in Canada, with the exception of Quebec, have the common law system of courts from which current mortgage practices originate. Operating under the Civil Code, mortgages in Quebec are termed hypothecs and differ

from the common law mortgages in that they do not transfer possession of a property to the mortgagee. Instead, hypothecs represent a charge against a property. The chronological order of the registered hypothecs gives the priority of position to the oldest outstanding hypothec in the case of claims made by mortgagees against a property. Although the mortgagee cannot assume the property, he can, by taking an hypothecary action, judicially cause the property to be sold in order to liquidate the outstanding debt.

Foreclosure per se is not an action which can be taken in Quebec although the net result of the possible actions is, de facto, foreclosure. Basically, foreclosure means that the mortgagee can, as a result of default, take possession of the property regardless of the mortgagor's equity position in it. In Quebec, the rights of the mortgagee are limited to the amount owed under the terms of the mortgage agreement. However, as in the case of common law mortgages, the mortgagee can be held responsible, by personal covenant, for any amounts which cannot be recovered through the sale of the property.

CHAPTER 2

FORMS OF OWNERSHIP AND SOURCES OF MORTGAGE FUNDS

2.1 INTRODUCTION

The goal of this chapter is to illustrate the various forms of ownership through which a multiple unit residential property may be acquired and the sources of funds that may be available to the potential residential building owner. Table 1 summarizes the common forms of ownership and sources of funds available.

2.2 FORMS OF OWNERSHIP

The many forms of ownership of multiple unit dwellings provide various advantages and disadvantages to both owners and tenants. Each has its own peculiar operational characteristics. There is not always the choice of a specific alternative because of the demands associated with each of them. Most owners decide to become owners by choice but not all tenants have the luxury of being in a position to make that choice. Because the individual units in most multiple unit residential buildings are leased, it is important to keep the tenants' perspective in mind when planning such a development. In any case, each form of ownership has its place in the housing market.

The condominium form of ownership is explored in more detail than other forms because of the recent growth and interest in this mechanism.

TABLE 1
OWNERSHIP, SOURCES of FUNDS, MORTGAGE DESIGNS, & GOVERNMENT ASSISTANCE
COMBINED TABLE

Forms of Ownership	Sources of Funds in Canada	Mortgage Designs	Gov't Assistance
Individual	Individuals	Standard, fixed, etc	Mortgage subsidies
Tenancy in Common	Life Insurance Companies	Variable Rate	Rent Subsidies
Corporation	Chartered Banks	Graduated Payment	Tax Benefits -Depreciation
REIT	Trust Companies, Mutual Savings Banks	Price Level Adjusted Mortgage	Techniques -Accelerated Depreciation
General Partnership	Savings & Loan Assoc's	Participation	
Limited Partnership	Government & Gov't Agencies	Anticipated Payment	CMHC Guarantees
Condominium	Corporate Lenders	Renewable mortgage	Government Grants
Cooperative	Other Companies -Mortgage Investment Corps	Variable Rate Fixed Payment	Municipal Grants
	Pension Funds	Constant Payment Factor VRM	
	Estates, Trusts		
	REITs		

THE INDIVIDUAL FORM OF OWNERSHIP

The individual form of ownership is the oldest, most-
popular, and most easily understood. The individual owner
acquires property through the use of a combination of his
own financial resources and a secondary source. Because
there is only one participant, the available combined fi-
nancial resources may be somewhat restricted thereby limit-
ing the involvement of single owners to smaller projects.
He generally administers his holding(s) himself and is by
law personally responsible for the financial and legal

aspects of the operation. All income which the individual owner earns is to be declared in his personal income tax return. The individual owner is a major source of dwelling units for the community.

TENANCY IN COMMON & JOINT TENANCY

Closely related to individual ownership are the tenancy in common and joint tenancy forms, the prime difference being, of course, the number of participants. With two or more participants, ownership under the joint tenancy arrangement is divided equally among them. The ownership is passed on to the surviving members. Under the tenancy in common, ownership shares may not necessarily be equal and in the event of death, an individual's shares form part of his estate.

THE CORPORATIVE FORM OF OWNERSHIP

Property may be owned by a corporation. Although the corporation retains the same responsibilty toward its tenants as the individual form of ownership, the personal financial responsibility is limited to the investment that the corporate members have in the corporation. The corporation can sue and be sued, and again legal actions are limited to the corporation and not the individuals themselves. The corporation can issue transferable shares. The death of one of the corporate members does not affect

ownership of a given property. The provincial and federal legislation concerning the operation of corporations can add significant costs and taxes to the operating expenses and personal benefits. However, profits earned by the corporation may be returned to its members as repayments of their loans (i.e. initial investment) without any tax payable. All other members' income is, however, taxed twice - once at the corporate level and a second time at the personal one.

THE PARTNERSHIP

The need for larger sums of money to initiate projects has led to an increased number of partnerships in the residential field. Individuals forming partnerships may have discarded the corporate form of ownership because of the negatives associated with that form. Although income is only taxed once, a key disadvantage is that one partner can bind any or all of the others who are jointly and severally responsible for the liabilities, be they legal or financial. A second form of partnership, the limited partnership, restricts the participation of the limited members to their initial investment leaving the management responsibility to the general partners.

THE COOPERATIVE

The cooperative is a form of ownership which closely resembles the condominium in nature but not in the financial and right to occupy characteristics. The cooperative corporation exists to own, manage, and lease its apartments to its participants.

Once formed, the corporation sells shares to individuals who are entitled to a long term "proprietary lease" on a unit. The number of shares which a shareholder must purchase varies directly as the size or rental value of the unit which he intends to either occupy himself or sub-lease to others. Transfer of ownership and the right to occupy a unit occurs through the transfer of shares and the proprietary lease.

The mortgage is held by the corporation and not by the individual as in the case of the condominium. Occupants of the units are required to pay their share of the project operating costs to the corporation. The corporation itself is not taxable but income derived from its operation must be added to the taxable income of the individual participants.

When the economy is in a favourable condition, the cooperative form of ownership runs well. On the negative side of the economic cycle the viability of this type of ownership is questionable. Since defaults by participants remain the responsibility of the residual shareholders, the payments which the latter must make increase. In times of

depression, like those experienced in the 1930s, the burden on the members in good standing becomes too great and the cooperative eventually defaults.

THE CONDOMINIUM

Although the condominium concept originated in biblical times, it was a form of ownership that saw insignificant development in North America until recently. It was only in the early 1970s that the advantages of the condominium became clear, or at least, appeared to become clear. The development of this ownership mechanism has had regular setbacks and to this date remains problematical. The origin of the condominium in the U.S. initiated from the post war need to provide relatively low cost housing. Developers later found that there were profit and tax advantages to be gained through condominium construction in the luxury market. Recent socio-economic conditions and rent stabilization legislation have encouraged residential (and commercial) property owners to convert their rental units into condominiums.

In Canada, condominiums were first seen as a method of providing the opportunity of home ownership at a lower cost to a greater number of Canadians. Fraught with a somewhat disastrous history, condominium projects in Canada are now being built more for the luxury and commercial markets than on the low cost residential one.

Rent control legislation has played a major role in increasing the desire to convert existing apartment complexes into condominiums. Because rent restrictions have limiting effects on an owner's cash flow, the idea of terminating the leases, renovating the building(s), and selling the units appeared to be a realistic alternative method of turning a loss situation into a profitable one. However, provincial governments were quick to come to the aid of apartment dwellers by establishing controls on intended conversions to the extent that some conversions are now practically impossible for occupied buildings.

A residential condominium project is a multiple unit building which is sold on a unit basis to private individuals for dwelling purposes. The purchaser of a unit assumes the responsibility for the mortgage payments and remains responsible until the end of the mortgage term. This commitment is not transferable to another person or corporation in case of default. This is the major difference between this form of ownership and the cooperative one where the remaining owners assume the responsibility and continuity of payments relating to the owner in default.

The initial act of loan between the lender and the developer is based on a "global" mortgage for the entire building or project. This act of loan is an agreement that the lender will provide to the builder a mortgage at a specific percentage above a given reference rate (e.g. prime plus 2%) after certain conditions have been met.

These conditions include meeting the predetermined building specifications and ensuring that clear title will be given to the potential unit owners when these units are eventually sold. The global mortgage is later subdivided proportionately among the condominium purchasers as they each close their purchase transactions.

One of the key elements required to ascertain a clear transfer of title relates to the zoning regulations for condominiums. In the case of a multiple storey building, the building itself must be zoned in three dimensions. Because notarial expertise in volumetric zoning is in the developmental phase, only a limited number of notaries are fully conversant with the procedures. Also, a parcel of land already zoned for residential purposes requires re-zoning and is therefore subject to the control of municipal by-laws and the politics associated with changes thereto.

When the construction of the building reaches the 70% completion stage, the actual mortgage document is signed. Generally, trust companies are the lenders for the long term mortgages guaranteed by CMHC.

At the signing of the offer to purchase, each unit buyer is required to deposit, in trust, about 25% of the purchase price subject to closing. The buyer pledges to assume the mortgage for his unit and the mortgage terms corresponding with those stated in the global mortgage agreement. When the builder reaches a co-ownership registration of a predetermined level which ranges from 70-80%,

the mortgagee begins the release of funds to the developer. Until this time, short term funds, usually obtained through the banks, provide the necessary interim financing for the builder.

Once the condominium project becomes an operating corporation, legislation requires that the developer re- tain, for a period of one year, the responsibility for the management of the complex. He is required to set aside an amount of money equivalent to approximately 5% of the condominium income to cover unforeseen major expenses such as roof repairs. The members of the condominium corpora- tion are required to set up a board of directors that will carry on the management of the project after the mandate of the developer expires. Major repairs and certain improve- ments to the property require the approval of the majority of the members of the corporation.

Although the individual units are designed to be as self-contained as possible so that each owner is charged directly by the supplier for the services which he uses, there are operating expenses attributable to the common areas of the project. The owner, and later the condominium corporation, assesses a condominium fee for each unit in accordance with a predetermined formula based on the per- centage of the total habitable area which his given unit occupies. These fees are payable monthly to the corpora- tion.

The total habitable area of a condominium is equal to the gross surface area minus the common areas (outside walls, parking, swimming pools, elevators, etc.). The "cote-par" (percentage occupancy of an individual unit) is equal to the exclusive area used by an owner divided by the net or total habitable area of the building. If, for example, the total habitable area of a condominium project is 200,000 square feet and the number of units is 200, the cote-par for an average size unit is 0.5%. For a larger unit of 1,500 square feet, the cote-par is equal to 0.75%. If, several years later, the corporation decides to create a large meeting hall by reducing the number of units by three, the total habitable area is reduced by 6,000 square feet to 194,000 and the cote-par for the smaller and larger units is recalculated to 0.515% and 0.773% respectively.

The taxes levied by local municipal governments tend to be higher for condominiums than for comparable apartment units. The value of the condominium unit varies with its floor area and not the number of rooms. The unit area cost to the builder is lower for larger units since the additional area, usually in the form of a bedroom, does not require additional plumbing and other integrated furnishings and equipment that are characteristic of both kitchens and washrooms.

In the initial project phases when the developer is evaluating what to build, he uses a market analysis to inform himself of the investments or payments that the

target market can support. Based on this data, he works backwards to calculate the corresponding profitable unit construction cost.

Purchasers searching for low cost accomodation look for a large number of rooms and not necessarily more space whereas the customer in search of luxury accomodation would tend to look for larger quantities of space and not necessarily more rooms. As a result of the increased interest of the higher income individual in condominiums and the builder's lower per unit costs for the larger units, the average floor area of a unit has increased significantly since 1971.

The rate of sales of condominium units in a complex varies with the location of the units within the building. For example, the sunny side of the building will sell more quickly top to bottom than will the shaded side. Less desireable units will sell more readily from the bottom to top.

The evolution of the residential condominium concept has been riddled with many unsuccessful projects. These failures are most predominant in low cost projects which house low income households. Stabilization of the socio-economic factors as they pertain to the condominium form of ownership in Montreal has yet to be attained. In the meanwhile, municipalities which have experienced the results of low cost projects are very prudent in approving new requests. Projects intended for the higher income

earners are having less difficulty with municipal approvals. It has now become obvious that the initial goal of providing low cost housing via the condominium concept is socially unfeasible and may not be reached for a long time to come.

2.3 MAJOR SOURCES OF FUNDS IN CANADA

Since 1935 when the federal government passed the Dominion Housing Act, the practice of mortgage lending has evolved rapidly. This section of the report summarizes the legislation concerning the major institutions, discusses the participation of these institutions in the mortgage market in abbreviated form, and explains the real estate investment trust (REIT).

Although the 1935 legislation limited the involvement of the primary lending institutions, it nevertheless opened new avenues. This is shown in the following summary of federal regulations concerning the chartered banks, life insurance companies, and trust companies:

CHARTERED BANKS:[6]

(1) In 1954 the Bank Act was changed to permit banks to make mortgage loans for the first time and at a maximum interest rate of 6% provided that such loans were made under the stipulations of the National Housing Act (NHA).

(2) In 1967 another modification to the Bank Act dropped the 6% interest limit and permitted banks to make conventional mortgage loans . The maximum loan-to-value ratio was set at 75% for conventional mortgages.

(3) In order to limit the risks to the banks, the maximum investment that they could make in the mortgage market was set at 10% of their total assets.

LIFE INSURANCE AND TRUST COMPANIES:[7]

(1)   In 1954 the maximum loan-to-value ratio for a given

      mortgage was set at 60% for NHA approved loans.   No

      interest ceiling was set.

(2)   In 1960 the maximum loan-to-value ratio was set at 66-

      2/3%.

(3)   In 1964 the maximum loan-to-value ratio was set at

      75%.

(4)   In 1969 tax law modifications caused a shift in the

      emphasis of life insurance companies from residential

      to the more profitable commercial lending.

MORTGAGE COMPANIES:[8]

      There are no direct laws affecting mortgage lending

      behavior as far as loan-to-value ratios are concerned.

PARTICIPATION OF THE MAJOR INSTITUTIONS IN MORTGAGES

      The most recent statistics on the proportionate share

of the mortgage market of each of the major institutions is

shown in table 2.   The eleven year average (1971-1981) of

the market shares for multiple dwelling structures is as

follows:

Trust Companies	35.1%
Chartered Banks	24.3%
Loan Co.'s,Credit Unions,etc	22.7%
Life Insurance Companies	18.1%

TABLE 2
NHA AND CONVENTIONAL MORTGAGE LOANS APPROVED BY LENDING INSTITUTIONS
MULTIPLE DWELLING STRUCTURES
(in Thousands of Dollars)

	Chartered Banks		Life Insurance Companies		Trust Companies		Loan & Other Companies		Total
	$*	%	$*	%	$*	%	$*	%	$*
1971	312,956	25.2	238,801	19.2	406,124	32.7	285,926	23.0	1,243,807
1972	359,167	26.5	231,339	17.1	470,488	34.8	292,703	21.6	1,353,697
1973	412,540	26.3	309,343	19.7	600,155	38.3	244,886	15.6	1,566,924
1974	289,273	32.0	158,543	17.5	297,054	32.8	160,473	17.7	905,344
1975	491,933	24.8	308,028	15.5	752,439	37.9	431,529	21.8	1,983,929
1976	589,524	23.1	446,793	17.5	954,019	37.4	558.031	21.9	2,548,367
1977	678,583	19.1	790,737	22.2	1,381,908	38.8	708,810	22.4	3,560,038
1978	487,031	24.5	369,190	18.6	752,724	37.8	379,980	19.1	1,988,925
1979	425,172	24.1	376,342	21.3	493,860	28.0	467,938	26.5	1,763,312
1980	313,758	21.5	248,702	17.1	479,774	32.9	415,669	28.5	1,457,903
1981	345,587	21.0	230,880	14.0	544,494	33.0	524,329	31.9	1,645,290
Average		24.2		18.1		35.1		22.6	

* Canadian Housing Statistics, 1981, Canada Mortgage and Housing Corp., Table 41

The first trust company was established in Ontario in 1882.[9] The present network of trust companies is believed to be unique worldwide. They are partly administrators since they manage many trust accounts, and are part financial intermediary handling one large pool of funds. Trust companies are diverse in that some are mortgage companies with trustee powers, others concentrate on bond investments, some depend on deposits, and others accept no deposits. Trust companies usually borrow for periods of less than five years to avoid excessively high interest payments over the longer term should the market interest rates decline.

The recent severe fluctuations in the rates of interest have left many trust companies, and, for that matter all financing institutions, in the unfavourable position of having to pay higher interest rates to their sources for money loaned out at lower rates. This is the consequence of borrowing short(term) and lending long(term).

Chartered banks played little or no role in the mortgage field until 1954 when the National Housing Act was passed. Thereafter, and until the time that NHA mortgage rates began to exceed 6%, they were very active in the mortgage market. Now that most of the major restrictions have been removed, banks are once again playing a major role in the residential mortgage arena.

Mortgage loan companies were established in the 19th century and resemble today's caisses populaires and credit unions. Now they are governed by the Loan and Trust companies Act. The mortgage companies pool deposits, sell debentures (publicly) and loan the funds primarily for residential mortgages.

Life insurance companies fall under the jurisdiction of the Canadian and British Insurance Company Acts and the Foreign Insurance Company Act which limit loan to value amounts for conventional mortgages. However, life insurance companies can participate without limit in the purchase of corporate mortgage bonds and can enter into other lease-back and sale agreements.

Very large corporate pension funds are increasing their participation in the mortgage market although very few have developed their own in-house expertise in the residential mortgage market. For the most part, they depend on a mortgage banker, trust company, or individual consultant to manage their mortgage portfolios. Pension fund organizations use only the funds of the non-self-administered pension plans for mortgage investments.

Other sources of mortgage funds include finance companies, private estates managed by lawyers and trust companies, individuals (who can be the vendors themselves), the government itself when money is tight, and the real estate investment trusts (REITs).

2.4 REAL ESTATE INVESTMENT TRUSTS (REITs)

The real estate investment trust is an intermediary type of mortgage financing mechanism and ownership which is actively being used in the United States. This mechanism originated in Massachussets in the 1850s but did not become a major funding source until the 1960s. Participants in the trusts include major U.S. institutions including the largest banks and mortgage companies.

The REIT serves as the instrument for pooling the financial resources of investors for investment in the mortgage and real estate markets.

Federal U.S. legislation maintained a tight reign on the eligibility requirements of REITs. Some of these re-

quirements stipulate that a REIT must:

(1) derive at least 75% of its income from real estate investments,

(2) leave its participants free of involvement in the management of the operation of the portfolio's properties, and

(3) not be involved itself with the management of its properties, but must engage the appropriate managers and consultants.[10]

Changes to the income tax act in 1971 finally led to the introduction of the REIT in Canada (1972). Here the REIT has the option to choose any loan which its financial advisor may take in order to assure that the best loans are not taken by the advisor himself. Until 1972, the closest semblance of the REIT in Canada was in the form of the Royal Bank's "M Fund" or the First Toronto Mortgage Trust. The M Fund is an open-ended investment vehicle which is not permitted to use leverage. Neither the M Fund nor the FTMT qualified as a legal investment and because of this, losses related to the operation of the real estate portfolio were not transferable to other income. This removes a prime attraction of real estate investment.

CHAPTER 3

GOVERNMENT INVOLVEMENT IN THE RESIDENTIAL MARKET

3.1 INTRODUCTION

In the first two chapters of this report we discussed some of the participants in the mortgage arena. These included financing institutions, tenants, owners, and others. One of the most important participants in the housing market not yet discussed is the government. This chapter discusses the actions that various levels of government can take and have taken in their desire to stimulate the production of residential units as well as the legislative action in the form of rent stabilization and their effect on present and future development in the multiple unit residential market. The financial assistance plans introduced across Canada are numerous at the provincial and municipal level. Examples from the Province of Quebec and the City of Montreal are used in this chapter.

3.2 GOVERNMENT INVOLVEMENT IN FINANCING
THE RESIDENTIAL BUILDING MARKET

The participation of the government in the financing of multiple unit residential buildings is primarily limited to the stimulation of the market through concessions and grants to developers, owners, and tenants. Apart from the indirect federal government interventions, provincial and

municipal governments have recently become involved as financing sources through direct cash grants. Government plans in the housing market are generally not applicable for long terms. Plans discussed here are examples only and they may be changed or retired at any given moment.

The federal government has three practical tools which it can use to influence the cost of property to both owners and tenants. These include:

(1) the setting of interest rates,

(2) tax concessions, and

(3) providing cash grants or credits.

The provincial government has two methods of stimulating property development - the provision of tax allowances and cash grants. The municipal level of government is limited to the provision of grants. Any unlikely concessions made by municipalities could pertain to real estate taxes and would have an impact on the operating costs, not the initial capital costs and are not, therefore, discussed in this chapter.

THE MURB

Following two years of inactivity in the multiple unit housing market, the federal government, in the November 1974 budget introduced the "MURB" (acronym for the Multiple Unit Residential Building Program). Under this plan, the MURB was defined as a building which provided not less than 80% of its floor area for self-contained domestic establishments and amenities.[11]

Originally, the government created two classes of buildings that were eligible for MURB classification. These two classes were similar to the then existing classes 3 and 6 which were able to be depreciated at rates of 5 and 10% respectively. In 1978 the government curtailed the class 6 (class 32 MURB) and with it virtually eliminated the 10% annual capital cost allowance (CCA) for new owners.[12] The advantage of the MURB is that it allowed the CCA as an expense for tax purposes regardless of the end of year cash flow position of the building operations. In addition, the total "loss" could be used to offset other income. (Owners of buildings not part of the MURB plan could use the CCA or a portion of it only if their expenses exceeded their revenues.)

This type of real estate investment was popular with professionals who required tax shelters to protect their income. Nonetheless, the nature of the MURB was such that one could purchase as little as one individual residential unit with a downpayment of only $5,000 (at the outset of the program), making the plan attractive to a wide range of the public.

The program has, in the past, been very successful in stimulating multiple unit residential building construction, so much so, that the program has been revitalized on several occasions since its inception in 1974. However, the elimination of the 10% CCA class for new projects and the recent higher cost of the MURB has lowered the interest

of perspective investors. The government decision to renew the plan is usually taken in late autumn as a stimulant to the creation of jobs for the forthcoming winter season.

DIRECT MORTGAGE LOANS

CMHC will, from time to time, grant direct mortgage loans under special circumstances. If a potential borrower can prove that he has been turned down by one lender (in rural areas) or two lenders (in urban areas), the corporation would provide the loan if the applicant and the project meet the prerequisites normally acceptable for the granting of mortgages. In addition, if no financing source is available in a given area, CMHC may provide the necessary funds in the form of a mortgage. The participation of CMHC via its direct loan is dependent upon the government's fiscal and monetary policy at a given point in time.

THE CANADA RENTAL SUPPLY PLAN

In its attempt to increase production of multiple unit dwellings, the government proposed the Canada Rental Supply Plan (CRSP) in its November 1981 budget. Administered by CMHC, the plan was intended to encourage the construction of up to 30,000 residential units and to replace the MURB program. Essentially, the change allowed builders to get higher ratio first mortgage loans if they could clearly show that they would be able to repay it at a later date. Under the plan, builders could apply for 15 year interest free loans for amounts up to $7,500 per unit.

In fact, the loans took the form of a second mortgage which would be repayable at the end of the 15 year period by a lump sum or in accordance with an amortization schedule spread over the remaining first mortgage period. Initial feedback from builders indicated that the $7,500 loan would be inadequate and should more appropriately be set at $15,000. The plan, under which CMHC accepted proposals from builders for a 30 day period, resulted in the construction of 600 units in the Montreal area. This plan is no longer in effect.

THE ASSISTED HOME OWNERSHIP PROGRAM

The now defunct Assisted Home Ownership Program (AHOP) was created in the 1970s and provided repayable interest reduction loans. Non-repayable contributions were necessary to assist households of two or more persons to acquire modest housing.[13] The assistance has been available for previously unoccupied dwellings which have an NHA insured mortgage with a minimum five year term on a 25 year minimum amortization period.

The repayable portion of the funds associated with the AHOP program compensated the purchaser of a dwelling for the excess interest payments, calculated from the payments that would result from the difference between the base rate of 8% and the current NHA rate, through monthly payments to the purchaser such that the mortgage payments would not exceed a 25% gross debt service (GDS). These monthly

grants would be repaid through higher monthly payments following the first five year term, since the advances given the purchaser were added to the outstanding mortgage balance. The reality of this mechanism, called the Interest Reduction Loan, is that it effectively delays payment of the actual interest due until, it is hoped, the purchaser's income will have increased to where his payments would not exceed the GDS of 25%. It meant that the government had a vested interest in inflation continuing.

In cases where the maximum assistance under the first part of the plan was still inadequate, i.e. the purchaser was still left with a GDS greater than 25%, then the federal government would provide a forgivable grant to reduce the effective payments to the 25% level by providing an additional maximum monthly contribution of $62.50.[14]

The AHOP plan was revised in 1978 to include previously occupied housing. The revision increased the acceptable GDS to 30% including principal, interest, taxes, and, where applicable, 50% of the common condominium fees. Repayment is to be completed by the end of the 10th year of the mortgage. This was the introduction of the Graduated Payment Mortgage.

THE ASSISTED RENTAL PROGRAM

The Assisted Rental Program (ARP) is a joint federal-provincial plan wherein a builder may obtain grants totaling $3,000 per unit in order to close or narrow the gap between attainable rents and market rents. Of the $3,000,

the amount of $600 is an outright grant and the balance of $2,400 is carried by an interest-free second mortgage. This junior mortgage is repayable by monthly installments based on the current NHA mortgage interest rate 10 years after the start of the first mortgage.

PROVINCIAL PARTICIPATION

Occasionally, provincial governments would introduce programs to effectively lower the cost of housing. The latest of these programs in Quebec provides up to $20,000 off a mortgage for the first five years for a new home of a value not exceeding $60,000. Another plan provides a reduction of up to 3% in the mortgage interest rate for homes and new homeowners meeting certain criteria. British Columbia, Alberta, Saskatchewan, Manitoba, and Ontario have similar plans in varying degrees.[15]

MUNICIPAL GOVERNMENT PARTICIPATION

The Montreal municipal government presently has several programs underway. The first is a subsidy plan which it introduces by the statement:

> An innovative subsidy programme offered by the municipal government encourages construction of new residential housing in Montreal...

This plan makes available to the first owner of a residential building subsidies of $2,000 per unit for buildings of 12 units or less and $1,000 per unit for larger residential buildings. This plan is an integral part of "Operation 10 000 logements".

Builders in Montreal who wish to convert non-residen-
tial buildings to housing units are eligible for up to 50%
of the cost of alterations or a maximum grant of $12,000
for each new unit created provided it meets a set of rea-
sonable criteria. This is an attractive plan which is
primarily intended as a stimulant to the redevelopment of
downtown (Old) Montreal.

3.3 TAX CONSIDERATIONS

Tax laws and properly directed relaxation of the tax
laws pertaining to multiple unit buildings for both the
capital and operating perspectives play a significant role
in the decisions to proceed with property development. In
almost all cases, basic tax allowances are the determining
factor which render a project economically feasible by
effectively changing a negative cash flow project into a
positive one.

The principal realizable tax benefit is the capital
cost allowance (CCA). Dependent on the nature of the
revenue producing building, the annual CCA may vary from 5%
for masonry buildings to 10% for frame structure buildings.
In the calculation of his income tax, the owner of a mason-
ry structure is allowed to include as an annual expense an
amount equal to 5% of the building (not land) value. In
certain cases, like the MURB, all of the CCA may be used
regardless of the positive or negative position of the pre-

tax cash flow, and any loss incurred may be transfered to other income. The CCA is calculated by the declining balance method.

The negative aspect of the CCA is the recapture tax payable as a result of a building sale. This tax is calculated at the personal (or corporate) tax rate of the owner and is based on this rate times the difference between the depreciated building value and its original cost.

Also payable as a result of the transfer of building ownership is the capital gains tax. This tax is calculated by multiplying 50% of the difference between the sale price and the original purchase price by the owner's income tax rate.

Until November 1981 payments received as a result of a building sale were effectively taxable in the year during which the payments were received. A seller could include in the deed of sale terms that would spread the proceeds over several years allowing him to take advantage of the forward averaging mechanism. Under the new legislation, this provision is no longer available although the payment of the taxes themselves may be spread over a three year period. This dealt a severe blow to sellers whose property had appreciated significantly .

The 1981 budget imputed a minimum 12% interest rate on outstanding housing loans. This reduced by about 50% the economic advantage of employer assisted low interest loans since the difference between the imputed interest on loans

advanced at rates less than 12% and the actual interest being paid must be added to the personal income of the beneficiary, and is, therefore, taxable. Although the 12% rate was still somewhat reasonable in 1981 when interest rates were hovering between 17% and 19%, it is not that acceptable today when the mortgage interest rates are approaching the 12% level. This legislation has effectively removed this employee benefit available under the former tax laws.

In the U.S.A., the Economic Recovery Tax Act of 1981 proposed the concept of accelerated depreciation in order to stimulate the substantial rehabilitation of existing structures. This technique is based on a 175% (of building cost) declining balance for the first six years of building operation. After the sixth year, the straight line depreciation method would be applied for the period which terminates when the building becomes fully depreciated.[16] Unfortunately this attractive plan is not available in Canada.

In summary, the governments have a number of mechanisms which they have developed in their attempt to encourage residential development. These mechanisms are initiated at times which are congruent with periods of inactivity in housing development. This does not exclude any congruency with the national economic situation or political aims.

3.4 RENT STABILIZATION AND ITS EFFECTS ON CONSTRUCTION

As a means of protection for the consumer of rental units from the harsh or "unreasonable" demands of building owners, provincial governments have developed rent stabilization programs. The variation of Canadian rent stabilization legislation is the result of needs peculiar to each of the provinces. Whereas the government participation discussed in the earlier sections of this chapter tend to stimulate production of multiple unit residential buildings, rent stabilization legislation generally acts as a deterrent to the development of rental units.

Quebec has the toughest rent control laws in Canada when viewed through the eyes of owners and developers. Recently, when the cost of mortgages became high and unpredictable, rent increases were still limited to adjustments resulting from changes in designated acceptable operating costs only. This excluded the cost of money which could account for up to 83% of the total operating costs at 18.5% interest rates versus 69% for interest rates of 10%. The owner has had to absorb the 14% annual expense thus reversing the annual cash flow position of his operation. Because of the unfavourable cash flow, buildings gradually became unsaleable. Since the worth of revenue producing real eatate is based on the capitalization of the income stream (economic value), there was little desire to purchase existing buildings.

Frustrated on many occasions with the Rent Control Board which would block any rent increase not based on its itemized allowable expenses, owners tried to sell their property based on the capital gain or appreciation that the new owner would realize when the latter would sell the building several years hence. All other things being equal, inflation would cause the value of a building to appreciate to the extent that one could possibly tolerate a zero net cash flow from the annual operation.

However, since the economic value did not increase because of the previously mentioned additional mortgage costs which the owners were forced to absorb, a sane potential purchaser would not foresee a real building value appreciation and would turn away from the purchase even though the replacement cost of the property may be in excess of the selling price. In short, owning an apartment building became a liability.

On the other hand, since the rent control legislation is not applicable to new buildings for a 5 year period, a potential owner could build a multiple unit dwelling and assess the rents initially and for 5 years thereafter any way he sees fit, at least theoretically.

Since it is the demand side of the market which determines the rentability of the units, the builder is not at liberty to set rent levels at his discretion when, in fact, there are comparable units available at lower rents in structures which remain under the control of the Board.

This leaves the new builder with a potentially vacant building.

Although the socially oriented government could have forecast the above-mentioned series of events, it took no preventive action to reorient its policies. Now faced with a housing problem and pressure from landlords, a new policy concerning acceptable operating expenses has been initiated. This policy, to be administered by the Rent Control Board, recognizes that mortgage expenses are real, and that they can now be included as part of the building operating expenses. It is not known whether or not the allowed increases will be retroactive to the time when the mortgage interest rates saw their largest increases. Nevertheless, the Rent Control Board still maintains upper limits on rent increases.

From the tenants' perspective, a decrease in the cost of a mortgage should result in a decrease in rent. To date this problem remains unresolved.

In 1982, landlords were able to request justified increases from tenants. This latest legislation will definitely bring some relief to the landlords, and if not abused, this new development may allow rents to eventually reach fair levels.

Once the level of the rents charged in existing buildings approaches those required to economically support new projects, construction should be stimulated somewhat, in both private and government subsidized sectors.

CHAPTER 4

MORTGAGE RATES, INFLATION, AND LEVERAGE

4.1 INTRODUCTION

The single most important factor affecting the economic viability of a given project which requires financing is the cost of money. This cost is most likely to be the largest individual expense item among the many which would be be included in the annual operating cost statement of a project. The recently frequent increases in interest rates have introduced an added dimension to their importance. The significance of the mortgage interest rate is greater for multiple unit residential construction than for commercial/industrial projects because of the rent stabilization legislation in that sector. The effect that the cost of money has on a development, is such that its importance can never be underestimated.

Since the prime objective of this report is to analyze the effect of various mortgage designs on the cash flow of a given multiple unit residential building, we will not examine the many theories which have been developed in the attempts to find a formula that would relate interest rates to other economic factors so that their future behavior could be predictable. Instead, a simplified analysis will be performed. The result of the analysis will be used in establishing mortgage interest rates for use in the analyses in the case study.

4.2 THE BEHAVIOR OF MORTGAGE INTEREST RATES

The private sector financing institutions are in business for the purpose of earning a profit. Like other businesses, these institutions earn profits from the markup on their article of trade which, in this case, happens to be money. The interest rate at which money is available to the bank itself is dependent upon the rate that investors are prepared to accept. In the final analysis, the investor can very well turn out to be the borrower.

CONVENTIONAL MORTGAGE INTEREST RATE
ANNUAL AVERAGE
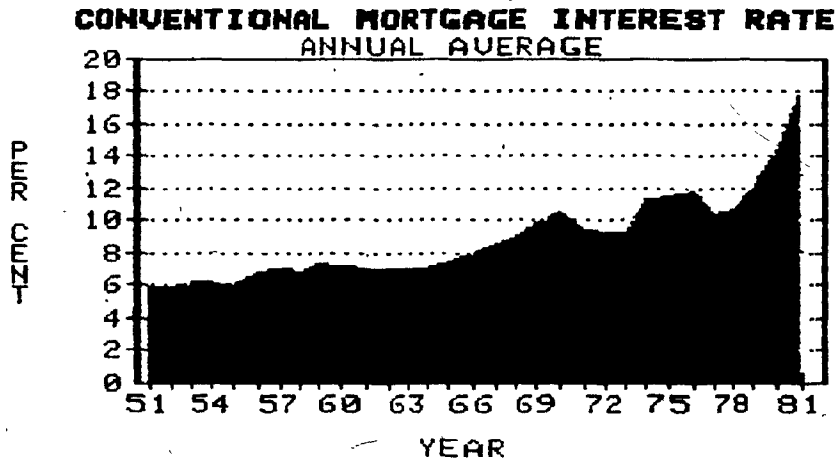
FIGURE R-1

Figure R-1 shows the 30 year behavior of the conventional mortgage interest rate. The year 1964 appears as the start to the steady increase in interest rates. In 1970, the rates lowered only to increase again in 1973. A cyclical pattern develops with the trend toward ever increasing rates.

Similar trends can be seen in the average annual Change in Consumer Price Index figure, R-2, and in the—

CHANGE IN CONSUMER PRICE INDEX
ANNUAL AVERAGE

FIGURE R-2

PRIME BUSINESS LOAN RATE
CHARTERED BANKS

FIGURE R-3

CPI & MORTGAGE RATES

MORTGAGE RATE

CPI
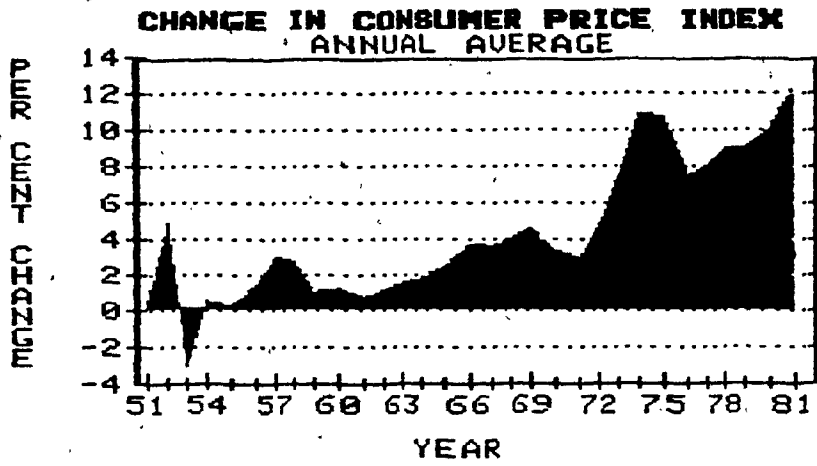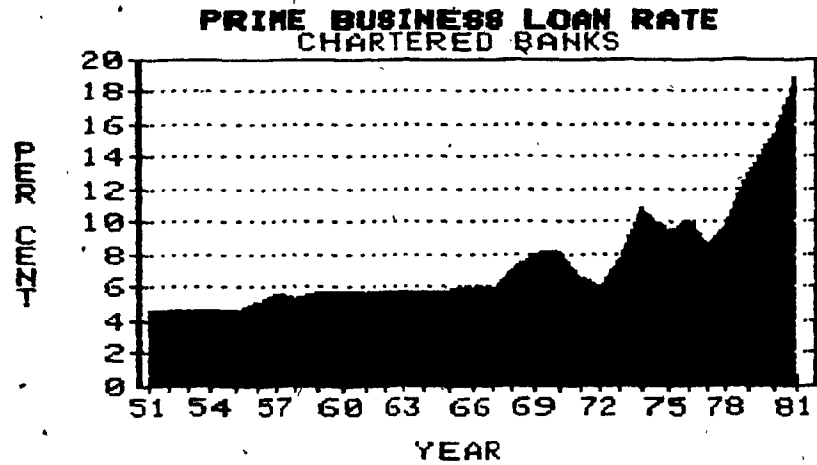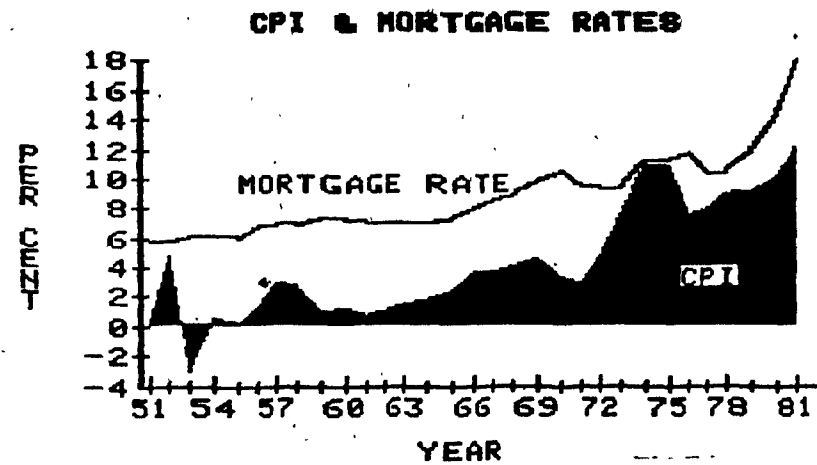
FIGURE R-4

Prime Business Loan Rate, figure R-3. In figure R-4 the historical behavior of the changes in the consumer price index (inflation) is overlaid by the mortgage interest rate. There appears to be a consistent discrepancy between the two rates until 1973 when the two become almost equal.

A closer look at this discrepancy is provided in figure R-5 where the difference between the mortgage interest rate and the percentage change in the consumer price index is plotted. As can be seen, during the period 1951 to 1972/3 when there was relative economic stability, i.e. stable inflation rates, stable mortgage interest rates, and stable prime business loan rates, the 22 year average was about 5.3%. Once the economic factors began their upward spiral, it reached an all time low of almost zero per cent in 1974 from which point it has taken seven years to recover to the long term average of 5.3%. Since this percentage represents a long term average during the period of relative stability, then one can conclude that the lower discrepancies as evidenced after 1972/73 are unusual and, therefore, not necessarily acceptable to all the participants in the mortgage financing market.

Figure R-6 illustrates the difference between the mortgage interest rate and the prime business lending rate over the same 30 year period. Until 1978, the mortgage rate was higher than prime. However, 1978 experienced the beginning of a sustained negative difference between the two rates. This further confirms the recent unusual behav-

ior in the various interest rate relationships and that
these results should be discounted when attempting to es-
tablish a long term relationship between economic factors.

MORTGAGE RATE LESS CHANGE IN CPI

FIGURE R-5

MORTGAGE RATE LESS PRIME RATE
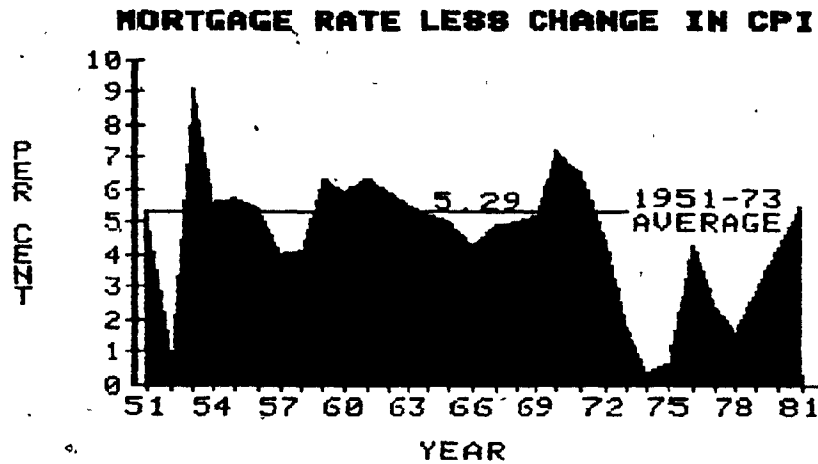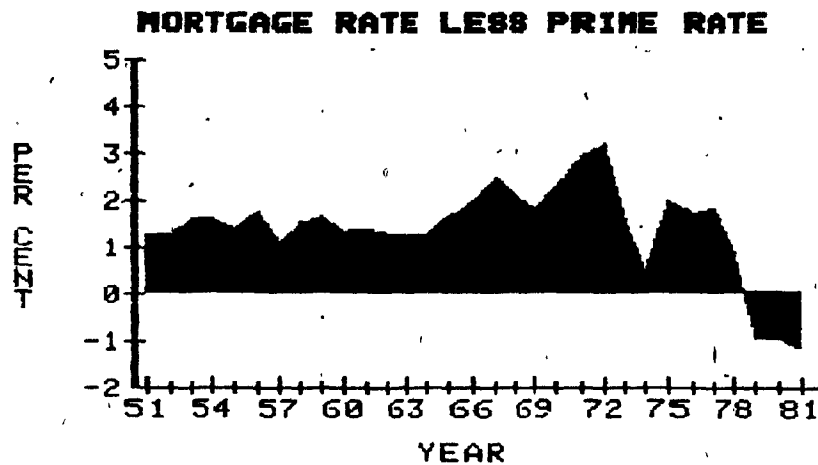
FIGURE R-6

For the purposes of this report, it will be assumed
that the eventual difference between the mortgage interest
rate and the rate of inflation will establish itself at a
level consistent with the historical data of the stable
period. Therefore, the mortgage interest rates that will

be used in the analyses which are included in later chap-
ters will be based on the rate of inflation plus 5.3%.

4.3 PREDICTING THE RATES OF INFLATION

In the analyses which follow in chapters 5 and 6, a
mortgage interest rate based on the reference rate of
inflation will be used. First, the rates of inflation for
the duration of a mortgage will have to be forecast for
each year of the amortization period. Although it may be
impossible to predict future inflation and interest rates
for a 25 year period, the predictions should reflect the
behavioral characteristics of the historical changes in the
rate of inflation.

Two of the important readily noticeable trends are the
continuous rise in the inflation rate and the cyclical
nature of the fluctuations (see figure R-2). To some de-
gree, many governments of the industrialized nations have
developed methods of dealing with inflation that should
arrest a forever increasing rate of inflation. Nonethe-
less, who is to say that it is not possible for Canada to
experience the 100% annual inflation rate at some time in
the future? In spite of all possibilities, it will be
assumed that changes in the consumer price index (CPI) will
remain within the range of recently experienced changes.

It appears very unlikely that the rate of inflation
will remain constant. The historical data plotted in Fig-
ure R-2 contains peaks in years 1952, 1957, 1969, 1974, and

1981. It is likely, however, that rates will continue to
fluctuate in the future. In order to reflect these fluc-
tuations in the predicted rates, the projections will be
based directly on the historical rates, but in reverse
order, for one half the duration of the mortgage amortiza-
tion period. The second half of the projection is based on
the mirror image of the first half. Figure R-7 represents
the result of the above projection technique.

PROJECTED RATES OF INFLATION
ANNUAL CHANGES IN THE CPI
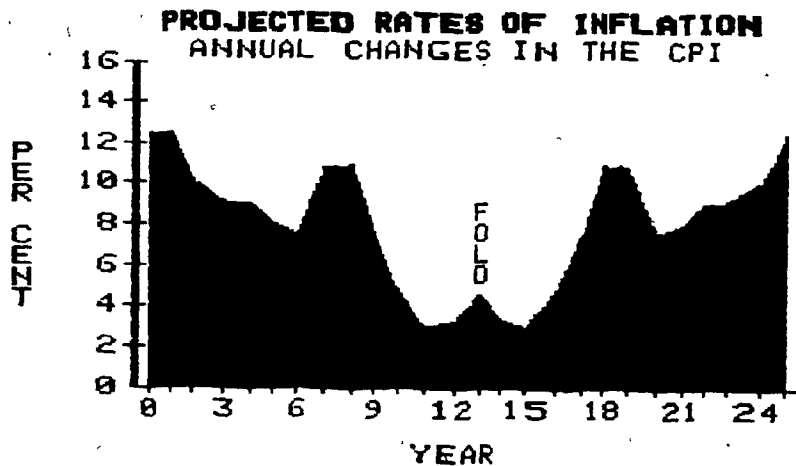
FIGURE R-7

The above predictions satisfy the basic cyclical na-
ture of the historical behavior. In addition, the average
frequency of the cycles approaches that of the historical
data, and the projected rates are within historical bound-
aries and fall within a wide range of values.

The data plotted in figure R-7 will be used in the
analyses in the later chapters. However, the computer
programs developed are capable of using any series of pro-
jected rates.

4.4 LEVERAGE

Most potential building owners do not have the personal financial resources required to purchase property outright. They must rely, therefore, on other sources of funds. Some building owners believe that using alternative sources to finance their project is the only way to amass a fortune. Others use borrowed money because they are not prepared to risk large sums of their own money in one project. Whatever the motivation, secondary sources of funds are generally required for building projects.

The terms used when discussing relationships between the cost of a project and the amount of personal equity invested to the amount loaned are leverage and the loan-to-value ratio. The loan-to-value ratio is defined as the percentage of the cost of a property covered by loans.[17] There are several definitions for leverage; for the purpose of this report, leverage is defined as the ratio between the total cost of the project to the amount initially invested.

The loan-to-value ratio or the leverage affects the economic viability of a project in two important ways:

(1) It determines the amount of the builder's own resources that are required to finance the capital cost of a project, and

(2) It has a direct impact on the annual cash flow of the operation of the completed building.

TABLE 3

LEVERAGE AND RETURN ON EQUITY INVESTMENT[18]

Ratio of mortgage debt to total cost	Total cost	Equity investment	Cash flow before debt service	Debt service	Net cash flow after debt service	Percent Cash flow of equity investment
.50	$1,000,000	$500,000	$120,000	$50,400	$69,600	13.92
.60	1,000,000	400,000	120,000	60,480	59,520	14.88
.70	1,000,000	300,000	120,000	70,560	49,440	16.48
.80	1,000,000	200,000	120,000	80,640	39,360	19.68
.90	1,000,000	100,000	120,000	90,720	29,280	29.28

Table 3 illustrates the dichotomy of loan ratios. On one hand it clearly indicates that the initial equity participation of the developer is only $100,000 for a $1,000,000 property at a 0.90 loan ratio and that the percentage return on the initial $100,000 is 29.28. When compared with a 0.50 loan ratio case, which yields only 13.92% return on the initial investment, it appears to be quite obvious that the higher loan ratio is advantageous.

On the other hand, the net cash flow after debt service for the 0.90 loan ratio is only $29,280 whereas that of the 0.50 ratio is $69,600. The higher loan ratio leaves the owner with little, if not insufficient, funds to defray the costs associated with the general operation of the enterprise.

Thus one can see the necessity for the owner to consider both the initial and future (operating) implications when attempting to decide upon the optimum leverage factor.

Over and above the logical arguments and calculations performed by a potential building owner, lending institu-

tions have their own restrictions and policies concerning loan ratios. For example, a loan guaranteed by CMHC is often limited to an amount not exceeding 80% of the project cost (including the cost of land) and the banking institutions are limited to 75%. Furthermore, should the institutions decide that the element of risk in a given project may be higher than "normal" then it may decide to impose an additional restriction to the maximum loan value.

In order to avoid the loan ratio restrictions imposed by federal legislation on the major institutions, an owner must find other sources of mortgage funds. These sources may include mortgage bond issues, REITs, mortgage companies, private lenders, etc. which may provide loans up to 100% of the land and building value.

The amount of a loan will be established by a lender in accordance with the value of the building. This value would be calculated based on one of (or a combination of) the following valuation techniques:

(1) the actual cost of the project;

(2) the economic value of the project based on the capitalization of the income stream; and

(3) the market value of the project.

In cases where the economic value of the property is in excess of its actual cost, it is possible to obtain mortgages for amounts greater than the actual cost of the project. The granting of loans based solely on higher than cost valuations can be dangerous for the lender. There are

known cases where the owner has gone into bankruptcy short-
ly after receiving his mortgage payment. \Fortunately, the
major institutions are governed by restrictive legislation
and conservative policies which limit the basis for the
establishment of the mortgage to an amount not exceeding
the actual cost.   Reliable institutions do, nonetheless,
evaluate the property using the three abovementioned meth-
ods to assure themselves that the actual costs of the
project is realistic compared with the other two values.

In summary, the amount of a mortgage acquired to
finance a project is a critical factor affecting its econo-
mic viability to both the mortgagee and the mortgagor.

CHAPTER 5

VARIATIONS IN MORTGAGES

5.1 INTRODUCTION

This chapter describes the mortgage formula, the repayment plans, mortgage types, mortgage designs, and the computer programs developed as tools for the computation and economic evaluation of several mortgage designs.

5.2 THE MORTGAGE FORMULA

There are four principal mechanisms by which mortgages can be repaid. They are:

(1) the unamortized loan,

(2) the straight principal reduction loan,

(3) the partially amortized loan, and

(4) the fully amortized loan.

The terms of the unamortized loan are such that the borrower pays interest only through regular, say monthly, installments and repays the capital in one lump sum at the conclusion of the term of the agreement. The mortgagor, therefore, does not build up any equity in the property until the final payment.

The straight principal reduction loan requires the mortgagor to make regular blended payments consisting of equal contributions toward the capital and the interest due on the outstanding mortgage balance. Because the outstanding balance is constantly decreasing, the interest payable decreases and the amount of the overall regular

payment declines. The borrower gradually builds up his equity in accordance with the capital contributions.

The amortized loan is repaid through equal blended payments of capital and interest. The loan is said to be fully amortized if the entire capital is repaid by the conclusion of the mortgage term. The partially amortized loan is one wherein the term of the mortgage is shorter than the amortization period so that at the conclusion of the mortgage term, there is an outstanding capital balance which must be repaid in a lump sum (balloon payment) or refinanced. The commonly used mortgage loan repayment plan is the fully amortized one for long term standard mortgages and the partially amortized method for long amortization short term mortgages.

"Amortized mortgage loans are a form of annuity, either simple annuity or general annuity."[19] When the compounding period is of the same duration as the payment period, the annuity is said to be simple. The term general annuity is used when the compounding period is of different duration than the payment period. In any case, the general annuity formula is used in this report for all mortgage calculations since application of the given data will reduce the equation to the simple annuity when necessary. Equation 1 represents the simple annuity, and equation 2, the general annuity. These equations are used to calculate the periodic payments for amortized (blended payment) mortgages.

$$(1) \quad W = P * \frac{i*(1 + i)^{n*p}}{(1 + i)^{n*p} - 1}$$

$$(2) \quad W = P * \frac{\left(1 + \frac{j}{m}\right)^{\frac{m}{p}} \left(1 + \left(1 + \frac{j}{m}\right)^{\frac{m}{p}}\right)^{n*p}}{\left(1 + \left(1 + \frac{j}{m}\right)^{\frac{m}{p}}\right)^{n*p} - 1}$$

where W = periodic payment ($)
P = mortgage amount, principal ($)
j = nominal interest rate (%/100)
m = no. of compounding periods/year
p = no. of periodic payments/year
n = amortization period (years)
i = interest rate/compounding period (%/100)

After calculating the periodic payments, the outstanding mortgage balance following a given number of payments can be calculated using equation 3:

$$(3) \quad Pr = \frac{W}{\dfrac{i*(1 + i)^{r}}{(1 + i)^{r} - 1}}$$

where Pr = outstanding principal
r = no. of payments remaining

The total amount paid toward the principal after any given number of payments is then calculated by equation 4:

(4)   AP = P - Pr

The amount of interest paid to date is then derived from equation 5:

(5)   IP = W * (n*p - r) - AP

The effective interest rate, i, is usually different from the nominal interest rate, j, because interest is often calculated on a semi-annual or monthly basis. Effective interest rates can be calculated using equation 6:

(6) $i = (1 + j/m)^m - 1$

The consequences of the frequency of compounding periods on effective interest rates are shown in table 5, page 74.

The above series of equations are used repetitively in the development of the tables for mortgage designs used in the case study analysis. For the non-standard mortgage designs, the basic equations remain the same but the method of adjusting the interest rates, outstanding capital, and interest paid from one year to the next varies. Several examples are given in the section "Mortgage Designs".

5.3 MORTGAGE TYPES

The mortgage business is a specialized one and like other specialized fields, it has its own characteristic terminology. This section explains the general interpretations of the conventional, blanket, wrap-around, junior, participation, and CMHC mortgages.

THE CONVENTIONAL MORTGAGE

The conventional mortgage is one which is fully amortized over a fixed period although its term may be variable. It is applicable to most multiple unit dwellings including condominium or similar projects where the global mortgage is later subdivided. In Canada, interest for the standard conventional mortgage is compounded semi-annually whereas in the U.S.A., it is compounded monthly.

The conventional mortgage is neither insured nor guaranteed by the government or its agencies. The terms of the mortgage are subject to the policies of the specific funding source. The building value upon which the loan ratio can be based may be either the actual capital cost of the project or its appraised economic value. Although this type of mortgage may be obtained from any source including the private individual, the most dependable ones are the larger Canadian institutions. These institutions have the history and the experience of mortgage lending and their future existence is quite secure.

The institutional sources of funds tend to renew mort-
gages at the end of their terms practically as a matter of
course, whereas the individual lender may not because his
personal requirements or state of mind may not permit a
continued loan. Individual funding sources can play havoc
with a mortgagor. The institutional sources are, however,
governed by federal legislation which establishes the lend-
ing limit on conventional mortgages. This limit, as ex-
plained earlier, is set at 75% to 80% of the appraised
building value.

THE CANADA MORTGAGE AND HOUSING CORPORATION (CMHC) MORTGAGE

The CMHC mortgage is given by a recognized lending
institution but is effectively guaranteed by the govern-
ment. Because of the guarantee, the risk exposure to the
lender is reduced resulting in a loan interest rate of 1/4%
to 3/4% lower than the conventional rate. The value of the
building upon which the loan-to-value ratio is applied is
based on its actual cost and not the economic value. Fur-
thermore, CMHC will guarantee mortgages if and only if the
specifications of the mortgaged property meet or exceed the
construction standards of that corporation.

THE BLANKET MORTGAGE

When developing several properties at or about the
same time, a developer may obtain one all-inclusive mort-
gage. This blanket mortgage may contain clauses which
would allow for the releases of individual properties once

payments toward the mortgage are made. This type of mort-
gage is similar to the global mortgages available for
condominium projects but has a wider range of use.

THE WRAP-AROUND MORTGAGE

From time to time a developer may wish to reduce the
down payment required to purchase a given property by ob-
taining additional financing or refinancing (over and above
the amount covered by an existing low interest rate mort-
gage). He usually has the option of a wrap-around mortgage
where the lender agrees to meet the payment terms of the
original mortgage out of the proceeds of the payments
received under the terms of the wrap-around mortgage. The
advantage of this mechanism is that the mortgagor is able
to obtain the wrap-around mortgage at an interest rate
lower than that of the second mortgage. As an example of
the above, consider the following:

> A developer has an outstanding mortgage of $700,000 at
> 10% on an apartment building that he wishes to sell
> for $2.000,000. He believes that if he can obtain
> favourable financial arrangements for an additional
> $700,000, he would have a better chance of selling the
> building. His choices are among the following plans:
> (1) pay off the present mortgage and obtain another at
>   the going rate, say, 18%,
> (2) put a second mortgage on the property at 22%, or
> (3) obtain a wrap-around mortgage at 15%.

TABLE 4
EXAMPLE OF WRAP-AROUND MORTGAGE

		PLAN 1	PLAN 2	PLAN 3
First mortgage				
Amount		$1,400,000	$700,000	$1,400,000
Interest rate		18%	10%	15%
Payment		252,000	70,000	210,000
Second mortgage				
Amount		-	$700,000	-
Interest rate		-	22%	-
Payment		-	$154,000	-
TOTAL (INTEREST) PAYMENT		$252,000	$224,000	$210,000

BENEFIT TO MORTGAGEE UNDER PLAN 3

Payments received from mortgagor	$210,000
LESS payments on original mortgage	70,000
Net cash flow	$140,000

As shown in table 4, the net cash flow to the mortgagee using Plan 3 is $140,000 which amounts to an interest rate of 20% on the $700,000 he advanced. This represents a higher yield than the 18% of Plan 1. In Plan 3, the lender takes advantage of leverage since he is receiving 5% (15% less 10%) on the original $700,000 he did not advance. The mortgagee maintains a second position on the building and if the mortgagor defaults, the mortgagee can repay the original mortgage and take possession of the building.

The mortgagor has lower payments, makes his payments to only one lender, and realizes savings of between $42,000 and $14,000 when compared to plans 1 and 2 respectively.

JUNIOR MORTGAGES

Oftentimes, the gap left between the available mort-
gage financing and the resources of the developer requires
additional financing. This additional financing may be
obtained through junior or equity mortgages. These second
and successive mortgages have greater risks than the first
for two important reasons. First, any claims on the prop-
erty by the second mortgagee are secondary to those of the
first mortgagee. In the event of default, the first mort-
gagee has first claim on the property. Because of the
additional payments required by the second (and successive
mortgages), the mortgagor is more likely to default on the
second mortgage payments in the presence of financial prob-
lems.

The second important reason for the additional risk is
that as successive mortages are taken, the mortgaged amount
approaches, and could sometimes exceed, the actual value of
the property. Any downward fluctuations in the true build-
ing value can leave the last mortgagee with no security.

Junior mortgages differ from first mortgages in that
interest rates on second mortgages are compounded monthly.

THE PARTICIPATION MORTGAGE

The participation mortgage allows the mortgagee to
benefit from advantages other than those associated with
the simple collection of interest on a loan. This mortgage
can provide the lender with ownership rights, management

rights, lease rights, and other possible advantages. The lender's cost is reflected in the preferential mortgage interest rates given to the developer. This type of mortgage has become more popular of late because the large sums of money involved in major projects require that the lenders protect themselves against high inflation rates through equity participation.

The Shared Appreciation Mortgage (SAM) is one wherein the lender may finance a mortgage for 10% when the going rate is 13% in return for a 5% equity appreciation participation. However, this type of mortgage is speculative and presents unknown risks to the lender, especially in the current poor state of the economy.

A second source of protection can be obtained through direct management rights. Mortgage lenders have concluded that mortgage defaults and project failures are primarily the result of poor property management practices. They believe that their participation in property management results in a lower risk of default.

In spite of the growing popularity of this type of mortgage, the major institutions, having very conservative lending policies, have avoided its introduction into the residential market.

MORTGAGE BONDS

Occasionally, when a large mortgage is sought, investors may not wish to assume the entire risk although they would be prepared to participate with other lenders. In

such cases, mortgage bonds would be publicly or privately issued for the total value of the desired mortgage. These bonds could be purchased by pension funds or other investors in the proportion they desire. Through this financing technique the major institutions are not subject to the maximum loan-to-value ratio since they are investing their funds through the purchase of bonds and not through the lending of money.

5.4 MORTGAGE DESIGNS

Many of the financing institutions had suffered severe losses as a result of long term commitments to borrowers. While inflation and interest rates skyrocketed, the lenders were faced with declines in the real value of their outstanding capital. To cope with the recent economic realities of variable, high, and unpredictable inflation rates, lenders have had to create new mortgage designs. New designs that effectively allow a variable stream of income or capital appreciation for the lenders are now commonplace. However, these new designs have left borrowers insecure since they are now faced with unpredictable mortgage payments based on interest rates that were beyond their wildest imagination only five years ago. The lending institutions have effectively transferred the risks associated with the future behavior of the money market to the mortgagors.

Mortgage lenders obtain money for mortgages through several methods, the prime one being the guaranteed investment certificate, as mentioned earlier. Private individuals purchase these certificates in varying denominations, usually in thousand dollar increments, for periods of time varying from 30 days to five years. The attractiveness of the interest rates offered on these certificates will, for the most part, determine the amount of money that would be raised and later offered in the mortgage market. The mortgage interest rate is usually in the range of 2% to 4%

above the rate of the certificate.

Faced with today's economic realities, the savers or investors who purchase the GICs are concerned about tying up their funds for long periods. Lenders cannot be expected to repeat their mistakes by extending mortgage periods beyond the term of their supply of funds. Because of the unwillingness of the saver to commit himself to long terms in order to keep his assets relatively liquid in these unstable times, the mortgagees must follow suit by either providing short term mortgage commitments or long term commitments with adjustable financing costs based on a formula.

Formula based mortgages with built-in variability are not totally detrimental for the borrower since decreases in the market interest rates are appropriately reflected in decreased amortization payments. The payments would vary according to a given reference rate that would produce a constant dollar effect. Owners of multi-unit residential buildings are, nevertheless, caught between the relatively fixed revenues controlled by rent stabilization legislation and unpredictable financing expenses. This section sets out recently developed mortgage designs and their implications. Mortgage tables for six designs are included in appendix A. Graphical representations are presented as part of the case study in chapter 6.

THE STANDARD MORTGAGE

The standard mortgage is the traditional fully-amortized level payment mortgage which was prevalent until the time that inflation began taking its toll of lenders. Monthly payments are blended, that is, each payment consists of interest and a contribution toward capital, the amount borrowed.

In the early years of a mortgage the capital contribution is minimal but increases significantly toward the middle of the amortization period. A typical amortization schedule is presented as computer printout 1 in appendix A and the corresponding graphical representation is shown as figure M-1 in chapter 6.

Standard mortgages were of long duration, ranging from 20 to 40 years. The most common term for single family dwellings was 20 to 25 years and 30 to 35 years for multiple unit residential buildings. The risks associated with the length of this commitment rested with the lender. Lenders who granted long term mortgages just before the upsurge in inflation rates remain committed for the balance of the term. Mortgage lenders with outstanding long term loans are being very frugal when mortgagees default because it gives them the opportunity to foreclose, or take other action that would lead to the recovery of some of their lost capital.

It now appears that standard mortgages are becoming extinct. The only hope of returning to a relatively con-

stant payment fixed term mortgage rests with the stabiliza-
tion of the economy. If and when this should occur, the
other mortgage designs would produce the effects character-
istic of the standard mortgage.

The impact of the difference between the American and
Canadian methods of calculating payments for the standard
and renewable standard mortgages is summarized in table 5.

TABLE 5
INTEREST RATES AND COMPOUNDING FREQUENCY

Nominal interest rate:	10.00%	15.00%	19.00%
Effective interest rates:			
Monthly compounding (USA)	10.47	16.08	20.75
Semi-annual compounding (Can)	10.25	15.56	19.90
Difference	0.22%	0.52%	0.85%

In Canada, all other mortgage designs are calculated
in accordance with the monthly compounding calculation.

THE RENEWABLE STANDARD MORTGAGE

This mortgage design is similar to the standard mort-
gage in that the amortization period is generally of long
duration and payments are blended. The key difference is
the duration of the term, that is, the period over which
the lender is prepared to guarantee certain conditions,
specifically the interest rate. The renewable mortgage
does not guarantee that the mortgage will be renewed al-
though the reputable mortgage institutions have a history
of renewing these loans at the current interest rate if the
risk concerning the future cash flow of the building opera-

tion is favourable.

When this mechanism was initiated in the late 1960s, mortgages were renewable in five year terms. The most recent transactions seldom, if ever, include terms greater than three year periods because the current economic cycles are too frequent. The high interest rates of 1981 and 1982 have increased the demand by mortgagors for the one year or even the six month mortgage to avoid having to repay the loan at the high rates for any longer than necessary.

At an interest penalty of about .75% which is tacked on to the standard mortgage rate, an owner may wisely opt for an "open" mortgage when interest rates are high. This enables him to make direct contributions toward his equity or even cancel the mortgage agreement during the term. The conditions of the "closed" mortgage impose a penalty of three months interest for unscheduled capital payments.

The conclusion of the mortgage term can present some difficulties for owners of multiple unit residential buildings. The burden of refinancing rests with the owner whose application is carefully scrutinized by the lender from the perspective of risk. The latter must decide whether or not the forecasted cash flow is justified, realistic, and sufficient to ensure continuity of mortgage payments and solvency of the owner. An unsuccessful result of the evaluation may result in an abnormally high mortgage interest rate, or in the worst case, a non-renewal. This is an important hazard of this form of mortgage.

Typical amortization schedules for the 5 and 3 year renewable mortgages are included as printouts 2 and 3 in appendix A. The corresponding graphs are shown as figures M-2 and M-3 in chapter 6.

THE VARIABLE RATE MORTGAGE

The variable rate mortgage (VRM) passes the risk of future interest rate fluctuations from the lender to the borrower. For the VRM, 'the interest rate is allowed to float according to a given reference rate. This reference rate may be the prime lending rate, the bond rate, the inflation rate, or other suitable rate. The frequency of the rate changes, the method of calculating the periodic payments, and occasionally the maximum payment or interest fluctuations are set out in advance in the mortgage agreement.

The basic VRMs are divided into two designs.[20] The first is the fixed term variable payment VRM which modifies the debiting rate as the reference rate changes. The second design is the fixed payment variable term mortgage which maintains a fixed periodic payment until the loan is amortized but modifies the term by adjustments to the principal to account for the difference between the current market rate and the rate used to compute the payments. Here, the amortization period remains the same but the number of payments would vary to assure repayment of the principal.

Although the fixed term variable payment mortgage is more popular at the moment, the fixed payment variable maturity is more beneficial to an owner as this design allows for more accurate forecasting of expenses for the duration of the term. As far as the lender is concerned, it is important to forecast a debiting interest rate which would approach the actual long term rate.

> The closer the originally estimated interest-rate scenario is to the actual average interest rates, the closer the final maturity will be to the expected maturity forecast in the loan agreement.[21]

However, small changes in rates do produce large changes in maturity dates and a consistent increase in rates would develop into a situation wherein the original fixed payment may never be adequate to repay the capital. This may explain the reluctance of the lending institutions to supply funding via the variable maturity mechanism. This design could be modified to include adjustments to the payments should the actual rates deviate significantly from the predicted long term rate. The modified version of the plan could then hardly be called "fixed payment".

Typical mortgage tables for the variable rate fixed term and fixed rate variable maturity mortgages are included as printouts 4 and 5 of appendix A with the corresponding graphs shown as figures M-4 and M-5 in chapter 6.

THE DUAL RATE VARIABLE RATE MORTGAGE

Because of the possibly frequent changes in the payments in the fixed term VRM of the potentially never ending

fixed payment VRM, there was a need to find a realistic combination of the two VRM designs. The dual rate VRM is an attempt to achieve this through the use of two interest rates.[22] The debiting rate is used to calculate interest on the outstanding capital and the payment factor is used to compute the regular payments. The mortgage agreement would provide for recalculating the payments at predetermined intervals, say each 3 or 5 years. These payments would be modified if the short term debiting rate changes, but in the case of an increase, i.e. the the rate at which interest is debited exceeds the interest contribution of the regular payment, the effect on the payments is usually not significant because the amortization of the additional capital is spread over the remaining portion of the mortgage term. The obvious problem concerning the dual rate VRM is its complexity.

THE GRADUATED PAYMENT MORTGAGE

The graduated payment mortgage is a financing instrument which was initiated to establish a correlation between mortgage payments and an owner's income and his ability to pay.[23] The initial payments are, therefore, lower than those of the standard mortgage and the later payments higher. The pure graduated payment mortgage involves payments that are gradually increased in accordance with the rate in inflation thereby retaining a constant value of the payments in terms of purchasing power. In the early stages of the term, the capital increases only to be recovered at

a later date when the payments rise.

THE INTEREST PREPAYMENT PLAN

This form of mortgage is available to the individual homeowner through CMHC. It is similar to the graduated payment plan in that it provides lower initial payments which in this case, is made possible through the prepayment of interest. This option is limited to a three year minimum term and provides the lower payments for the first three years.

The CMHC plan shows that for a $60,000 dwelling with 95% financing a $3,000 downpayment and a lump sum interest payment of $2,645 are required. The monthly payments for the first three years are reduced to $670, $710, and $751 from the would-be standard payment of $794.[24] These payments are calculated using interest rates 3% lower than the standard rate for the first year, 2% for the second year, and 1% for the third year.

Although the outlay in current dollars is equivalent to that of the standard mortgage, this process does decrease the minimum annual income required to purchase the property. Based on a gross debt service of 32%, the minimum annual income required to obtain a standard mortgage is $32,182 and that for the interest prepayment plan mortgage is $29,532.

This plan is artificial in that the formula used to calculate the payments is not consistent for the duration

of the mortgage. It was designed to accomodate the pur-
chaser rather than to solve today's complex mortgage prob-
lem.

THE PRICE LEVEL ADJUSTED MORTGAGE

More commonly known by its acronym PLAM, this mortgage
design is intended to tie the interest rates in the mort-
gage agreement to "real" rates of interest.[25] The real
interest rate is defined as the net interest rate after the
consideration of inflation. In chapter 4, the real inter-
est rate is described as the difference between the debit-
ing rate and the rate of inflation; this was estimated to
be 5.3%. In the PLAM, the real interest rate is used to
calculate the interest on the mortgage balance. At regular
intervals, say annually, the principal is adjusted in con-
sideration of the payments made.

To illustrate this, let us use the example of a
$500,000 PLAM amortized over 25 years, at a real interest
rate of 5.3%, with an inflation rate of 10%. Table 6
demonstrates the method of calculation.

The payments made in the second year exceed those of
the first by $3686 or 10.20% which is very close to the
inflation rate of 10%. When applied for the duration of
the amortization period, this formula maintains the con-
stant dollar value and gross debt service effects while
minimizing if not eliminating, the risk to the borrower.
Note that although the example (table 6) showing the early
years of the mortgage term may lead one to believe that the

TABLE 6
THE PLAM CALCULATION

YEAR 1

Initial principal	$500,000
plus Interest at 5.3%	26,262
plus Adjustments to principal (10%)	50,000
less Payments made ($500,000/5.3%/25 yrs)	36,132
Principal for following year	$540,130

YEAR 2

Initial principal	$540,130
plus Interest at 5.3%	28,351
plus Adjustments to principal (10%)	54,013
less Payments made ($540,130/5.3%/24 yrs)	39,818
Principal for following year	$582,676

loan would never be amortized, the application of the PLAM formula for the duration of the amortization period eventually does amortize the loan. The 25 year amortization schedule included as printout 6 in appendix A shows that for the initial mortgage amount of $7,134,304, a balance of only $469,764 remains after 25 years (see adjusted principal column). This can be repaid by a balloon payment or by several continued monthly payments. The eventual amortization results from the fact that a portion of each payment is applied toward the capital and as the payments gradually increase, they become large enough to overcome the effects of the inflation factor on the adjusted principal.

The mortgage schedule is plotted in figure M-6 in chapter 6.

THE CONSTANT PAYMENT FACTOR VARIABLE RATE MORTGAGE

A combination of the formulae used to calculate the dual rate variable rate mortgage and the price level adjusted mortgage results in yet another form of variable rate mortgage.[26] The constant payment factor VRM is based upon a variable debiting rate and a fixed payment factor, the latter established in the mortgage contract. The payment factor, used to calculate the mortgage payment, is chosen to correspond to the current long term mortgage interest rate. The debiting rate is chosen as the inflation-free rate of interest which has been established at 5.3% for the purposes of this report.

The difference between the payments made and the interest due under the debiting rate calculation is added to the outstanding capital. The payments for the subsequent year are based on the application of the payment factor to the new outstanding principal. This differs from the PLAM which adjusts the mortgage balance by the direct application of the reference inflation rate, and from the dual rate VRM which modifies the payment factor to calculate the new payments.

Table 7 outlines the mechanics of the mortgage design for the $500,000 mortgage of 25 year duration, a real interest rate of 5.3%, and a debiting rate of 15.3% based on the reference inflation rate of 10%.

The annual payment factor computed in year 1 according to $500,000/5.3%/25 years is used to calculate the payments

TABLE 7
THE CONSTANT PAYMENT FACTOR VRM CALCULATION

YEAR 1

Initial principal	$500,000
plus Interest required ($500,000/15.3%/25 yrs)	76,371
less Payments made ($500,000/5.3%/25 yrs)	36,132
Principal for following year	$540,239

YEAR 2

Initial principal	$540,239
plus Interest required ($490,130/15.3%/24 yrs)	76,063
less Payments made ($540,239/5.3%/24 yrs)	39,826
Principal for following year	$576,477

to be made in year 2 and subsequent years. The second year payment is $3,694 or 10.22% higher than the first year's payment. This increase is again close to the 10% inflation rate thereby protecting the lender against loss in equity.

Although it is highly unlikely, but not impossible, a perpetually increasing reference rate can lead to disastrous capital recovery problems since the long term interest rate on which the mortgage is based remains fixed. A continuously decreasing reference rate would have negative consequences for the borrower.

Typical payments and interest for the constant payment factor VRM for 25 years is included as printout 7 in appendix A and is represented graphically in figure M-7.

SUMMARY AND CONCLUSION

The requirement for the development of variable type mortgages results from the need to protect the mortgagee against devaluation of his income stream in times of escalating inflation. In times of declining inflation rates, the variable rate mechanisms protect the mortgagor against excessively high payments. These needs were recognized after the recent and significant increases in inflation rates. These new designs effectively pass the interest rate risks to the mortgagor.

Indeed there are several viable mortgage design alternatives capable of coping with the concerns of lenders and borrowers. We have seen that some of these concerns are complex and may not be easily understood by those unfamiliar with this specialized field. However, the conservative nature of the major lending institutions combined with the borrowers' lack of understanding of the new mechanisms and the viability of the mortgage designs themselves have delayed the full scale implementation of the new processes.

Conceptual adaptation is required by borrowers' who have been spoiled over the years when long term mortgages guaranteed fixed payments. Borrowers are now beginning to reluctantly accept the principal of the new financing methods although this acceptance is not evidenced as of yet by the level of development activity in the multiple unit residential building market.

5.5 COMPUTER PROGRAMS

To produce the tables and charts that will be present-
ed in the case study innumerable calculations and data
plotting must be performed.   Even before the final data is
presented, many trials are required to assure a correlation
between individual bits of information obtained from dif-
ferent sources.   To do this manually would not only be a be
a nightmare but would take "forever".

In the attempt to minimize the time required for the
repetitive calculations and reruns, a series of computer
programs were developed for use on a personal micro-compu-
ter, the Apple][plus.   The language used is Applesoft, a
form of Basic.

A group of six user interactive programs were devel-
oped for the production of mortgage tables for each of the
six mortgage designs used in the case study.   The programs
were written for the following mortgage designs:

  (1) the standard mortgage,

  (2) the renewable standard mortgage for mortgage terms
      of any duration (5 and 3 years are used in this
      report),

  (3) the variable rate mortgage,

  (4) the constant payment variable maturity variable
      rate mortgage,

  (5) the price level adjusted mortgage, and

  (6) the constant payment factor variable rate mort-
      gage.

The data provided in the tables was later input to a commercially written analysis and plotting program to produce the graphs used in this report.

The programs developed are sufficiently general to permit the analysis of any number of mortgage interest rates, reference rates (e.g. rate of inflation), mortgage amounts, amortization periods, and mortgage terms. Although this report deals with a specific set of raw input information, the programs can produce outputs according to any specific set of relevant information. Due to the size of the output data, the tabular printouts are included in appendices A and B and the graphs are appropriately dispersed in the text.

There are no specific assumptions made in the above programs since the mortgage schedules are straightforward once a thorough understanding of each mortgage design is obtained.

A program was written to perform the evaluation of the financial feasibility of a multiple unit residential building for varying sets of given data. The basic data pertinent to each run is shown on each printout. Other data and assumptions common to all of the related analyses are shown as part of the case study in chapter 6.

Although the task of developing these programs was arduous, it did serve several goals. Apart from eliminating the tediousness of the work, it illustrated the usefulness of the micro-computer in a complicated mortgage

analysis. In addition, it provided an output which was directly presentable in a report.

The same micro-computer, an Epson MX-80F/T dot matrix printer with Graftrax plus, and a commercially available word processing software package are used for the production of the complete report.

CHAPTER 6

CASE STUDY

6.1 INTRODUCTION

The objective of the case study is to analyze the impact of the different mortgage financing designs on the cash flow of the operation of a high rise multiple unit apartment building. Because mortgage,designs of the future will be significantly different than the standard mortgage of the past, it is important that present and future property owners and developers have some technical understanding of both present and future mechanisms. The case study will give the reader some insight into the effects of the financing mechanisms on the ability to earn a profit in the multiple unit housing market as measured in terms of cash flow and internal rate of return. Section 2 of this chapter deals with the establishment of revenues and expenses as well as the relationships between them. At the end of section 2, table 12 summarizes the revenues, expenses, and all other basic data used in the analysis of the effects of mortgage design on operating cash flow and internal rate of return.

The case residential building is to be built in Montreal and will contain 144 units consisting of 20 studio-bachelor apartments, 20 one bedroom apartments, 60 two bedroom units, and 44 three bedroom units. Provision is made for one parking space for each unit. The total gross

and net floor areas of the concrete structure building are 137,898 and 117,360 square feet respectively. The average unit size is 815 square feet.

The general data used and assumptions made in order to determine the effects of mortgage design on cash flow and internal rate of return include the following:

(1) annual escalation in operating costs and revenues in accordance with the reference rate, the rate of inflation,

(2) the "grossing-up" (gross less net floor area in %) percentage of 17.5%,

(3) the total expenses include mortgage interest and capital payments and the deduction for taxes do not include any contribution toward capital,

(4) the capital cost allowance is used only when the gross revenue exceeds the total expenses less the contributions toward capital,

(5) the total capital costs include all the hard and soft costs relating to the construction including financing costs, fees, etc., up to and including the time that the building reaches the 95% occupancy level,

(6) at time of sale, and for the purpose of calculating the internal rate of return (IRR), the forecast cash reversion is is calculated in accordance with property appreciation rates of 0% and 5% and includes the costs of disposal but not the recapture and capital gains taxes which are treated separately, and

(7) no government grants are included in any of the calcu-

lations.

6.2 THE RELATIONSHIP OF REVENUES AND EXPENSES

The unit area operating costs will be based on CMHC figures obtained in its analysis of residential building operating costs for 1981-82. These operating costs are summarized in table 8.

TABLE 8
SCHEDULE OF EXPENSES 1981-1982
RESIDENTIAL BUILDING (CONCRETE STRUCTURE) IN MONTREAL

	$/S.F.	$/Unit	$/Room	% Gross Revenue
Taxes	1.204	886	259	23.0
Insurance	0.059	52	13	1.3
Heating/Elect.	0.511	468	129	9.2
Mainten/Repairs	0.225	167	35	4.5
Salaries	0.140	123	31	2.7
Administration	0.218	157	45	4.3
Total	$2.357	$1853	$512	45.0

From the table we can conclude that the average gross revenue per unit was $4,118 ($1,853 * 100%/45%) or $343.17 per month. Similarly, the average number of rooms per unit is calculated to be 3.62. The 55% of the revenue remaining after the deduction of direct expenses is available for the financing costs, amortization, and the owner's profit.

Because there is a high demand for larger apartments, i.e. apartments with more rooms, the average number of rooms per unit for the case building has been adjusted slightly upward to 3.75. This in turn modifies the average

per unit net area by the factor 3.75/3.62 to get 815 square
feet per unit. The expenses for the case building are,
therefore, proportionately modified to those shown in table
9. The average gross revenue is also adjusted to $4,266
annually or $356 monthly.

TABLE 9
CORRECTED SCHEDULE OF EXPENSES 1981-1982
CASE RESIDENTIAL BUILDING IN MONTREAL

	$/S.F.	$/Unit	$/Room	% Gross Revenue
Taxes	1.204	918	59	23.0
Insurance	0.059	54	13	1.3
Heating/Elect.	0.513	485	129	9.2
Mainten/Repairs	0.225	173	35	4.5
Salaries	0.140	127	31	2.7
Administration	0.218	163	45	4.3
Total	$2.357	$1920	$512	45.0

These operating costs reflect the average costs rela-
tive to many buildings which include old as well as new
structures. Similarly, the revenues obtained in the CMHC
survey are based on buildings of various ages. The direct
expenses do not include the financing costs which are much
higher for recently constructed buildings for two reasons —
the higher cost of construction and the elevated interest
rates. To plan a project based on its economic viability,
significantly higher gross revenues will have to be real-
ized.

An average annual rental of $4,267 implies individual
unit rents of approximately $218 per month for the studio
apartment, $291 for the one bedroom, $364 for the two

bedroom, and $436 for the three bedroom apartments. Con-
sidering the present low vacancy rate for apartment build-
ings, the market could probably now support monthly rents
of $300, $400, $500, and $600 for each of the aforemen-
tioned units.

As discussed in chapter 5, the computer program "FI-
NANCIAL ANALYSIS – APARTMENT BUILDING" was developed in
order to evaluate the effects of revenues, expenses, lever-
age, capital cost, and financing costs using the standard
mortgage mechanism on the economic feasiblity of a project.
This program will be used as a tool to help determine an
appropriate balance of revenues and critical expenses re-
quired to achieve a positive operating cash flow.

Using fixed critical data which includes capital cost,
operating costs, escalation rates, the mortage interest
rate, loan limit, and mortgage design, the program was run
with the four sets of monthly apartment rents shown in
table 10. The detailed analyses are included as printouts
8 to 11 in appendix B and the summarized results of the
calculations are shown in table 11.

It becomes quite clear that if the revenues are based
on the average rents determined under CMHC averages and the
standard mortgage, the owner will encounter severe losses
which can total $4,463,885 (using a 10% discount rate) over
the first 10 years of operation. If the rents are based on
estimated market rates which are about 38% higher than the
CMHC figures, then he can still lose $2,391,693 over the

TABLE 10
SCHEDULE OF MONTHLY RENTS FOR TRIAL SET OF CASH FLOW RUNS

	Run 1 CMHC Rents	Run 2 Estimated Market Rents	Run 3 Trial Rents	Run 4 Trial Rents
Bachelor/Studio	218	300	375	565
One Bedroom	291	400	475	720
Two Bedroom	364	500	600	908
Three Bedroom	436	600	700	1095

TABLE 11
DISCOUNTED ANNUAL CASH FLOWS VS. RENTS FOR 10 YEARS
SUMMARY OF COMPUTER RUNS

Year	Run 1 CMHC Rents	Run 2 Market Rents	Run 3 Trial Rents	Run 4 Trial Rents
1	(827,960)	(619,310)	(473,659)	16,685
2	(712,131)	(498,739)	(349,777)	145,574
3	(613,874)	(400,288)	(251.191)	244,610
4	(527,841)	(316,003)	(168,126)	297,138
5	(450,206)	(240,293)	(93,761)	310,136
6	(383,163)	(177,066)	(33,198)	317,133
7	(324,292)	(122,879)	17,719	320,879
8	(260,983)	(58,105)	83,516	341,355
9	(202,867)	1,670	144,450	361,426
10	(160,568)	39,320	152,543	362,417
Total	(4,463,885)	(2,391,693)	(971,484)	2,711,353

initial 10 years with the annual cash flow becoming positive only in the ninth year. Run 3 shows that a 62% increase over the average CMHC rent calculation leaves the owner with a $971,484 loss after 10 years with a positive cash flow first evident in the seventh year. Run 4 demonstrates that if the rents were set at a level of about 150% of the CMHC levels the after tax discounted cash flow would

be positive from the first year. However, this level of rents is about 82% higher than current market rates!

Furthermore, the calculations show that the total direct operating costs for new buildings must be in the order of 18% of the revenues to produce a discounted after tax profit of 10% from the first year. This, of course, is due to today's high cost of construction and the cost of mortgage money which was about 17.8% in mid 1982.

Although buildings constructed over 10 years ago may have a chance to produce income for their owners, it is quite clear that the levels of the current market rents and costs of money are deterrents in the development of new residential units.

It should be pointed out that in calculating profit, owners have been looking at the overall cash flow including the capital gain that could be realized at the time of building sale. Some owners are content with a breakeven annual operation if they believe they could realize a significant capital gain at building sale. Although anticipated property appreciation is speculative, it will, nonetheless, be considered as part of the calculation of the internal rate of return.

Table 12 on the following page summarizes the basic data used in the case study analysis.

TABLE 12
CASE STUDY BASIC DATA
APARTMENT BUILDING

Land cost:	$500,000	Loan-to-value ratio:	0.80
Building & soft costs:	$8,273,880	Mortgage amount:	$7,134,304
Cost of appliances:	$144,000	Initial equity:	$1,783,576
Total capital cost:	$8,917,880	Amortization period:	25 years
		No. of payments/yr.:	12

Net floor area:	117,360 sq.ft.
Gross floor area:	137,898 sq.ft.
Average unit size:	815 sq.ft. net

Number of studio/bachelor apartments:	20	monthly rent: $375
Number of one bedroom apartments:	20	monthly rent: $475
Number of two bedroom apartments:	60	monthly rent: $600
Number of three bedroom apartments:	44	monthly rent: $700
Number of parking spaces:	144	monthly rent: $35

Mortgage interest rates vary with mortgage design.
Initial interest rates:

		Initial operating expenses:	
Standard mortgage:	17.80%	Taxes:	$1.204/sq.ft.
5 year renewable standard mortgage:	17.80%	Insurance:	$0.059/sq.ft.
3 year renewable standard mortgage:	17.80%	Heating/electricity	$0.511/sq.ft.
Variable rate mortgage:	17.35%	Maintenance/repairs	$0.225/sq.ft.
Fixed payment variable maturity VRM:	13.50% *	Salaries	$0.140/sq.ft.
Price level adjusted mortgage:	5.30% **	Administration	$0.218/sq.ft.
Constant payment factor VRM:	5.30% **	Total	$2.357/sq.ft.

* represents the long term interest rate
** represents the "real" interest rate

Inflation rates forecast in figure R-7 are used in the establishment of all mortgage rates except the standard mortgage. These inflation rates are used for the escalation in revenues and expenses.

Tax rates:		Capital cost allowance:		Discount rate (after tax):	10%
Income tax rate:	50%	Land:	0.0%	Occupancy rate:	95%
Capital gains tax rate:	25%	Building:	5.0%	Lost revenues & bad debts:	5%
		Appliances:	20.0%		

Property appreciation rates of 0% and 5% are used in the calculation of the internal rates of return.

6.3 THE EFFECTS OF MORTGAGE DESIGN ON

INTEREST AND PRINCIPAL

The application of the mortgage designs on the case building involves two steps. The first is to obtain the mortgage capital and interest table for each of the designs on the building. The second stage requires the insertion of the mortgage data into the "APARTMENT BUILDING - FINANCIAL ANALYSIS" program to perform the cash flow analyses.

For each of the different mortgage mechanisms there is a characteristic mortgage interest rate. These rates, summarized in table 12 (for the first year), are established in accordance with the relationships discussed in "The Behavior of Mortgage Interest Rates" in chapter 4 and "Mortgage Designs" in chapter 5. Although the rates are different in the absolute sense, they must be viewed in conjunction with the mechanics of the design in question.

The mortgage table computer programs are run with all of the following factors remaining equal:

(1) initial capital cost ($8,917,880),

(2) amount financed ($7,134,304),

(3) amortization period (25 years),

(4) revenues and expenses as per table 12,

(5) annual number of mortgage payments (12), and

(6) predicted rates of inflation as per figure R-7.

The tabular results are shown as printouts 1 through 7, in appendix A and the corresponding graphical representations are presented as figures M-1 through M-7.

Three basic categories emerge from the visual inspection of the seven mortgage designs analyzed:

(1) the fixed payment mortgages:

.standard mortgage (fig. M-1)
.constant payment variable maturity VRM (fig. M-5)

(2) the fluctuating payment mortgages:

.five year renewable mortgage (fig. M-2)
.three year renewable mortgage (fig. M-3)
.variable rate mortgage (fig. M-4)

(3) the constant dollar mortgages:

.price level adjusted mortgage (fig. M-6)
.constant payment factor VRM (fig. M-7)

THE FIXED PAYMENT MORTGAGES

There are two major differences between the standard and constant payment variable rate mortgages. The first is that the amount of the annual payments is, at this point in time (1981-1982), higher for the standard mortgage than for the constant payment VRM. This results from the fact that the long term interest rate is estimated to be 13.5% for the constant payment VRM whereas the interest rate used for the 25 year standard mortgage is the current rate of 17.8%.

The second difference between the two mortgages is the profile of the interest contribution generated by the payments. The standard mortgage interest payments continually decrease with time while those for the constant payment variable maturity VRM will vary in accordance with the inflation based debiting rate. The changes in the predicted inflation rates will lead to corresponding fluctuations in total operating expenses of a given building.

FIVE YEAR RENEWABLE MORTGAGE

PAYMENTS

INTEREST

DOLLARS
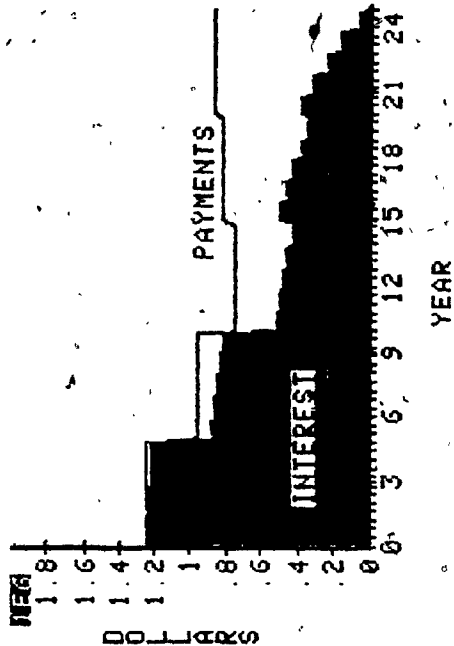
YEAR

FIGURE M-2

THE VARIABLE RATE MORTGAGE

PAYMENTS

INTEREST

DOLLARS
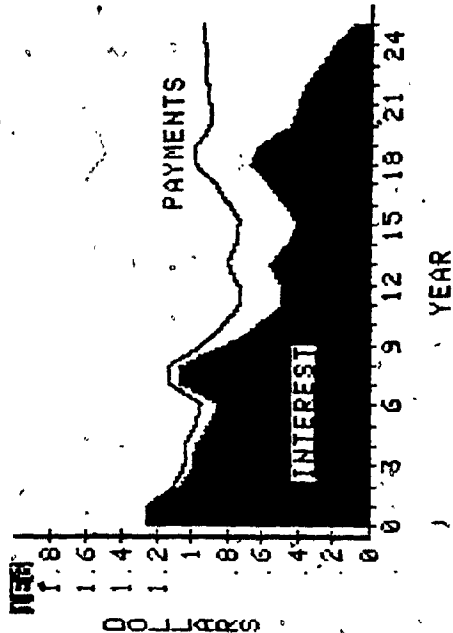
YEAR

FIGURE M-4

THE STANDARD MORTGAGE

PAYMENTS

INTEREST

DOLLARS
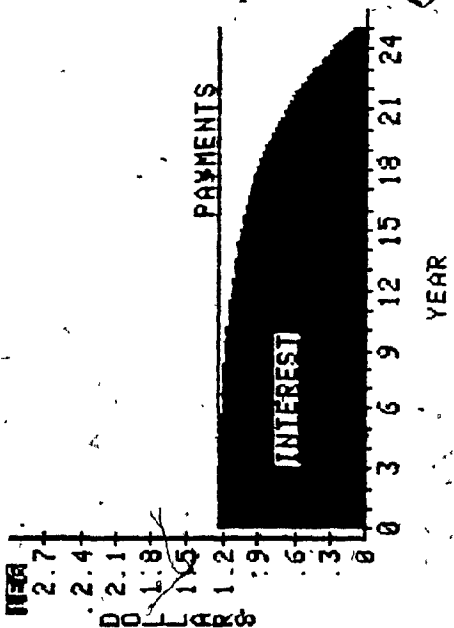
YEAR

FIGURE M-1

THREE YEAR RENEWABLE MORTGAGE

PAYMENTS

INTEREST

DOLLARS

YEAR
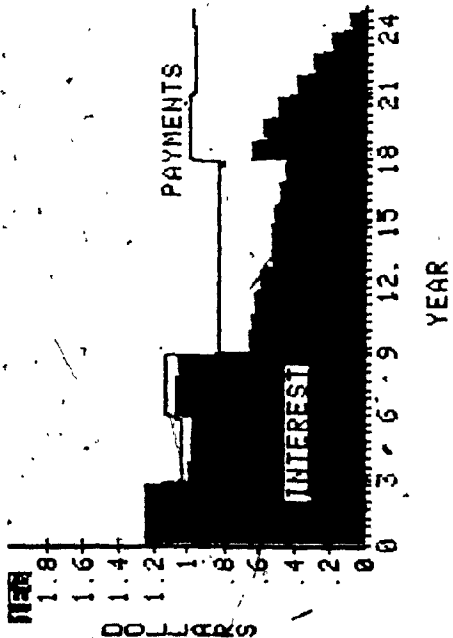
FIGURE M-3

CONSTANT PAYMENT-VARIABLE MATURITY
VARIABLE RATE MORTGAGE
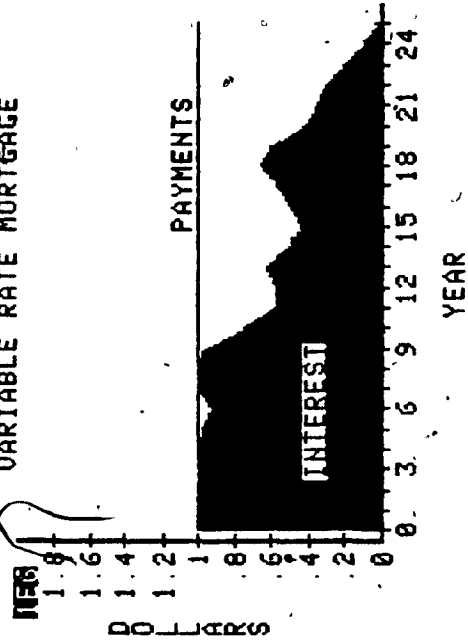
FIGURE N-5

THE PRICE LEVEL ADJUSTED MORTGAGE
THE PLAM
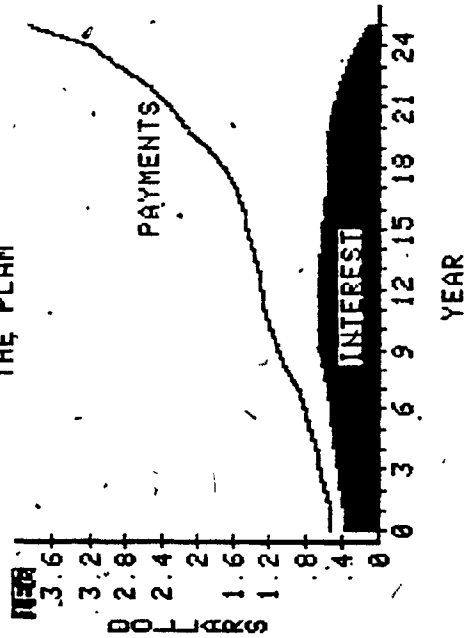
FIGURE N-6

THE CONSTANT PAYMENT FACTOR
VARIABLE RATE MORTGAGE
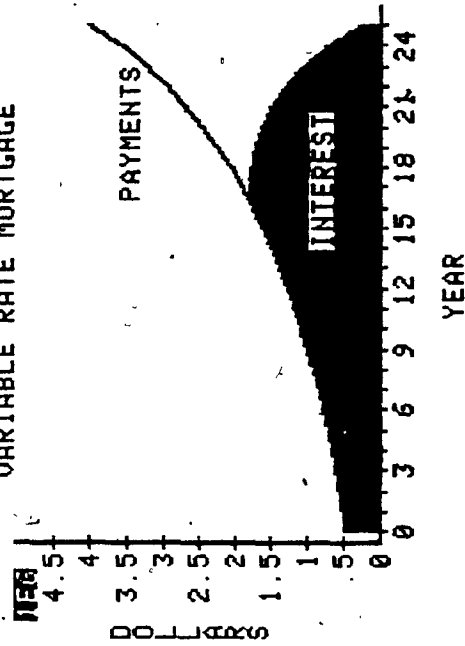
FIGURE N-7

THE FLUCTUATING PAYMENT MORTGAGES

From the financial perspective, each of the three mortgage designs in this category are simple variations of the same basic design. As the frequency of adjustment to the interest rate increases (e.g. 25 to 5 to 3 years), the ultimate limit becomes the continuously readjusted interest rate. As these readjustment periods are shortened, the payments become increasingly sensitive to the reference rate (e.g. inflation). The shorter the period, the greater the risk to the borrower. For the set of reference rates used here, we can see that the payment peaks seen in the years 7, 13, and 18 of the variable rate mortgage (fig. M-4 and printout 4 in appendix A) are hardly noticeable in the five year renewable option.

On the other hand, a different set of reference rates or a different timing of the renewal periods can completely change the resulting effect on the payments including the lengthening of the impact of a change in the reference rate on the payment schedule.

In all three cases the payments toward the end of the 25 year amortization period are lower than the initial payments although the reference rate at the end of this period is as high as it is at the beginning. This effect is due to the fact that when the interest rates are adjusted to lower rates early in the term, the outstanding capital is repaid more quickly and although interest rates at the beginning of a new term may be higher, the lower outstand-

ing balance results in lower payments.

Interestingly enough, at the outset of a project the payments are the highest only to decrease with time in both current and constant value perspectives. These initially high payments can deter the development of new projects or even lead to the demise of a recently built project.

THE CONSTANT DOLLAR MORTGAGES

Both the PLAM and the constant payment factor VRM produce payment profiles (figs. M-6 and M-7) which are very close approximations to the consumer price index profile. The initial payments are one half or less than those of all the other mortgage designs and the final payments are about 3.5 to 4.5 times higher. These payments are effectively calculated in constant dollars with the payments made in current dollars.

It can be seen that the payments under the PLAM remain blended throughout the entire 25 year amortization period whereas those for the constant payment factor VRM do not effectively become blended until year 17. The initially lower interest rates for both plans will have a significant positive impact on the cash flow in the early years of building operation. In the later years of the 25 year period the difference between the escalated revenues and expenses should be large enough to carry the mortgage payments although the higher interest contribution of this VRM compared to the PLAM may have detrimental effects on the cash flow.

The graphical representations of the mortgage designs provides a useful visual aid when trying to grasp an understanding of the behavior of the designs considered here. The application of these designs to the operating cash flow of the case residential building will be discussed next.

6.4 THE EFFECTS OF MORTGAGE DESIGN ON CASH FLOW

The capital and interest output data obtained from the mortgage programs is now inserted as raw data for the Financial Analysis program to determine the effects of each mortgage design on cash flow. The results are shown as printouts 12 to 18 in appendix B and plotted in figures CF-1 to CF-8 on the following two pages. The bar chart representation of the cash flow obtained from the application of each of the mortgage designs on the case building is superimposed on the line representation of the cash flow which results from the application of the reference, the 25 year standard mortgage.

The cash flow resulting from each design includes the annual operating cash flows only. The initial 20% equity required at the start of the project, net present value (NPV) of the cash reversion at a sale assumed to take place at the end of the 25 year amortization period, and the NPV of the recapture and capital gains taxes payable at time of sale are taken into account in calculating the IRR.

5 YR. RENEWABLE VS. STANDARD MORT.
CASH FLOW

BAR= 5 YR. RENEWABLE
LINE=STANDARD MORTGAGE

YEAR

FIGURE CF-1

3 YR. RENEWABLE VS. STANDARD MORT.
CASH FLOW

BAR= 3 YR. RENEWABLE
LINE=STANDARD MORTGAGE

YEAR

FIGURE CF-2

VARIABLE RATE VS. STANDARD MORT.
CASH FLOW

BAR=VARIABLE RATE MORT.
LINE=STANDARD MORTGAGE

YEAR

FIGURE CF-3

CONSTANT PAYMENT VRM VS. STANDARD
CASH FLOW

BAR=CONST PAYMENT VRM
LINE=STANDARD MORTGAGE

YEAR

FIGURE CF-4

CONST. PAYMENT FACTOR VS. STANDARD
CASH FLOW

BAR = CPF VRM
LINE=STANDARD MORTGAGE

YEAR

FIGURE CF-6

THE PLAM VS. THE STANDARD MORTGAGE
CASH FLOW

BAR = PLAM
LINE=STANDARD MORTGAGE

YEAR

FIGURE CF-5

CASH FLOW FOR ALL MORTGAGE TYPES
FINAL PERIOD

ENVELOPE OF OTHER
MORTGAGE DESIGNS

PLAM & CPF

YEAR

FIGURE CF-8

CASH FLOW FOR ALL MORTGAGE TYPES
INITIAL PERIOD

CPF

PLAM

ENVELOPE
OF OTHER MORTGAGE
DESIGNS

YEAR

FIGURE CF-7

Earlier in this chapter it was shown that over a 10 year period, the schedule of rents would have to be those indicated in "Run 4", which represented the highest of all the schedules run, in order to obtain a positive cash flow from the first year of building operation with the standard mortgage. Over the long 25 year term, however, the initial period is not the determining factor in the overall rate of return and trials with this higher rent schedule led to extremely high rates of return. Since the schedule of Run 3 did produce a positive cash flow in the seventh year and presumably for the remainder of the 25 year period, it is this rent schedule that is used in the complete 25 year analyses.

Figure CF-1 shows that the five year renewable mortgage produces a positive cash flow in year 6, the first year into the second 5 year mortgage period. This comes one year earlier than the standard mortgage, but the cash flow over the remainder of the 25 years is consistently higher for the 5 year design. The renewals of the mortgage at periodic intervals and at lower interest rates were instrumental in providing the advantage in this case.

Figure CF-2 shows that the cash flow for 'the three year renewable mortgage first becomes positive in year 5, two years prior to that of the standard mortgage. Again, the cash flow exceeds that of the reference mortgage for all years subsequent to the first renewal.

The variable rate mortgage (fig. CF-3) produces a positive cash flow in year 5, two years before the standard mortgage. The cash flow exceeds that of the standard mortgage for all the years after the first but the losses incurred during the first three years are less for this design than for the standard, 3 year, and 5 year renewable mortgages.

The constant payment variable maturity VRM (fig. CF-4) produces results very similar to those of the variable rate mortgage. This similarity is interesting because we would expect that different payment schedules associated with the two mortgage types would produce quite different cash flows. However, the profiles of the interest contributions for the plans are very similar. The constant payment variable maturity mortgage truncates all interest payments in excess of the total mortgage payment and adds this unpaid amount to the capital to extend the length of the amortization period. At times when the payments exceed those of the standard form VRM, the positive difference between the payments is allocated against the increased capital to decrease the amortization period.

Nevertheless, it is the similarity of the interest contribution of the payments between the two mortgage designs that produces the near matching cash flows. The truncations in the first four years and in years 7 and 8 are reflected in the improved cash flows for those specific periods for the constant payment variable maturity VRM.

The losses in the first three years of the constant payment variable maturity VRM are less than those of the straight variable rate mortgage.

The cash flow profiles for the PLAM (fig. CF-5) and the constant payment factor VRM (fig. CF-6) illustrate the major difference between CPI based capital adjusting mortgages and the other variable rate and standard mortgages. The PLAM and CPF VRM mortgage designs produce a positive operating cash flow from the first year of building operation because of the lower interest payments required under these plans. The constant payment factor VRM maintains a consistently higher cash flow than the PLAM and this cash flow remains positive until year 19, surpassing the PLAM's by four years.

Although the interest payments of the CPF VRM are higher, the higher deductible income tax expenses is responsible for decreasing the impact of the elevated expenses to produce the improved cash flow.

For a proprietor, these plans represent a major breakthrough in mortgage financing because they provide a positive cash flow from the start. Of the plans analyzed these are the only ones which produce losses in the later years of the amortization period with the PLAM producing higher losses in these later years. The effects of the different cash flow profiles will be shown in the results of the calculations of the internal rate of return.

The lending institutions are protected through the escalated payments although they may resist a full scale introduction of the constant payment factor VRM because there are no contributions toward the capital until the later years of the amortization term, in this case, year 17. The PLAM payments do have higher initial capital payments than all of the other mortgage designs and could have greater appeal to the lending institutions.

Figures CF-7 and CF-8 illustrate on expanded scales the effects that each of the mortgage designs have in both the initial and final periods of the amortization term. The early advantages and later disadvantages of the PLAM and and the CPF VRM are highlighted in these graphs.

In summary, the PLAM and the constant payment factor VRM do provide advantages to the borrower and the lender in the early years of a project under the particular conditions used in this study. For the borrower, it provides an encouraging early return on his initial investment although he may become anxious to dispose of his property before the cash flow turns negative. For the lender, a hedge against inflation is created. However, lending institutions may have some difficulty accepting these plans because of the huge payments that are required in the later years and their doubt as to whether the owners would be capable of meeting them. As far as the other mortgage designs are concerned, they resemble each other rather closely and do not seem to provide the necessary conceptual change re-

quired to adjust to the anticipated behavior of future inflation rates. The real overall impact of these designs on the economic viability of a project can be determined through the calculation of the internal rate of return.

6.5 THE INTERNAL RATE OF RETURN (IRR)

In order to measure the return on an owner's initial investment, the IRR method is used here. The internal rate of return is defined as the discount rate required to produce a net present value cash flow of zero for a specific period of time, in this case, the duration of the mortgage term (25 years). The tediousness of the trial and error method of calculating the IRR was simplified by modifying the Financial Analysis program and applying 0% and 5% property appreciation factors. The results are listed below in table 13.

From table 13 it is apparent that the constant payment factor VRM produces the highest rate of return of all the mortgage designs considered. The PLAM design produces the lowest return.

TABLE 13
INTERNAL RATES OF RETURN

Mortgage Design	IRR (%) 0% Apprec.	IRR (%) 5% Apprec.	Figure CF-9 Ident. 5% Apprec.
Standard Mortgage	8.9	11.6	1
5 Year Renewable	11.3	13.3	2
3 Year Renewable	11.3	13.4	3
Variable Rate Mortgage	12.6	14.5	4
Constant Payment Variable Maturity VRM	12.9	14.9	5
Price Level Adjusted Mortgage	-23.6	-0.2	6
Constant Payment Factor VRM	19.5	21.3	7

The graphical representation of the result of the seven IRR calculations using the property appreciation rate of 5% is shown in figure CF-9.

NET PRESENT VALUE VS. DISCOUNT RATE
DETERMINING THE IRR

FIGURE CF-9
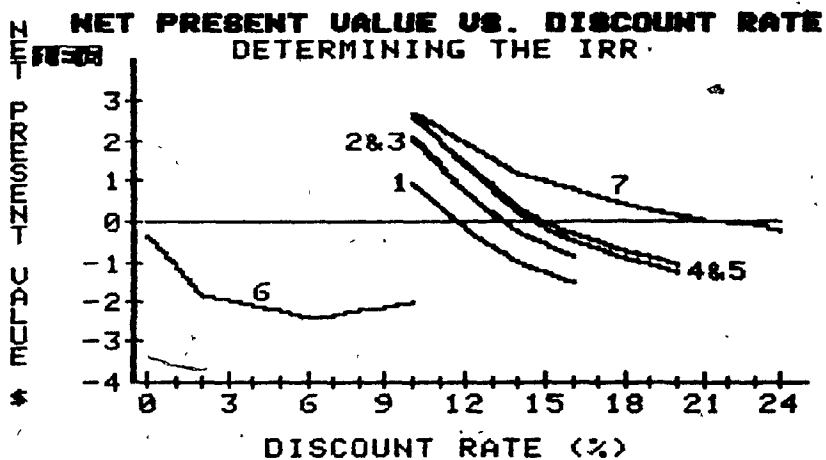
In summary, the various mortgage designs do have a significant impact on the rate of return on a given residential building under the conditions set forth in this report. There seems to be no doubt as to the economic benefits of the constant payment factor VRM for the building owner.

CONCLUSION

CONCLUSION

This report traced the evolution of mortgages, explored the sources of funds and types of ownership, considered the effects of government intervention, presented mortgage design alternatives, and analyzed the impact of the different designs on the cash flow for a given multiple unit residential building in a case study. The following conclusions can be drawn:

(1) The modern history of mortgage development essentially began during the feudal period. The laws concerning mortgages were modified in favour of the mortgagor by removing some of the severe punitive measures in cases of default. There was little development in mortgage designs until the 1930s when mortgage payments became "blended".

(2) The major changes in mortgage design were initiated in the late 1960s when inflation and other economic factors began changing at unusually high magnitudes and frequencies. Major lending institutions and the public in general have yet to adapt to the more "progressive" designs.

(3) Practically all major developments require financing in the form of mortgages. Although there are many forms of ownership of multiple unit residential buildings, the mortgages analyzed are applicable to any one of them.

(4) There are a number of lending institutions which are governed by legislation and, therefore, limited in their participation in the mortgage market. Other lending institutions and individuals are free of participatory limitations.

(5) The federal, provincial, and municipal levels all have mechanisms to encourage the development of multiple unit residential buildings. These include direct and indirect grants to owners and tenants, loan guarantees, and tax concessions.

(6) Provincial rent control legislation has a tranquilizing effect on residential building development.

(7) The meanings of mortgage types and mortgage designs are clarified: mortgage types pertain to the sources of funds whereas designs are the mathematical relationships used to calculate the mortgage payments.

(8) There are six principal mortgage designs applicable to the residential market. These designs have various effects on the interest, capital, and payment schedules for a given set of economic factors and assumptions.

(9) In determining a mortgage design, the concerns of both the mortgagee and mortgagor must be considered.

(10) The mortgage design selected for a given project can have considerable effects on the cash flow for a given project.

(11) The price level adjusted mortgage (PLAM) and the con-
stant payment factor variable rate mortgage are radi-
cally different from the other mortgage plans.

(12) The personal micro-computer is a valuable tool in
working with the design and effects of mortgage finan-
cing. In fact, a general routine can be developed for
assessing many mortgage designs.

The results of the report must be used with caution
since the variables used may not be pertinent to any other
case. However, this report provides a general tool which
can be used to obtain a realistic evaluation of a given
project using those factors peculiar to other given cases.

Further work could include the consolidation of the
components of the tool into an integrated package. Also,
extensive sensitivity analyses can be performed using a
range of inflation scenarios, loan ratios, rent schedules,
appreciation rates, and tax rates.

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APPENDIX A

MORTGAGE TABLES

THE STANDARD MORTGAGE

INTEREST & EQUITY TABLE FOR 25 YEARS

MORTGAGE AMOUNT: $ 7134304   AMORTIZATION PERIOD: 25 YEARS
INTEREST RATE: 17.8 %   PERIODIC PAYMENT: $ 103560.13
COMPOUNDING PERIODS/YR: 2   NO. OF PAYMENTS/YR: 12

YEAR	PAYMENTS MADE NO.	REM'G NO.	ANNUAL PAYMENT	CUMULATIVE PAYMENTS	ANN EQUITY BUILD-UP	TOTAL EQUITY	ANNUAL INTEREST	CUMULATIVE INTEREST	MORTGAGE BALANCE
0	0	300	1242722.	0000.	0000.	0000.	0000.	0000.	7134304.
1	12	288	1242722.	1242722.	18943.	18943.	1223779.	1223779.	7115361.
2	24	276	1242722.	2485443.	22465.	41407.	1220257.	2444036.	7092897.
3	36	264	1242722.	3728165.	26641.	68049.	1216080.	3660116.	7066255.
4	48	252	1242722.	4970886.	31595.	99643.	1211127.	4871243.	7034661.
5	60	240	1242722.	6213608.	37469.	137112.	1205253.	6076496.	6997192.
6	72	228	1242722.	7456329.	44435.	181547.	1198287.	7274782.	6952757.
7	84	216	1242722.	8699051.	52696.	234243.	1190025.	8464808.	6900061.
8	96	204	1242722.	9941772.	62493.	296736.	1180228.	9645036.	6837568.
9	108	192	1242722.	11184494.	74112.	370849.	1168609.	10813645.	6763455.
10	120	180	1242722.	12427215.	87891.	458740.	1154830.	11968475.	6675564.
11	132	168	1242722.	13669937.	104232.	562972.	1138489.	13106965.	6571332.
12	144	156	1242722.	14912658.	123611.	686584.	1119110.	14226075.	6447721.
13	156	144	1242722.	16155380.	146593.	833177.	1096128.	15322203.	6301127.
14	168	132	1242722.	17398101.	173848.	1007024.	1068874.	16391077.	6127280.
15	180	120	1242722.	18640823.	206170.	1213194.	1036552.	17427629.	5921110.
16	192	108	1242722.	19883545.	244501.	1457695.	998220.	18425849.	5676609.
17	204	96	1242722.	21126266.	289959.	1747654.	952763.	19378612.	5386650.
18	216	84	1242722.	22368988.	343868.	2091523.	898853.	20277465.	5042781.
19	228	72	1242722.	23611709.	407801.	2499324.	834921.	21112385.	4634980.
20	240	60	1242722.	24854431.	483620.	2982943.	759102.	21871487.	4151361.
21	252	48	1242722.	26097152.	573535.	3556478.	669187.	22540674.	3577826.
22	264	36	1242722.	27339874.	680167.	4236645.	562555.	23103229.	2897659.
23	276	24	1242722.	28582595.	806624.	5043269.	436098.	23539327.	2091035.
24	288	12	1242722.	29825317.	956592.	5999861.	286129.	23825456.	1134443.
25	300	0	1242722.	31068038.	1134443.	7134304.	108279.	23933734.	0000.

THE RENEWABLE STANDARD MORTGAGE

5 YEAR RENEWABLE TERMS

MORTGAGE AMOUNT: $ 7134304 AMORTIZATION PERIOD : 25 YEARS
COMPOUNDING PERIODS/YR: 2 NO. OF PAYMENTS/YR: 12

MORTGAGE INTEREST RATE BASED ON THE PROJECTED RATE OF INFLATION PLUS 5.3%

YEAR	INFLATION RATE %	INTEREST RATE %	ANNUAL PAYMENT $	ANNUAL EQUITY $	TOTAL EQUITY $	ANNUAL INTEREST $	MORTGAGE BALANCE $
1	12.50	17.80	1242721.53	18942.80	18942.80	1223778.72	7115361.19
2	10.10	17.80	1242721.53	22464.67	41407.48	1220256.85	7092896.52
3	9.10	17.80	1242721.53	26641.33	68048.81	1216080.20	7066255.18
4	9.00	17.80	1242721.53	31594.51	99643.33	1211127.02	7034660.67
5	8.00	17.80	1242721.53	37468.60	137111.93	1205252.93	6997192.07
6	7.50	12.80	952285.20	84348.02	221459.96	867937.17	6912844.04
7	10.80	12.80	952285.20	95490.06	316950.02	856795.14	6817353.97
8	10.90	12.80	952285.20	108103.92	425053.95	844181.28	6709250.05
9	7.50	12.80	952285.20	122384.02	547437.97	829901.18	6586866.02
10	4.80	12.80	952285.20	138550.46	685988.44	813734.74	6448315.56
11	2.90	8.20	742313.21	230769.20	916757.64	511544.01	6217546.35
12	3.30	8.20	742313.21	250080.20	1166837.85	492233.01	5967466.15
13	4.60	8.20	742313.21	271007.16	1437845.02	471306.05	5696458.98
14	3.30	8.20	742313.21	293685.31	1731530.33	448627.90	5402773.67
15	2.90	8.20	742313.21	318261.20	2049791.54	424052.01	5084512.46
16	4.80	10.10	802723.00	313640.45	2363431.99	489082.54	4770872.01
17	7.30	10.10	802723.00	346118.00	2709549.99	456604.99	4424754.01
18	10.90	10.10	802723.00	381958.60	3091508.60	420764.39	4042795.40
19	10.80	10.10	802723.00	421510.51	3513019.12	381212.48	3621284.88
20	7.50	10.10	802723.00	465158.03	3978177.16	337564.96	3156126.84
21	8.00	13.30	860688.21	479916.81	4458093.97	380771.40	2676210.03
22	9.00	13.30	860688.21	545868.06	5003962.04	314820.14	2130341.97
23	9.10	13.30	860688.21	620882.48	5624844.52	239805.73	1509459.48
24	10.10	13.30	860688.21	706205.56	6331050.08	154482.65	803253.92
25	12.50	13.30	860688.21	803253.92	7134304.00	57434.29	0.00

THE RENEWABLE STANDARD MORTGAGE

3 YEAR RENEWABLE TERMS

MORTGAGE AMOUNT: $ 7134304   AMORTIZATION PERIOD : 25 YEARS
COMPOUNDING PERIODS/YR: 2   NO. OF PAYMENTS/YR: 12

MORTGAGE INTEREST RATE BASED ON THE PROJECTED RATE OF INFLATION PLUS 5.3%

YEAR	INFLATION RATE %	INTEREST RATE %	ANNUAL PAYMENT $	ANNUAL EQUITY $	TOTAL EQUITY $	ANNUAL INTEREST $	MORTGAGE BALANCE $
1	12.50	17.80	1242721.53	18942.80	18942.80	1223778.72	7115361.19
2	10.10	17.80	1242721.53	22464.67	41407.48	1220256.85	7092896.52
3	9.10	17.80	1242721.53	26641.33	68048.81	1216080.20	7066255.18
4	9.00	14.30	1031009.33	52655.34	120704.16	978353.99	7013599.84
5	8.00	14.30	1031009.33	60454.24	181158.40	970555.09	6953145.60
6	7.50	14.30	1031009.33	69408.25	250566.66	961601.07	6883737.34
7	10.80	16.10	1132587.60	64207.23	314773.89	1068380.36	6819530.10
8	10.90	16.10	1132587.60	74960.67	389734.57	1057626.92	6744569.42
9	7.50	16.10	1132587.60	87515.11	477249.69	1045072.49	6657054.31
10	4.80	10.10	830241.75	179604.93	656854.62	650636.82	6477449.37
11	2.90	10.10	830241.75	198203.07	855057.69	632038.68	6279246.30
12	3.30	10.10	830241.75	218727.04	1073784.74	611514.71	6060519.26
13	4.60	9.90	822054.32	244770.26	1318555.01	577284.06	5815748.99
14	3.30	9.90	822054.32	269602.27	1588157.28	552452.05	5546146.72
15	2.90	9.90	822054.32	296953.49	1885110.77	525100.83	5249193.23
16	4.80	10.10	828722.15	323798.86	2208909.64	504923.29	4925394.37
17	7.50	10.10	828722.15	357328.31	2566237.95	471393.84	4568066.05
18	10.90	10.10	828722.15	394329.75	2960567.70	434392.40	4173736.30
19	10.80	16.10	982989.85	357318.68	3317886.39	625671.16	3816417.61
20	7.50	16.10	982989.85	417162.51	3735048.90	565827.34	3399255.10
21	8.00	16.10	982989.85	487028.99	4222077.89	495960.86	2912226.11
22	9.00	14.30	953073.09	584822.92	4806900.81	368250.17	2327403.19
23	9.10	14.30	953073.09	671442.35	5478343.17	281630.74	1655960.83
24	10.10	14.30	953073.09	770891.19	6249234.37	182181.89	885069.63
25	12.50	17.80	969546.36	885069.63	7134304.00	84476.73	0.00

THE VARIABLE RATE MORTGAGE

TABLE OF RATES AND PAYMENTS

MORTGAGE AMOUNT: $ 7134304   AMORTIZATION PERIOD: 25 YEARS
COMPOUNDING PERIODS/YR: 12   NO. OF PAYMENTS/YR: 12
NAME OF REFERENCE RATE: RATE OF INFLATION

YEAR	REFERENCE RATE %	INTEREST RATE %	ANNUAL PAYMENT $	ANNUAL EQUITY $	TOTAL EQUITY $	ANNUAL INTEREST $	MORTGAGE BALANCE $
1	12.50	17.35	1254717.10	18327.48	18327.48	1236389.61	7115976.51
2	10.10	14.95	1094792.02	33165.05	51492.54	1061626.96	7082811.46
3	9.10	13.95	1030479.24	45247.60	96740.15	985231.62	7037563.85
4	9.00	13.85	1024210.20	52774.43	149514.58	971435.76	6984789.42
5	8.00	12.85	963319.93	69789.94	219304.53	893529.98	6914999.47
6	7.50	12.35	934009.09	84694.38	303998.91	849314.71	6830305.08
7	10.80	15.65	1127715.10	63176.80	367175.72	1064538.29	6767128.28
8	10.90	15.75	1133626.71	72919.16	440094.88	1060707.55	6694209.12
9	7.50	12.35	943588.20	123700.01	563794.89	819888.19	6570509.10
10	4.80	9.65	807555.80	181384.97	745179.87	626170.83	6389124.13
11	2.90	7.75	721671.32	234735.91	979915.78	486935.41	6154388.22
12	3.30	8.15	738418.72	245886.24	1225802.03	492532.48	5908501.97
13	4.60	9.45	791029.51	243023.14	1468825.17	548006.37	5665478.83
14	3.30	8.15	741516.55	290471.20	1759296.38	451045.34	5375007.62
15	2.90	7.75	727643.97	322372.09	2081668.48	405271.87	5052635.52
16	4.80	9.65	789546.43	315687.41	2397355.89	473859.01	4736948.11
17	7.50	12.35	874380.10	306321.52	2703677.42	568058.58	4430626.58
18	10.90	15.75	977328.68	300591.09	3004268.51	676737.59	4130035.49
19	10.80	15.65	974518.53	352761.15	3357029.67	621757.37	3777274.33
20	7.50	12.35	894428.88	453008.98	3810038.65	441419.90	3324265.35
21	8.00	12.85	904586.88	506564.99	4316603.65	398021.89	2817700.35
22	9.00	13.85	921431.67	566230.61	4882834.26	355201.06	2251469.74
23	9.10	13.95	922742.81	649127.35	5531961.62	273615.45	1602342.38
24	10.10	14.95	931849.82	741762.86	6273724.49	190086.95	860579.51
25	12.50	17.35	943583.43	860579.51	7134304.00	83003.92	0.00

THE VARIABLE RATE MORTGAGE
CONSTANT PAYMENT-VARIABLE MATURITY

MORTGAGE AMOUNT: $ 7134304   AMORTIZATION PERIOD : 25 YEARS
COMPOUNDING PERIODS/YR: 12   NO. OF PAYMENTS/YR: 12

FIXED INTEREST SET AT 13.5 % YIELDING FIXED ANNUAL PAYMENTS OF $ 997927.829
DEBITING INTEREST RATE BASED ON THE PROJECTED RATE OF INFLATION PLUS 5.3% LESS .45 %

YEAR	DEBITING RATE %	DEBITED AMOUNT $	DEBITED INTEREST $	FIXED PAYMENT $	INTEREST PAID $	EQUITY BUILD-UP $	MORTGAGE BALANCE $
1	17.35	1254717.10	1236389.61	997927.82	997927.82	-238461.78	7372765.78
2	14.95	1134299.01	1099937.16	997927.82	997927.82	-102009.32	7474775.11
3	13.95	1087506.08	1039754.47	997927.82	997927.82	-41826.63	7516601.75
4	13.85	1093926.87	1037560.15	997927.82	997927.82	-39632.31	7556234.07
5	12.85	1042131.76	966632.10	997927.82	966632.10	31295.72	7524938.35
6	12.35	1016393.55	924228.68	997927.82	924228.68	73699.14	7451239.20
7	15.65	1230234.21	1161314.08	997927.82	997927.82	-163386.25	7614625.45
8	15.75	1275599.11	1193547.74	997927.82	997927.82	-195619.91	7810245.37
9	12.35	1100900.09	956577.21	997927.82	956577.21	41350.60	7768894.76
10	9.65	954844.74	740377.22	997927.82	740377.22	257550.60	7511344.15
11	7.75	848429.54	572463.36	997927.82	572463.36	425464.46	7085879.69
12	8.15	850181.37	567079.25	997927.82	567079.25	430848.57	6655031.12
13	9.45	890974.74	617246.04	997927.82	617246.04	380681.78	6274349.34
14	8.15	821207.53	499519.31	997927.82	499519.31	498408.51	5775940.82
15	7.75	781920.48	435501.96	997927.82	435501.96	562425.86	5213514.95
16	9.65	814686.13	488947.01	997927.82	488947.01	508980.81	4704534.14
17	12.35	868396.90	564171.47	997927.82	564171.47	433756.35	4270777.79
18	15.75	942068.48	652322.15	997927.82	652322.15	345605.67	3925172.11
19	15.65	926179.20	590916.16	997927.82	590916.16	407011.66	3518160.45
20	12.35	833072.75	411139.33	997927.82	411139.33	586788.49	2931371.95
21	12.85	797674.17	350979.87	997927.82	350979.87	646947.95	2284423.99
22	13.85	747042.04	287975.91	997927.82	287975.91	709951.91	1574472.07
23	13.95	645281.95	191341.63	997927.82	191341.63	806586.19	767885.87
24	14.95	446567.67	91094.81	997927.82	91094.81	906833.00	-138947.13

MORTGAGE IS FULLY AMORTIZED IN YEAR 24

THE PRICE LEVEL ADJUSTED MORTGAGE
USING REAL INTEREST RATE OF 5.3 %

MORTGAGE AMOUNT: $ 7134304   AMORTIZATION PERIOD : 25 YEARS
COMPOUNDING PERIODS/YR: 12   NO. OF PAYMENTS/YR: 12

ADJUSTMENTS TO OUTSTANDING CAPITAL ARE MADE ANNUALLY IN ACCORDANCE WITH THE RATE OF INFLATION

YEAR	INFLATION RATE %	INTEREST RATE %	ANNUAL PAYMENT $	ANNUAL INTEREST $	CAPITAL ADJUSTMENT $	ADJUSTED PRINCIPAL $	MORTGAGE BALANCE $
1	12.50	5.30	515554.	374729.	891788.	7885267.	6993479.
2	10.10	5.30	581296.	413891.	796412.	8514274.	6845007.
3	9.10	5.30	641280.	446571.	774799.	9094364.	6688472.
4	9.00	5.30	701003.	476602.	818492.	9688457.	6523436.
5	8.00	5.30	765689.	507270.	775076.	10205115.	6349437.
6	7.50	5.30	828623.	533777.	765383.	10675652.	6165989.
7	10.80	5.30	892618.	557752.	1152970.	11493757.	5972579.
8	10.90	5.30	992143.	599727.	1252819.	12354160.	5768665.
9	7.50	5.30	1104109.	643693.	926562.	12820305.	5553678.
10	4.80	5.30	1190123.	666887.	615374.	12912443.	5327015.
11	2.90	5.30	1249680.	670422.	374460.	12707647.	5088043.
12	3.30	5.30	1287623.	658365.	419352.	12497741.	4836093.
13	4.60	5.30	1332328.	645864.	574896.	12386173.	4570460.
14	3.30	5.30	1397177.	638206.	408743.	12035945.	4290402.
15	2.90	5.30	1446294.	617975.	349042.	11556670.	3995135.
16	4.80	5.30	1491336.	590837.	554720.	11210891.	3683833.
17	7.50	5.30	1568969.	570145.	840816.	11052884.	3355625.
18	10.90	5.30	1698152.	558380.	1204764.	11117876.	3009594.
19	10.80	5.30	1904532.	556821.	1200730.	10970896.	2644770.
20	7.50	5.30	2138595.	543069.	822817.	10198188.	2260134.
21	8.00	5.30	2326286.	496479.	815855.	9184235.	1854610.
22	9.00	5.30	2553081.	435823.	826581.	7893558.	1427064.
23	9.10	5.30	2851700.	358369.	718313.	6118541.	976298.
24	10.10	5.30	3231020.	252622.	617972.	3758117.	501053.
25	12.50	5.30	3866877.	108760.	469764.	469764.	0.

THE CONSTANT PAYMENT FACTOR
VARIABLE RATE MORTGAGE

MORTGAGE AMOUNT: $ 7134304   AMORTIZATION PERIOD : 25 YEARS
COMPOUNDING PERIODS/YR: 12   NO. OF PAYMENTS/YR: 12

THE REAL RATE OF INTEREST IS SET AT 5.3 %
THE DEBITING RATE IS SET AT 13.5 %

YEAR	INFLATION RATE %	DEBITED INTEREST $	ANNUAL PAYMENT $	INTEREST PAID $	CAPITAL ADJUSTMENT $	ADJUSTED PRINCIPAL $
1	12.50	960895.	515554.	515554.	445340.	7579644.
2	10.10	1020521.	558766.	558766.	461755.	8041399.
3	9.10	1082255.	605664.	605664.	476590.	8517990.
4	9.00	1145862.	656575.	656575.	489287.	9007277.
5	8.00	1211025.	711855.	711855.	499170.	9506448.
6	7.50	1277332.	771893.	771893.	505438.	10011887.
7	10.80	1344254.	837119.	837119.	507134.	10519022.
8	10.90	1411127.	908004.	908004.	503123.	11022145.
9	7.50	1477122.	985065.	985065.	492056.	11514202.
10	4.80	1541218.	1068876.	1068876.	472341.	11986543.
11	2.90	1602164.	1160070.	1160070.	442093.	12428637.
12	3.30	1658440.	1259352.	1259352.	399088.	12827725.
13	4.60	1708203.	1367506.	1367506.	340696.	13168422.
14	3.30	1749234.	1485416.	1485416.	263817.	13432240.
15	2.90	1778864.	1614079.	1614079.	164785.	13597025.
16	4.80	1793898.	1754635.	1754635.	39263.	13636288.
17	7.50	1790510.	1908405.	1790510.	-117894.	13518394.
18	10.90	1764129.	2076950.	1764129.	-312820.	13205573.
19	10.80	1709288.	2262162.	1709288.	-552874.	12652698.
20	7.50	1619442.	2466434.	1619442.	-846992.	11805706.
21	8.00	1486721.	2692973.	1486721.	-1206252.	10599454.
22	9.00	1301580.	2946491.	1301580.	-1644911.	8954543.
23	9.10	1052232.	3235001.	1052232.	-2182768.	6771774.
24	10.10	723465.	3575973.	723465.	-2852507.	3919266.
25	12.50	292472.	4032690.	292472.	-3740218.	179048.

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*-*-*    FINANCIAL  ANALYSIS.  *-*-*
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*-*-*  APARTMENT  BUILDING     *-*-*
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BASIC DATA:

LAND COST: $ 500000	NO. OF STUDIO/BACHELOR APTS.: 20	MONTHLY RENT: $ 218
BUILDING COST: $ 8273880	NO. OF ONE BEDROOM APTS.: 20	MONTHLY RENT: $ 291
COST OF APPLIANCES: $ 144000	NO. OF TWO BEDROOM APTS.: 60	MONTHLY RENT: $ 364
TOTAL CAPITAL COST: $ 8917880	NO. OF THREE BEDROOM APTS.: 44	MONTHLY RENT: $ 436

MORTGAGE AMOUNT: $ 7134304	MORTGAGE INTEREST RATE (%): 17.8	LOAN LIMIT (%): 80
AMORTIZATION PERIOD (YEARS): 25	ANNUAL MORTGAGE PAYMENT: $ 1242721.53	

BUILDING NET FLOOR AREA IN SQ.FT.: 117360 GROSS FLOOR AREA IN SQ.FT.: 137898.   AVERAGE UNIT SIZE IN SQ.FT.: 815
TOTAL CONSTRUCTION COST/SQ.FT.: $ 60

BUILDING OPERATING COSTS FOR 10 YEARS

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	1223779.	18943.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1220257.	22465.
3	159029.	9275.	83473.	29786.	21939.	29003.	330505.	1216080.	26641.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	1211127.	31595.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	1205253.	37469.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	1198287.	44435.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	1190025.	52696.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	1180228.	62493.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	1168609.	74112.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	1154830.	87891.

CASH FLOW PROJECTION FOR 10 YEARS

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	641182.	1509554.	NOT REQD	1490611.	(849429.)	NIL	(868372.)	(827960.)
2	721329.	1542908.	NOT REQD	1520443.	(799114.)	NIL	(821578.)	(712131.)
3	794184.	1573226.	NOT REQD	1546585.	(752401.)	NIL	(779043.)	(613874.)
4	866454.	1603302.	NOT REQD	1571708.	(705253.)	NIL	(736848.)	(527841.)
5	944435.	1635755.	NOT REQD	1598286.	(653851.)	NIL	(691319.)	(450206.)
6	1019990.	1667197.	NOT REQD	1622762.	(602772.)	NIL	(647207.)	(383163.)
7	1096489.	1699033.	NOT REQD	1646337.	(549847.)	NIL	(602544.)	(324292.)
8	1214910.	1748314.	NOT REQD	1685821.	(470911.)	NIL	(533404.)	(260983.)
9	1347335.	1803424.	NOT REQD	1729312.	(381977.)	NIL	(456089.)	(202867.)
10	1448385.	1845477.	NOT REQD	1757585.	(309200.)	NIL	(397091.)	(160568.)

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***  FINANCIAL ANALYSIS   ***
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***  APARTMENT BUILDING   ***
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BASIC DATA:

LAND COST: $ 500000

BUILDING COST: $ 8273880

COST OF APPLIANCES: $ 144000

TOTAL CAPITAL COST: $ 8917880

NO. OF STUDIO/BACHELOR APTS.: 20　　MONTHLY RENT: $ 300

NO. OF ONE BEDROOM APTS.: 20　　MONTHLY RENT: $ 400

NO. OF TWO BEDROOM APTS.: 60　　MONTHLY RENT: $ 500

NO. OF THREE BEDROOM APTS.: 44　　MONTHLY RENT: $ 600

MORTGAGE AMOUNT: $ 7134304

AMORTIZATION PERIOD (YEARS): 25

MORTGAGE INTEREST RATE (%): 17.8　　LOAN LIMIT (%): 80

ANNUAL MORTGAGE PAYMENT: $ 1242721.53

BUILDING NET FLOOR AREA IN SQ.FT.: 117360　GROSS FLOOR AREA IN SQ.FT.: 137898　　AVERAGE UNIT SIZE IN SQ.FT.: 815

TOTAL CONSTRUCTION COST/SQ.FT.: $ 60

BUILDING OPERATING COSTS FOR 10 YEARS

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS- TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	1223779.	18943.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1220257.	22465.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	1216080.	26641.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	1211127.	31595.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	1205253.	37469.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	1198287.	44435.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	1190025.	52696.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	1180228.	62493.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	1168609.	74112.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	1154630.	87891.

CASH FLOW PROJECTION FOR 10 YEARS

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	860016.	1509554.	NOT REQD	1490611.	(630595.)	NIL	(649538.)	(619310.)
2	967518.	1542908.	NOT REQD	1520443.	(552925.)	NIL	(575390.)	(498739.)
3	1065237.	1573226.	NOT REQD	1546585.	(481348.)	NIL	(507989.)	(400288.)
4	1162174.	1603302.	NOT REQD	1571708.	(409534.)	NIL	(441128.)	(316003.)
5	1266770.	1635755.	NOT REQD	1598286.	(331516.)	NIL	(368985.)	(240293.)
6	1368111.	1667197.	NOT REQD	1622762.	(254651.)	NIL	(299086.)	(177066.)
7	1470719.	1699033.	NOT REQD	1646337.	(175617.)	NIL	(228313.)	(122879.)
8	1629557.	1748314.	NOT REQD	1685821.	(56264.)	NIL	(118757.)	(58105.)
9	1807179.	1803424.	77847.	1807179.	NIL	NIL	3755.	1670.
10	1942717.	1845477.	185132.	1942717.	NIL	NIL	97241.	39320.

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***  FINANCIAL ANALYSIS   ***
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***  APARTMENT BUILDING   ***
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BASIC DATA:

LAND COST: $ 500000   NO. OF STUDIO/BACHELOR APTS.: 20   MONTHLY RENT: $ 375
BUILDING COST: $ 8273880   NO. OF ONE BEDROOM APTS.: 20   MONTHLY RENT: $ 475
COST OF APPLIANCES: $ 144000 NO. OF TWO BEDROOM APTS.: 60   MONTHLY RENT: $ 600
TOTAL CAPITAL COST: $ 8917880 NO. OF THREE BEDROOM APTS.: 44   MONTHLY RENT: $ 700

MORTGAGE AMOUNT: $ 7134304   MORTGAGE INTEREST RATE (%): 17.8   LOAN LIMIT (%): 80
AMORTIZATION PERIOD (YEARS): 25   ANNUAL MORTGAGE PAYMENT: $ 1242721.53

BUILDING NET FLOOR AREA IN SQ.FT.: 117360 GROSS FLOOR AREA IN SQ.FT.: 137898   AVERAGE UNIT SIZE IN SQ.FT.: 815
TOTAL CONSTRUCTION COST/SQ.FT.: $ 60

BUILDING OPERATING COSTS FOR 10 YEARS

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS- TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	1223779.	18943.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1220257.	22465.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	1216080.	26641.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	1211127.	31595.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	1205253.	37469.
6	202960.	11912.	107207.	38253.	28176.	35965.	424476.	1198287.	44435.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	1190025.	52696.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	1180228.	62493.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	1168609.	74112.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	1154830.	87891.

CASH FLOW PROJECTION FOR 10 YEARS

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	1509554.	NOT REQD	1490611.	(477835.)	NIL	(496778.)	(473659.)
2	1139373.	1542908.	NOT REQD	1520443.	(381070.)	NIL	(403535.)	(349777.)
3	1254450.	1573226.	NOT REQD	1546585.	(292135.)	NIL	(318777.)	(251191.)
4	1368605.	1603302.	NOT REQD	1571708.	(203103.)	NIL	(234698.)	(168126.)
5	1491779.	1635755.	NOT REQD	1598286.	(106507.)	NIL	(143976.)	(93761.)
6	1611121.	1667197.	NOT REQD	1622762.	(11641.)	NIL	(56076.)	(33198.)
7	1731955.	1699033.	85619.	1731955.	NIL	NIL	32923.	17719.
8	1919007.	1748314.	233186.	1919007.	NIL	NIL	170692.	83516.
9	2128178.	1803424.	398867.	2128178.	NIL	NIL	324754.	144450.
10	2287792.	1845477.	400066.	2157652.	130140.	65070.	377245.	152543.

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*-*-*   FINANCIAL  ANALYSIS                     *-*-*
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*-*-*   APARTMENT  BUILDING                     *-*-*
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BASIC DATA:

LAND COST: $ 500000   NO. OF STUDIO/BACHELOR APTS.: 20   MONTHLY RENT: $ 565
BUILDING COST: $ 8273880   NO. OF ONE BEDROOM APTS.: 20   MONTHLY RENT: $ 720
COST OF APPLIANCES: $ 144000   NO. OF TWO BEDROOM APTS.: 60   MONTHLY RENT: $ 908
TOTAL CAPITAL COST: $ 8917880   NO. OF THREE BEDROOM APTS.: 44   MONTHLY RENT: $ 1095

MORTGAGE AMOUNT: $ 7134304   MORTGAGE INTEREST RATE (%): 17.8   LOAN LIMIT (%): 80
AMORTIZATION PERIOD (YEARS): 25   ANNUAL MORTGAGE PAYMENT: $ 1242721.53

BUILDING NET FLOOR AREA IN SQ.FT.: 117360   GROSS FLOOR AREA IN SQ.FT.: 137898   AVERAGE UNIT SIZE IN SQ.FT.: 315
TOTAL CONSTRUCTION COST/SQ.FT.: $ 60

BUILDING OPERATING COSTS FOR 10 YEARS

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22606.	266832.	1223779.	18943.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1220257.	22465.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	1216080.	26641.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	1211127.	31595.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	1205253.	37469.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	1198267.	44435.
7	218182.	12805.	115246.	41125.	30289.	38662.	456311.	1190025.	52696.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	1180228.	62493.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	1168609.	74112.
10	298204.	16915.	152234.	54323.	40010.	51070.	602755.	1154830.	87891.

CASH FLOW PROJECTION FOR 10 YEARS

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1520760.	1509554.	30149.	1520760.	NIL	NIL	11206.	10685.
2	1710855.	1542908.	190412.	1710855.	NIL	NIL	167947.	145574.
3	1883651.	1573226.	337066.	1883651.	NIL	NIL	310425.	244610.
4	2055064.	1603302.	409421.	1981129.	73935.	36968.	414794.	297138.
5	2240019.	1635755.	385668.	1983954.	256065.	128033.	476232.	310136.
6	2419221.	1667197.	363759.	1986522.	432699.	216350.	535674.	317133.
7	2600662.	1699033.	343471.	1989808.	610855.	305427.	596202.	320879.
8	2881534.	1748314.	324617.	2010438.	871096.	435548.	697672.	341355.
9	3195621.	1803424.	307042.	2036354.	1159267.	579634.	812564.	361426.
10	3435293.	1845477.	290615.	2048200.	1387092.	693546.	896270.	362417.

APPENDIX B

FINANCIAL ANALYSES

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***   FINANCIAL   ANALYSIS   ***
***                                     ***
***   APARTMENT  BUILDING   ***
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BASIC DATA:

LAND COST: $ 500000   NO. OF STUDIO/BACHELOR APTS.: 20   MONTHLY RENT: $ 375
BUILDING COST: $ 8273880   NO. OF ONE BEDROOM APTS.: 20   MONTHLY RENT: $ 475
COST OF APPLIANCES: $ 144000   NO. OF TWO BEDROOM APTS.: 60   MONTHLY RENT: $ 600
TOTAL CAPITAL COST: $ 8917880 NO. OF THREE BEDROOM APTS.: 44   MONTHLY RENT: $ 700

THE STANDARD MORTGAGE

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	1223779.	18943.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1220257.	22465.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	1216080.	26642.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	1211127.	31595.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	1205253.	37469.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	1198287.	44435.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	1190025.	52697.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	1180228.	62494.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	1168609.	74113.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	1154830.	87892.
11	302037.	17727.	159541.	56930.	41931.	53521.	631687.	1138489.	104233.
12	310796.	18241.	164168.	58581.	43147.	55073.	650006.	1119110.	123612.
13	321053.	18843.	169585.	60514.	44571.	56891.	671457.	1096128.	146594.
14	335821.	19710.	177386.	63298.	46621.	59508.	702344.	1068874.	173848.
15	346903.	20360.	183240.	65387.	48159.	61472.	725521.	1036552.	206170.
16	356963.	20950.	188554.	67283.	49556.	63254.	746561.	998220.	244502.
17	374098.	21956.	197605.	70513.	51935.	66290.	782396.	952763.	289959.
18	402155.	23603.	212425.	75801.	55830.	71262.	841076.	898853.	343869.
19	445990.	26175.	235579.	84064.	61915.	79030.	932753.	834921.	407801.
20	494157.	29002.	261022.	93142.	68602.	87565.	1033490.	759102.	483620.
21	531218.	31178.	280598.	100128.	73747.	94132.	1111002.	669187.	573535.
22	573716.	33672.	303046.	108138.	79647.	101663.	1199882.	562555.	680167.
23	625350.	36702.	330321.	117871.	86815.	110813.	1307872.	436098.	806624.
24	682257.	40042.	360380.	128597.	94715.	120897.	1426888.	286129.	956593.
25	751165.	44086.	396778.	141585.	104281.	133107.	1571004.	108279.	1134443.

THE STANDARD MORTGAGE

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	1509554.	NOT REQD	1490611.	(477835.)	NIL	(496778.)	(473659.)
2	1139373.	1542908.	NOT REQD	1520443.	(381070.)	NIL	(403535.)	(349778.)
3	1254450.	1573227.	NOT REQD	1546585.	(292135.)	NIL	(318777.)	(251192.)
4	1368605.	1603303.	NOT REQD	1571708.	(203103.)	NIL	(234698.)	(168126.)
5	1491779.	1635755.	NOT REQD	1598286.	(106507.)	NIL	(143976.)	(93761.)
6	1611121.	1667198.	NOT REQD	1622763.	(11641.)	NIL	(56076.)	(33199.)
7	1731955.	1699033.	85619.	1731955.	NIL	NIL	32922.	17719.
8	1919007.	1748315.	233186.	1919007.	NIL	NIL	170692.	83516.
9	2128178.	1803425.	398867.	2128178.	NIL	NIL	324754.	144450.
10	2287792.	1845477.	400066.	2157652.	130140.	65070.	377244.	152543.
11	2397606.	1874409.	377052.	2147228.	250377.	125189.	398008.	146308.
12	2467136.	1892728.	355790.	2124907.	342230.	171115.	403293.	134774.
13	2548552.	1914179.	336074.	2103658.	444894.	222447.	411926.	125144.
14	2665785.	1945066.	317728.	2088946.	576839.	288420.	432300.	119394.
15	2753756.	1968243.	300608.	2062681.	691075.	345537.	439976.	110468.
16	2833615.	1989283.	284591.	2029372.	804243.	402121.	442211.	100935.
17	2969629.	2025118.	269572.	2004731.	964897.	482449.	462062.	95878.
18	3192351.	2083798.	255462.	1995391.	1196960.	598480.	510073.	96219.
19	3540317.	2175475.	242184.	2009858.	1530459.	765229.	599612.	102827.
20	3922671.	2276212.	229671.	2022263.	1900408.	950204.	696255.	108545.
21	4216871.	2353724.	217864.	1998053.	2218819.	1109409.	753738.	106824.
22	4554221.	2442604.	206712.	1969149.	2585072.	1292536.	819081.	105532.
23	4964101.	2550594.	196169.	1940139.	3023962.	1511981.	901526.	105595.
24	5415834.	2669610.	186195.	1899212.	3516622.	1758311.	987913.	105194.
25	5962834.	2813726.	176753.	1856036.	4106798.	2053399.	1095709.	106066.

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***  FINANCIAL  ANALYSIS  ***
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***  APARTMENT  BUILDING  ***
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BASIC DATA:

LAND COST: $ 500000   NO. OF STUDIO/BACHELOR APTS.: 20   MONTHLY RENT: $ 375
BUILDING COST: $ 8273880   NO. OF ONE BEDROOM APTS.: 20   MONTHLY RENT: $ 475
COST OF APPLIANCES: $ 144000   NO. OF TWO BEDROOM APTS.: 60   MONTHLY RENT: $ 600
TOTAL CAPITAL COST: $ 8917880   NO. OF THREE BEDROOM APTS.: 44   MONTHLY RENT: $ 700

THE 5 YEAR RENEWABLE MORTGAGE

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	1223779.	18943.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1220257.	22465.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	1216080.	26642.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	1211127.	31595.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	1205253.	37469.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	867937.	84348.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	856795.	95490.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	844181.	108104.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	829901.	122384.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	813735.	138550.
11	302037.	17727.	159541.	56930.	41931.	53521.	631687.	511544.	230769.
12	310796.	18241.	164168.	58581.	43147.	55073.	650006.	492233.	250080.
13	321053.	18843.	169585.	60514.	44571.	56891.	671457.	471306.	271007.
14	335821.	19710.	177386.	63298.	46621.	59508.	702344.	448628.	293685.
15	346903.	20360.	183240.	65387.	48159.	61472.	725521.	424052.	318261.
16	356963.	20950.	188554.	67283.	49556.	63254.	746561.	489083.	313640.
17	374098.	21956.	197605.	70513.	51935.	66290.	782396.	456605.	346118.
18	402155.	23603.	212425.	75801.	55830.	71262.	841076.	420764.	381959.
19	445990.	26175.	235579.	84064.	61915.	79030.	932753.	381212.	421511.
20	494157.	29002.	261022.	93142.	68602.	87565.	1033490.	337565.	465158.
21	531218.	31178.	280598.	100128.	73747.	94132.	1111002.	380771.	479917.
22	573716.	33672.	303046.	108138.	79647.	101663.	1199882.	314820.	545868.
23	625350.	36702.	330321.	117871.	86815.	110813.	1307872.	239806.	620882.
24	682257.	40042.	360380.	128597.	94715.	120897.	1426888.	154483.	706205.
25	751165.	44086.	396778.	141585.	104281.	133107.	1571004.	57434.	803254.

THE 5 YEAR RENEWABLE MORTGAGE

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	1509554.	NOT REQD	1490611.	(477835.)	NIL	(496778.)	(473659.)
2	1139373.	1542908.	NOT REQD	1520443.	(381070.)	NIL	(403535.)	(349778.)
3	1254450.	1573227.	NOT REQD	1546585.	(292135.)	NIL	(318777.)	(251192.)
4	1368605.	1603303.	NOT REQD	1571708.	(203103.)	NIL	(234698.)	(168126.)
5	1491779.	1635755.	NOT REQD	1598286.	(106507.)	NIL	(143976.)	(93761.)
6	1611121.	1376761.	318709.	1611121.	NIL	NIL	234361.	138747.
7	1731955.	1408596.	418849.	1731955.	NIL	NIL	323359.	174033.
8	1919007.	1457878.	398847.	1748621.	170386.	85193.	375936.	183937.
9	2128178.	1512988.	375939.	1766542.	361636.	180818.	434373.	193208.
10	2287792.	1555040.	354769.	1771259.	516533.	258266.	474485.	191863.
11	2397606.	1374000.	335132.	1478363.	919242.	459621.	563984.	207321.
12	2467136.	1392319.	316857.	1459096.	1008040.	504020.	570797.	190750.
13	2548552.	1413770.	299799.	1442561.	1105990.	552995.	581787.	176748.
14	2665785.	1444657.	283837.	1434809.	1230977.	615488.	605640.	167268.
15	2753756.	1467834.	268867.	1418440.	1335316.	667658.	618264.	155232.
16	2833615.	1549284.	254802.	1490446.	1343169.	671584.	612746.	139860.
17	2969629.	1585119.	241564.	1480565.	1489063.	744532.	639978.	132796.
18	3192351.	1643799.	229088.	1490928.	1701423.	850711.	697840.	131639.
19	3540317.	1735476.	217315.	1531280.	2009037.	1004518.	800322.	137246.
20	3922671.	1836213.	206195.	1577250.	2345421.	1172711.	913747.	142452.
21	4216871.	1971690.	195681.	1687454.	2529417.	1264709.	980473.	138959.
22	4554221.	2060570.	185734.	1700436.	2853785.	1426893.	1066758.	137443.
23	4964101.	2168560.	176317.	1723994.	3240107.	1620053.	1175488.	137684.
24	5415834.	2287576.	167397.	1748767.	3667067.	1833533.	1294725.	137864.
25	5962834.	2431692.	158943.	1787381.	4175453.	2087726.	1443416.	139724.

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***  FINANCIAL  ANALYSIS  ***
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***  APARTMENT  BUILDING  ***
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BASIC DATA:

LAND COST: $ 500000   NO. OF STUDIO/BACHELOR APTS.: 20   MONTHLY RENT: $ 375
BUILDING COST: $ 8273880   NO. OF ONE BEDROOM APTS.: 20   MONTHLY RENT: $ 475
COST OF APPLIANCES: $ 144000 NO. OF TWO BEDROOM APTS.: 60   MONTHLY RENT: $ 600
TOTAL CAPITAL COST: $ 8917880 NO. OF THREE BEDROOM APTS.: 44   MONTHLY RENT: $ 700

THE 3 YEAR RENEWABLE MORTGAGE

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	1223779.	18943.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1220257.	22465.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	1216080.	26642.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	978354.	52655.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	970555.	60454.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	961601.	69408.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	1068380.	64208.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	1057627.	74961.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	1045072.	87516.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	650637.	179605.
11	302037.	17727.	159541.	56930.	41931.	53521.	631687.	632039.	198203.
12	310796.	18241.	164168.	58581.	43147.	55073.	650006.	611515.	218727.
13	321053.	18843.	169585.	60514.	44571.	56891.	671457.	577284.	244770.
14	335821.	19710.	177386.	63298.	46621.	59508.	702344.	552452.	269602.
15	346903.	20360.	183240.	65387.	48159.	61472.	725521.	525101.	296953.
16	356963.	20950.	188554.	67283.	49556.	63254.	746561.	504923.	373799.
17	374098.	21956.	197605.	70513.	51935.	66290.	782396.	471394.	357328.
18	402155.	23603.	212425.	75801.	55830.	71262.	841076.	434392.	394330.
19	445990.	26175.	235579.	84064.	61915.	79030.	932753.	625671.	357319.
20	494157.	29002.	261022.	93142.	68602.	87565.	1033490.	565827.	417163.
21	531218.	31178.	280598.	100128.	73747.	94132.	1111002.	495961.	487029.
22	573716.	33672.	303046.	108138.	79647.	101663.	1199882.	368250.	584823.
23	625350.	36702.	330321.	117871.	86815.	110813.	1307872.	281631.	671442.
24	682257.	40042.	360380.	128597.	94715.	120897.	1426888.	182182.	770891.
25	751165.	44086.	396778.	141585.	104281.	133107.	1571004.	84477.	885069.

THE 3 YEAR RENEWABLE MORTGAGE

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	1509554.	NOT REQD	1490611.	(477835.)	NIL	(496778.)	(473659.)
2	1139373.	1542908.	NOT REQD	1520443.	(381070.)	NIL	(403535.)	(349778.)
3	1254450.	1573227.	NOT REQD	1546585.	(292135.)	NIL	(318777.)	(251192.)
4	1368605.	1391590.	29870.	1368605.	NIL	NIL	(22985.)	(16465.)
5	1491779.	1424042.	128191.	1491779.	NIL	NIL	67737.	44112.
6	1611121.	1455485.	225045.	1611121.	NIL	NIL	155637.	92141.
7	1731955.	1588899.	207264.	1731955.	NIL	NIL	143056.	76993.
8	1919007.	1638181.	355787.	1919007.	NIL	NIL	280826.	137402.
9	2128178.	1693291.	386975.	1992750.	135429.	67714.	367173.	163318.
10	2287792.	1432997.	364951.	1618343.	669449.	334724.	520070.	210296.
11	2397606.	1461929.	344562.	1608289.	789317.	394658.	541018.	198879.
12	2467136.	1480248.	325622.	1587143.	879993.	439997.	546891.	182762.
13	2548552.	1493511.	307971.	1556711.	991840.	495920.	559121.	169862.
14	2645785.	1524398.	291476.	1546272.	1119513.	559757.	581631.	160637.
15	2753756.	1547575.	276026.	1526648.	1227109.	613554.	592627.	148795.
16	2833615.	1625283.	261523.	1513007.	1320608.	660304.	548028.	125088.
17	2969629.	1611118.	247886.	1501676.	1467953.	733976.	624534.	129592.
18	3192351.	1669798.	235042.	1510510.	1681841.	840920.	681633.	128581.
19	3540317.	1915743.	222931.	1781355.	1758962.	879481.	745093.	127775.
20	3922671.	2016480.	211497.	1810815.	2111857.	1055928.	850263.	132555.
21	4216871.	2093992.	200693.	1807656.	2409216.	1204608.	918271.	130143.
22	4554221.	2152955.	190474.	1758606.	2795615.	1397807.	1003458.	129288.
23	4964101.	2260945.	180803.	1770306.	3193795.	1596898.	1106259.	129575.
24	5415834.	2379961.	171645.	1780715.	3635119.	1817559.	1218314.	129727.
25	5962834.	2540550.	162969.	1818450.	4144384.	2072192.	1350092.	130690.

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*** FINANCIAL  ANALYSIS ***
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*** APARTMENT  BUILDING ***
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BASIC DATA:

LAND COST: $ 500000	NO. OF STUDIO/BACHELOR APTS.: 20	MONTHLY RENT: $ 375
BUILDING COST: $ 8273880	NO. OF ONE BEDROOM APTS.: 20	MONTHLY RENT: $ 475
COST OF APPLIANCES: $ 144000	NO. OF TWO BEDROOM APTS.: 60	MONTHLY RENT: $ 600
TOTAL CAPITAL COST: $ 8917880	NO. OF THREE BEDROOM APTS.: 44	MONTHLY RENT: $ 700

THE VARIABLE RATE MORTGAGE

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	1236390.	18327.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	1061627.	33165.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	985232.	45247.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	971436.	52774.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	893530.	69790.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	849315.	84694.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	1064539.	63176.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	1060708.	72919.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	819888.	123700.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	626171.	181385.
11	302037.	17727.	159541.	56930.	41931.	53521.	631687.	486935.	234736.
12	310796.	18241.	164168.	58581.	43147.	55073.	650006.	492532.	245887.
13	321053.	18843.	169585.	60514.	44571.	56891.	671457.	548006.	243024.
14	335821.	19710.	177386.	63298.	46621.	59508.	702344.	451045.	290472.
15	346903.	20360.	183240.	65387.	48159.	61472.	725521.	405272.	322372.
16	356963.	20950.	188554.	67283.	49556.	63254.	746561.	473859.	315687.
17	374098.	21956.	197605.	70513.	51935.	66290.	782396.	568059.	306321.
18	402155.	23603.	212425.	75801.	55830.	71262.	841076.	676738.	300591.
19	445990.	26175.	235579.	84064.	61915.	79030.	932753.	621757.	352762.
20	494157.	29002.	261022.	93142.	68602.	87565.	1033490.	441420.	453009.
21	531218.	31178.	280598.	100128.	73747.	94132.	1111002.	388022.	516565.
22	573716.	33672.	303046.	108138.	79647.	101663.	1199882.	355201.	566231.
23	625350.	36702.	330321.	117871.	86815.	110813.	1307872.	273615.	649128.
24	682257.	40042.	360380.	128597.	94715.	120897.	1426888.	190087.	741763.
25	751165.	44086.	396778.	141585.	104281.	133107.	1571004.	83004.	860579.

THE VARIABLE RATE MORTGAGE

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	1521549.	NOT REQD	1503222.	(490446.)	NIL	(508773.)	(485096.)
2	1139373.	1394978.	NOT REQD	1361813.	(222440.)	NIL	(255605.)	(221554.)
3	1254450.	1360984.	NOT REQD	1315737.	(61287.)	NIL	(106534.)	(83947.)
4	1368605.	1384791.	36588.	1368605.	NIL	NIL	(16186.)	(11595.)
5	1491779.	1356353.	205216.	1491779.	NIL	NIL	135426.	88193.
6	1611121.	1358485.	337331.	1611121.	NIL	NIL	252637.	149567.
7	1731955.	1584026.	211105.	1731955.	NIL	NIL	147929.	79616.
8	1919007.	1639220.	352706.	1919007.	NIL	NIL	279787.	136893.
9	2128178.	1504291.	375703.	1756294.	371885.	185942.	437945.	194797.
10	2287792.	1410311.	354527.	1583453.	704339.	352169.	525311.	212415.
11	2397606.	1353358.	334887.	1453510.	944096.	472048.	572199.	210341.
12	2467136.	1388425.	316612.	1459151.	1007985.	503993.	574718.	192061.
13	2548552.	1462487.	299558.	1519020.	1029532.	514766.	571299.	173562.
14	2665785.	1443861.	283600.	1436989.	1228796.	614398.	607526.	167789.
15	2753756.	1453165.	268637.	1399430.	1354326.	677163.	623428.	156528.
16	2833615.	1536107.	254578.	1474998.	1358617.	679308.	618199.	141105.
17	2969629.	1656776.	241348.	1591803.	1377826.	688913.	623940.	129468.
18	3192351.	1818405.	228879.	1746693.	1445658.	722829.	651117.	122825.
19	3540317.	1907272.	217114.	1771624.	1768693.	884346.	748699.	128393.
20	3922671.	1927919.	206002.	1680912.	2241759.	1120880.	873872.	136236.
21	4216871.	2015589.	195496.	1694520.	2522351.	1261176.	940107.	133238.
22	4554221.	2121314.	185557.	1740640.	2813581.	1406790.	1026116.	132207.
23	4964101.	2230615.	176148.	1757634.	3206467.	1603233.	1130253.	132385.
24	5415834.	2358738.	167235.	1784210.	3631624.	1815812.	1241284.	132173.
25	5962834.	2514587.	158789.	1812797.	4150037.	2075018.	1373229.	132930.

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***   FINANCIAL  ANALYSIS   ***
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***   APARTMENT  BUILDING   ***
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BASIC DATA:

LAND COST: $ 500000	NO. OF STUDIO/BACHELOR APTS.: 20	MONTHLY RENT: $ 375
BUILDING COST: $ 8273880	NO. OF ONE BEDROOM APTS.: 20	MONTHLY RENT: $ 475
COST OF APPLIANCES: $ 144000	NO. OF TWO BEDROOM APTS.: 60	MONTHLY RENT: $ 600
TOTAL CAPITAL COST: $ 8917880	NO. OF THREE BEDROOM APTS.: 44	MONTHLY RENT: $ 700

CONSTANT PAYMENT—VARIABLE MATURITY

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	997928.	0000.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	997928.	0000.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	997928.	0000.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	997928.	0000.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	966632.	31296.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	924229.	73699.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	997928.	0000.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	997928.	0000.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	956577.	41351.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	740377.	257551.
11	302037.	17727.	159541.	56930.	41931.	53521.	631687.	572463.	425465.
12	310796.	18241.	164168.	58581.	43147.	55073.	650006.	567079.	430849.
13	321053.	18843.	169585.	60514.	44571.	56891.	671457.	617246.	380682.
14	335821.	19710.	177386.	63298.	46621.	59508.	702344.	499519.	498409.
15	346903.	20360.	183240.	65387.	48159.	61472.	725521.	435502.	562426.
16	356963.	20950.	188554.	67283.	49556.	63254.	746561.	488947.	508981.
17	374098.	21956.	197605.	70513.	51935.	66290.	782396.	564171.	433757.
18	402155.	23603.	212425.	75801.	55830.	71262.	841076.	652322.	345606.
19	445990.	26175.	235579.	84064.	61915.	79030.	932753.	590916.	407012.
20	494157.	29002.	261022.	93142.	68602.	87565.	1033490.	411139.	586789.
21	531218.	31178.	280598.	100128.	73747.	94132.	1111002.	350980.	646948.
22	573716.	33672.	303046.	108138.	79647.	101663.	1199882.	287976.	709952.
23	625350.	36702.	330321.	117871.	86815.	110813.	1307872.	191342.	806586.
24	682257.	40042.	360380.	128597.	94715.	120897.	1426888.	91095.	767886.
25	751165.	44086.	396778.	141585.	104281.	133107.	1571004.	0000.	0000.

CONSTANT PAYMENT–VARIABLE MATURITY

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	1264760.	NOT REQD	1264760.	(251984.)	NIL	(251984.)	(240257.)
2	1139373.	1293114.	NOT REQD	1298114.	(158741.)	NIL	(153741.)	(133260.)
3	1254450.	1328433.	NOT REQD	1328433.	(73983.)	NIL	(73983.)	(58298.)
4	1368605.	1358509.	10096.	1368605.	NIL	NIL	10096.	7232.
5	1491779.	1390961.	132114.	1491779.	NIL	NIL	100818.	65655.
6	1611121.	1422404.	262417.	1611121.	NIL	NIL	188718.	111726.
7	1731955.	1454239.	277716.	1731955.	NIL	NIL	277716.	149468.
8	1919007.	1503521.	402189.	1905710.	13297.	6648.	408837.	200035.
9	2128178.	1558631.	378997.	1896277.	231902.	115951.	453597.	201759.
10	2287792.	1600683.	357581.	1700714.	587078.	293539.	393569.	159144.
11	2397606.	1629615.	337730.	1541880.	855726.	427863.	340127.	125031.
12	2467136.	1647934.	319265.	1536350.	930786.	465393.	353809.	118237.
13	2548552.	1669385.	302039.	1590742.	957810.	478905.	400262.	121601.
14	2665785.	1700272.	285927.	1487790.	1177995.	588998.	376516.	103988.
15	2753756.	1723449.	270823.	1431846.	1321910.	660955.	369352.	92736.
16	2833615.	1744489.	256635.	1492143.	1341472.	670736.	418390.	95498.
17	2969629.	1780324.	243286.	1589853.	1379775.	689888.	499417.	103630.
18	3192351.	1839004.	230708.	1724106.	1468245.	734122.	619225.	116809.
19	3540317.	1930681.	218842.	1742511.	1797806.	898903.	710733.	121883.
20	3922671.	2031418.	207635.	1652264.	2270407.	1135203.	756049.	117867.
21	4216871.	2108930.	197041.	1659023.	2557848.	1278924.	829017.	117493.
22	4554221.	2197810.	187020.	1674878.	2879343.	1439672.	916739.	118114.
23	4964101.	2305800.	177533.	1676747.	3287354.	1643677.	1014624.	118842.
24	5415834.	2285869.	168548.	1686531.	3729303.	1864652.	1265314.	134732.
25	5962834.	1571004.	160034.	1731038.	4231796.	2115898.	2275932.	220312.

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*** FINANCIAL ANALYSIS        ***
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*** APARTMENT BUILDING        ***
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BASIC DATA:

LAND COST: $ 500000
BUILDING COST: $ 8273880
COST OF APPLIANCES: $ 144000
TOTAL CAPITAL COST: $ 8917880

NO. OF STUDIO/BACHELOR APTS.: 20
NO. OF ONE BEDROOM APTS.: 20
NO. OF TWO BEDROOM APTS.: 60
NO. OF THREE BEDROOM APTS.: 44

MONTHLY RENT: $ 375
MONTHLY RENT: $ 475
MONTHLY RENT: $ 600
MONTHLY RENT: $ 700

THE PRICE LEVEL ADJUSTED MORTGAGE

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	374729.	140825.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	413891.	167405.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	446571.	194709.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	476602.	224401.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	507270.	258419.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	533777.	294846.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	557752.	334866.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	599727.	392416.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	643693.	460416.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	666887.	523236.
11	302037.	17727.	159541.	56930.	41931.	53521.	631687.	670422.	579258.
12	310796.	18241.	164168.	58581.	43147.	55073.	650006.	658365.	629258.
13	321053.	18843.	169585.	60514.	44571.	56891.	671457.	645864.	686464.
14	335821.	19710.	177386.	63298.	46621.	59508.	702344.	638206.	758971.
15	346903.	20360.	183240.	65387.	48159.	61472.	725521.	617975.	828319.
16	356963.	20950.	188554.	67283.	49556.	63254.	746561.	590837.	900499.
17	374098.	21956.	197605.	70513.	51935.	66290.	782396.	570145.	998824.
18	402155.	23603.	212425.	75801.	55830.	71262.	841076.	558380.	1139772.
19	445990.	26175.	235579.	84064.	61915.	79030.	932753.	556821.	1347711.
20	494157.	29002.	261022.	93142.	68602.	87565.	1033490.	543069.	1595526.
21	531218.	31178.	280598.	100128.	73747.	94132.	1111002.	496479.	1829807.
22	573716.	33672.	303046.	108138.	79647.	101663.	1199882.	435823.	2117258.
23	625350.	36702.	330321.	117871.	86815.	110813.	1307872.	358369.	2493331.
24	682257.	40042.	380380.	128597.	94715.	120897.	1426888.	252622.	2978398.
25	751165.	44086.	396778.	141585.	104281.	133107.	1571004.	108760.	3758117.

THE PRICE LEVEL ADJUSTED MORTGAGE

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME. TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	782386.	371215.	1012776.	NIL	NIL	230390.	219668.
2	1139373.	881482.	420309.	1134386.	4987.	2493.	255398.	221375.
3	1254450.	971785.	395699.	1172774.	81675.	40838.	241827.	190556.
4	1368605.	1061584.	373037.	1210220.	158384.	79192.	227829.	163205.
5	1491779.	1158722.	352085.	1252388.	239391.	119696.	213361.	138947.
6	1611121.	1253099.	332640.	1290892.	320229.	160115.	197908.	117167.
7	1731955.	1348929.	314535.	1328598.	403357.	201679.	181348.	97602.
8	1919007.	1497736.	297630.	1402950.	516056.	258028.	163242.	79871.
9	2128178.	1664812.	281806.	1486202.	641976.	320988.	142379.	63330.
10	2287792.	1792878.	266962.	1536604.	751187.	375594.	119320.	48248.
11	2397606.	1881367,	253011.	1555120.	842485.	421243.	94995.	34920.
12	2467136.	1937629.	239878.	1548249.	918887.	459444,	70063.	23414.
13	2548552.	2003785.	227498.	1544818.	1003733.	501867.	42900.	13033.
14	2665785.	2099521.	215814.	1556364.	1109421.	554711.	11554.	3191.
15	2753756.	2171815.	204776.	1548272.	1205484.	602742.	(20801.)	(5223.)
16	2833615.	2237897.	194340.	1531738.	1301877.	650939.	(55221.)	(12604.)
17	2969629.	2351365.	184445.	1537006.	1432623.	716311.	(98048.)	(20345.)
18	3192351.	2539228.	175115.	1574571.	1617780.	808890.	(155767.)	(29384.)
19	3540317.	2837285.	166258.	1655832.	1884485.	942242.	(239211.)	(41022.)
20	3922671.	3172085.	157864.	1734424.	2188248.	1094124.	(343538.)	(53557.)
21	4216871.	3437288.	149906.	1757387.	2459484.	1229742.	(450159.)	(63799.)
22	4554221.	3752963.	142359.	1778064.	2776157.	1388078.	(586821.)	(75607.)
23	4964101.	4159572.	135200.	1801440.	3162661.	1581330.	(776801.)	(90986.)
24	5415834.	4657908.	128407.	1807917.	3607918.	1803959.	(1046033.)	(111383.)
25	5962834.	5437881.	121960.	1801723.	4161110.	2080555.	(1555602.)	(150584.)

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***   FINANCIAL  ANALYSIS   ***
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***   APARTMENT  BUILDING   ***
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BASIC DATA:

LAND COST: $ 500000 NO. OF STUDIO/BACHELOR APTS.: 20 MONTHLY RENT: $ 375
BUILDING COST: $ 8273880 NO. OF ONE BEDROOM APTS.: 20 MONTHLY RENT: $ 475
COST OF APPLIANCES: $ 144000 NO. OF TWO BEDROOM APTS.: 60 MONTHLY RENT: $ 600
TOTAL CAPITAL COST: $ 8917880 NO. OF THREE BEDROOM APTS.: 44 MONTHLY RENT: $ 700

CONSTANT PAYMENT FACTOR MORTGAGE

YEAR	TAXES	INSURANCE	HEATING & ELECTRICITY	MAINTENANCE & REPAIRS	SALARIES	ADMINIS-TRATION	TOTAL DIRECT OPERATING COSTS	MORTGAGE INTEREST	MORTGAGE CAPITAL
1	127584.	7488.	67392.	24048.	17712.	22608.	266832.	515554.	0000.
2	143532.	8424.	75816.	27054.	19926.	25434.	300186.	558766.	0000.
3	158029.	9275.	83473.	29786.	21939.	28003.	330505.	605664.	0000.
4	172409.	10119.	91069.	32497.	23935.	30551.	360581.	656575.	0000.
5	187926.	11030.	99266.	35422.	26089.	33301.	393033.	711855.	0000.
6	202960.	11912.	107207.	38255.	28176.	35965.	424476.	771893.	0000.
7	218182.	12805.	115248.	41125.	30289.	38662.	456311.	837119.	0000.
8	241746.	14188.	127694.	45566.	33561.	42838.	505593.	908004.	0000.
9	268096.	15735.	141613.	50533.	37219.	47507.	560703.	985065.	0000.
10	288204.	16915.	152234.	54323.	40010.	51070.	602755.	1068876.	0000.
11	302037.	17727.	159541.	56930.	41931.	53521.	631687.	1160070.	0000.
12	310796.	18241.	164168.	58581.	43147.	55073.	650006.	1259352.	0000.
13	321053.	18843.	169585.	60514.	44571.	56891.	671457.	1367506.	0000.
14	335821.	19710.	177386.	63298.	46621.	59508.	702344.	1485416.	0000.
15	346903.	20360.	183240.	65387.	48159.	61472.	725521.	1614079.	0000.
16	356963.	20950.	188554.	67283.	49556.	63254.	746561.	1754635.	0000.
17	374098.	21956.	197605.	70513.	51935.	66290.	782396.	1790510.	117895.
18	402155.	23603.	212425.	75801.	55830.	71262.	841076.	1764129.	312821.
19	445990.	26175.	235579.	84064.	61915.	79030.	932753.	1709288.	552874.
20	494157.	29002.	261022.	93142.	68602.	87565.	1033490.	1619442.	846992.
21	531218.	31178.	280598.	100128.	73747.	94132.	1111002.	1486721.	1206252.
22	573716.	33672.	303046.	108138.	79647.	101663.	1199882.	1301580.	1644911.
23	625350.	36702.	330321.	117871.	86815.	110813.	1307872.	1052232.	2182769.
24	682257.	40042.	360380.	128597.	94715.	120897.	1426888.	723465.	2852508.
25	751165.	44086.	396778.	141585.	104281.	133107.	1571004.	922472.	3110218.

CONSTANT PAYMENT FACTOR MORTGAGE

YEAR	GROSS REVENUE	TOTAL EXPENSES	DEPRECIAT. (CCA)	DEDUCTION FOR TAXES	TAXABLE INCOME	INCOME TAX	AFTER TAX CASH FLOW	DISCOUNTED A/T CASH FLOW
1	1012776.	782386.	230390.	1012776.	NIL	NIL	230390.	219668.
2	1139373.	858952.	280421.	1139373.	NIL	NIL	280421.	243064.
3	1254450.	936169.	318281.	1254450.	NIL	NIL	318281.	250801.
4	1368605.	1017156.	351449.	1368605.	NIL	NIL	351449.	251761.
5	1491779.	1104888.	373549.	1478437.	13342.	6671.	380220.	247610.
6	1611121.	1196369.	352535.	1548904.	62217.	31109.	383644.	227127.
7	1731955.	1293430.	333039.	1626470.	105486.	52743.	385782.	207630.
8	1919007.	1413597.	314892.	1728489.	190518.	95259.	410151.	200677.
9	2128178.	1545768.	297951.	1843719.	284460.	142230.	440181.	195791.
10	2287792.	1671631.	282097.	1953728.	334064.	167032.	449129.	181610.
11	2397606.	1791757.	267226.	2058984.	338622.	169311.	436537.	160472.
12	2467136.	1909358.	253252.	2162611.	304525.	152263.	405515.	135516.
13	2548552.	2038963.	240100.	2279062.	269489.	134745.	374844.	113879.
14	2665785.	2187760.	227703.	2415462.	250323.	125161.	352864.	97455.
15	2753756.	2339600.	216004.	2555604.	198152.	99076.	315080.	79109.
16	2833615.	2501196.	204953.	2706149.	127466.	63733.	268686.	61328.
17	2969629.	2690801.	194505.	2767411.	202218.	101109.	177719.	36877.
18	3192351.	2918026.	184619.	2789824.	402527.	201264.	73061.	13782.
19	3540317.	3194915.	175259.	2817300.	723016.	361508.	(16106.)	(2762.)
20	3922671.	3499924.	166394.	2819326.	1103345.	551673.	(128926.)	(20099.)
21	4216871.	3803975.	157992.	2755715.	1461157.	730578.	(317682.)	(45024.)
22	4554221.	4146373.	150026.	2651489.	1902732.	951366.	(543518.)	(70028.)
23	4964101.	4542873.	142473.	2502576.	2461525.	1230762.	(809534.)	(94820.)
24	5415834.	5002861.	135307.	2285660.	3130174.	1565087.	(1152114.)	(122678.)
25	5962834.	5603694.	128508.	2621983.	3340850.	1670425.	(1311285.)	(126934.)