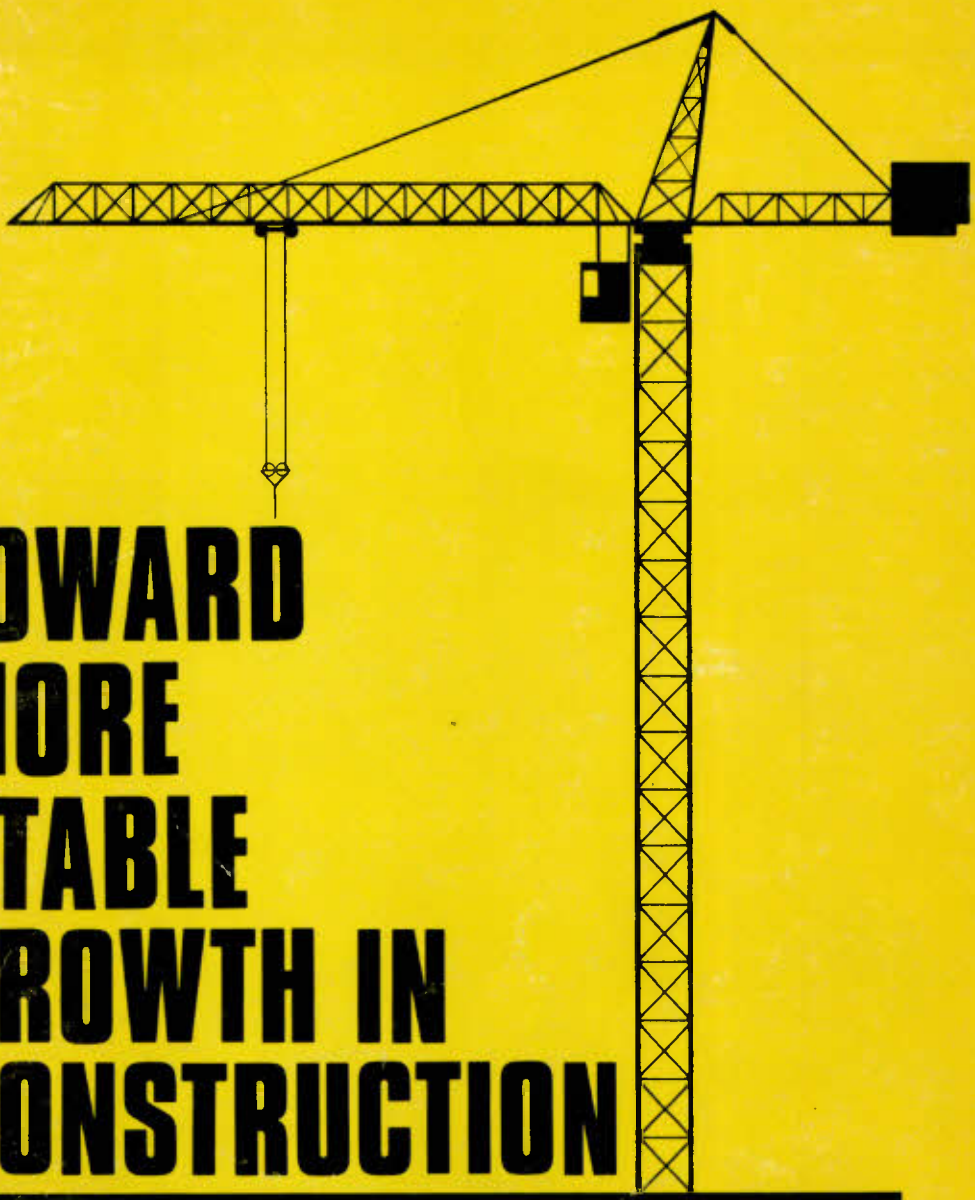

TOWARD MORE STABLE GROWTH IN CONSTRUCTION

ECONOMIC COUNCIL OF CANADA

TOWARD MORE STABLE GROWTH IN CONSTRUCTION

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Toward More Stable Growth in Construction

Report of the Study on Cyclical Instability in Construction

1974

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Preface

Terms of Reference

On January 10, 1972, the Economic Council of Canada received a request from the Prime Minister to undertake a detailed study of construction activity. His letter stated that the study should examine, in particular, issues relating to the causes and effects of cyclical instability in construction, and that it should focus on:

—the role of the construction industry in the economy, together with the effects that changes in this sector have on the whole economy;

—the consequences of changes in economic activity, particularly cyclical phenomena, on the construction industry and on the ability of the industry to meet urban needs; and

—the impact of government policies on the stability of the construction industry.

The study was to provide a basis on which the Council could recommend action to reduce instability.[1]

Origin of the Study

Construction activity is, by nature, impermanent, as it shifts from one project and employer to the next and from one locality to another, but the industry in Canada and elsewhere has long been plagued by two additional kinds of instability—seasonal swings and longer-run cycles. The seasonal instability originates mainly from the summer-winter

[1] For the full text of the Prime Minister's letter, see Appendix A.

contrasts in climate. In recent decades, strides have been made in reducing these seasonal swings, thanks mainly to technological developments enabling more winter-time construction, and in moderating the severity of the impact of seasonality, due partly to institutional "safety nets", such as unemployment insurance, and partly to above-average rates of increase in wages.

The problem of longer-run surges and slumps in construction activity, however, has claimed increasing attention. A construction boom began in the mid-1950s, and there was a smaller one again in the mid-1960s. The harmful effects of these cyclical upswings and intervening slumps could be seen both inside and outside the industry. The Economic Council, in its *Third Annual Review* in 1966, in its 1970 report on *Performance and Potential*, and in its *Ninth Annual Review* of 1972, drew attention to the seriousness, both for the industry itself and the economy in general, of such instability in construction activity.

The construction industry felt increasingly dissatisfied with this unstable state of affairs and, in recent years, its business and labour leaders pressed for a thoroughgoing and objective study of the causes of, and possible remedies for, the construction cycle. The Construction Industry Development Council and the Canadian Construction Association were influential advocates of such a study.

In 1971, the Minister of Industry, Trade and Commerce asked the Prime Minister to request the Economic Council to undertake the study. After other interested departments were consulted, the Prime Minister requested us to undertake the inquiry.

Approaches Taken

The work was designed and undertaken in accordance with the terms of the study indicated at the outset of this Preface. The three basic aspects to be covered—the construction industry itself, the economy in general, and the government sector—and the mutual interrelationships among them, with respect to cyclical instability, were built into the research program.[2] Some of the studies were systematically quantitative and some were more institutional in nature. Except for the historical study, our research covered the two decades since 1950. As part of the studies, over 300 interviews were conducted across the country covering various aspects of construction instability.

[2] A list of the subject areas of the various background studies is provided in Appendix B. Some of the background studies are to be published separately by the Council.

In addition to the (mainly) in-house program of research, it was decided at the outset to invite publicly the submission of briefs from interested parties, in order to obtain information and insights into the sources and effects of, and the remedies for, cyclical instability in construction from those who have been experiencing it first-hand. The briefs also provided a means of participating in the study for people whose goodwill and co-operation are essential to the implementation of recommendations in the Council's report. In addition, our Council membership provides a broad representation of the interests of the general public across Canada.

Structure of the Report

In addition to the Preface, the Summary and Recommendations, and the Appendixes, this Report on the construction study has three parts, including nine chapters. Part 1 is mainly descriptive of the nature of the construction industry. It contains two chapters dealing with the nature, role, and place of construction in the economy; the organization and structure of the industry; some business aspects; financing; technological change; and construction prices, productivity, and costs. The third chapter pertains to construction labour. Part 2 is devoted to analysing cyclical instability in construction. It begins with an introduction to measuring instability and then, in Chapters 5 to 7, presents the results of the analysis with respect to major industries and regions and the economy as a whole, with respect to residential construction, and with respect to expenditures on construction by the government sector. Part 3 contains our main findings, conclusions, and recommendations. Chapter 8 draws together main findings concerning the sources and impact of cyclical instability, discusses the benefits and costs of stabilizing and the various ways and means of reducing instability, and considers the prospects of achieving greater stability. Our conclusions and recommendations are in Chapter 9.

Acknowledgments

Many people, directly or indirectly, have contributed to the work on the study. We shall not name them individually, but we wish to acknowledge them by group and to express publicly our grateful appreciation.

First of all, we would like to thank the individuals and groups who submitted briefs in response to our public invitation. Fifty-three briefs

were received.[3] These were classified into the following five source categories, with the number of submissions in each also indicated: associations of construction contractors or related professionals, 21; interested individuals, 14; construction or related firms, 12; labour federations or unions, 5; and government departments, 1. Although there was a variety of opinions in the briefs, their consensus message is included in the Summary.

We also owe a large debt of gratitude to over 300 people across the country and in Washington who contributed time and information to our researchers. Included were construction contractors, related professionals and manufacturer-suppliers, trade associations, financial institutions providing construction credit, labour relations leaders, officials and specialists, and personnel in provincial and federal government departments and agencies.

Specific acknowledgments for information and co-operation are due the following: Statistics Canada; the Central Mortgage and Housing Corporation; the federal departments of Urban Affairs, of Regional Economic Expansion, of Industry, Trade and Commerce, of Public Works, of Labour, and of Manpower and Immigration; the Unemployment Insurance Commission; the Division of Building Research of the National Research Council; and the Science Council of Canada. The Science Council undertook a special study on our behalf dealing with technology transfer and innovation in construction.

[3] A complete list of the briefs is contained in Appendix C.

SUMMARY
AND RECOMMENDATIONS

Summary and Recommendations

INTRODUCTION

In human society, as in biological matters, growth and development proceed at varying rates. The sequence is usually one of slow preparatory growth leading to acceleration and then to deceleration as the process approaches the shifting limits of society's demands or of the capacity of the economy. This cyclical pattern repeats itself again and again as new stimuli occur, population grows, consumer tastes change, and new products and techniques are introduced. Growth in one sector or region may offset decline in another or, alternatively, there may be cumulative repercussions that move the economy as a whole at different rates at different times. The phenomenon of instability results.

If, then, some instability is inseparable from growth and growth is desirable, why are people so concerned about instability? It is basically because the economic factors that enter into the production process—management, labour, equipment, materials and, to a lesser degree, financing—are not perfectly mobile. In an unstable production situation, they experience periods of unemployment and involuntary idleness, or they may be less than fully productive in other periods, all of which represent real costs to society. Moreover, instability in the economy at large, and in individual sectors such as construction, creates price and employment pressures that alter the earnings or income position of one group of Canadians relative to another. In the extreme, instability can lead to pronounced income redistribution, particularly at the peaks and troughs of the cycle, and this redistribution may run counter to publicly accepted views of equity. In short, while some instability is inevitable, too much instability is counterproductive, inhibiting both growth and the fair distribution of its rewards. The key question becomes that of how to minimize instability while maintaining economic growth.

Construction instability is an integral part of the larger process of economic expansion and contraction occurring locally, regionally, and nationally. Since construction firms primarily are marketing highly specialized site-preparation and assembly skills, they carry no inventories. Instead, they respond—as do service agencies—to the immediate demands of other sectors of the economy: to business demands for additional industrial or commercial plant capacity; to government spending on schools, hospitals, energy facilities, roads, sewers, and other social structures; and to family requirements for new or replacement housing. Thus a review of the sources of construction instability requires some explanation of how these other areas and construction interact during the various stages of the business cycle.

"Business cycles exist", it has been said, "because a private enterprise economy expands and contracts through a cumulative process which eventually breeds a movement in the opposite direction."[1] These movements, in turn, largely reflect the expectations and responses of consumers, businessmen, and government decision-makers.

We have relied heavily on econometric analysis to examine past trends and cyclical variations through the 1951-70 period and to simulate possible policy options that might moderate cyclical instability in construction through the years ahead. This has helped us to estimate the net results on prices, output, and employment, between specified points in time, of adopting one course of action rather than another. Estimation, however, is not explanation. Our analysis would be incomplete, therefore, without some discussion of the processes and stages of the business cycle; the sequence of events that generate pressures, maladjustments, and self-correcting forces; and the relationship of these to construction instability.

Consider, for example, the period of business contraction in the late 1950s. After a number of years of strong growth, production and new investment began to falter, equity prices fell, and unemployment mounted. Industrial construction slackened in 1957 and residential construction, in 1959. As the downswing continued, industrial production fell faster than consumption and retail sales. Inventories, which had accumulated at the upper turning point, began to decline as businessmen converted them to cash in order to pay off previous commitments. This, in turn, increased the liquidity position of banks and other lending agencies, and interest rates dropped. Wage demands eased, along with the prices of raw materials and semifinished products. The preconditions for the mid-1960 recovery were set.

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[1]Robert A. Gordon, *Business Fluctuations* (New York: Harper, 1952), p. 267.

The state of the construction industry significantly affects the length and severity of a recession. Mortgage rates were reduced in 1960 and 1961 to attract home-buyers. Still lower bond rates offered opportunities to business firms contemplating expansion and sufficiently widened the margin between mortgage and bond rates to attract funds into the housing market. Between 1962 and 1966, mortgages held by Canadian mortgage loan companies doubled. Government initiatives in the education and health fields increased institutional construction by about a third in the single year 1962. In short, there was a marked renewal in residential and institutional construction. As confidence spread, orders from industry for new equipment and machinery increased, leading to new hirings, rising incomes, and additional confidence. Between 1962 and 1966, expenditures in constant dollars on machinery and equipment rose by 80 per cent.

As expansion proceeds and firms compete for increasingly scarce financial resources, equipment, and labour, interest rates and prices rise and wage demands escalate. With rising profits, equity prices increase rapidly. Production bottlenecks and skill shortages begin to appear. As prices rise, so do the costs of expansion. Mortgage rates increase, but other interest rates rise more rapidly, which narrows the mortgage/bond-rate margin, causing the flow of mortgage funds to shrink. Despite their higher incomes, home-buyers, in turn, will be discouraged by higher housing prices and tightening credit. These events are likely to cause a moderation in the pace of business expansion and housing starts. Government construction expenditures that are closely associated with the rise and fall of industrial and residential building may also begin to ease. And so the cycle recurs.

Residential construction cycles sometimes move counter to, and sometimes along with, the movements of other construction sectors.[2] In any event, whether in construction or the economy as a whole, the sequence of events at the turning points may differ from cycle to cycle. Ordinarily, the turning points are not clearly distinguishable at the time—there is usually a zone during which the turnaround signals can be ambiguous.

In a free-enterprise economy, some instability is inevitable. And, since a country's economic activities are all interwoven, the instabilities in one or more sectors, coming together, can set in train cumulative processes that result in major or minor cycles. Each expansion and each contraction creates countervailing forces that, like the tides, ultimately reverse the process.

---

[2] When one construction component swings counter to another or to the economy, we refer to it as "countercyclical"; otherwise, we call it "cyclical".

Much of the impetus of these forces stems from expanding and contracting investment—public, business, and consumer investment. Traditionally, investment is the most volatile element of aggregate demand, rising more rapidly than consumption on the upswing and falling more sharply on the downswing. Construction accounts for well over half of all new investment and demonstrates the same high degree of cyclical instability. A reduction in construction instability, therefore, would not only help to reduce uncertainties within the industry, but could also lessen the severity of the overall business cycle. This could, in turn, ease price pressures by releasing resources that are now employed to cover periods of peak activity. With increased stability, some of the excess capacity of labour and equipment associated with construction and related activity—evident in recurrent periods of idleness—would become available for more productive employment and growth elsewhere in the economy.

As explained in the Preface, we were asked by the Government of Canada to make a detailed study of construction activity, with emphasis on matters relating to the causes and effects of cyclical instability in construction, in order to recommend action for reducing the instability. We defined cyclical instability as year-by-year variations in construction activity above and below the underlying trend.[3] A complete summary of our report follows, including the consensus message of the briefs and our recommendations.

HIGHLIGHTS

General Considerations

Construction in the economy

The history of the construction industry in Canada reflects the growth and development of the nation's economy. In particular, surges and slumps in construction have tended to coincide with periods of prosperity and depression. Since 1950, there have been two main surges in construction, in 1952-57 and 1964-66.

Among 12 major industries, construction ranks near average in size and growth. It has grown at about the same rate as the Gross National Product—approximately 5 per cent per year.

[3] For the techniques used to measure instability, the reader is referred to Chapter 4.

On a value-added basis, the output of the construction industry accounts for about 6 per cent of Gross Domestic Product. This proportion is smaller than in most western European countries, and larger than in the United States.

Construction expenditures represent the major part (about 60 per cent) of total capital investment in Canada. Over three-quarters of construction work is done by the construction industry itself and the balance by the labour forces of other industries and government departments. Government at all levels, private business, and housing, each account for about one-third of construction expenditures.

Structure of the industry

Construction is a dispersed, compartmentalized, and competitive industry. Customers in all sectors of the economy from coast to coast purchase a wide range of construction products from a large number of firms. The industry reacts quickly to shifts in demand but lacks any capacity for moderating the impact of such shifts.

Entry to the construction business is easy, even for smaller firms. The industry currently comprises about 80,000 firms, of which 25 per cent are corporate entities, the remainder being partnerships and proprietorships. The 20,000 incorporated firms, most of which are small, do two-thirds of the construction business.

Teams of construction contractors, tradesmen, and other specialists are continually organizing in patterns appropriate to the technical and commercial requirements of each project. When the job is done, they depart to join teams on other projects. This feature of temporary arrangements is characteristic of the construction industry and, in addition to cyclical and seasonal swings in demand, is an important source of insecurity for the participants.

Business aspects of the firm

Construction is a risky business. There are often wide swings from year to year in the scale of operations of construction firms, and profits are highly variable. The financial performance of firms varies considerably among types of construction and from region to region.

Procedures have been developed for reducing risk to suppliers, labourers, and buyers, leaving it mainly with the contractors.

While the surveyed firms indicated room for improvement in internal planning and management training in the construction industry, they felt that the solution to the problem of instability lay mainly in better overall planning and scheduling of construction buying, a more even supply and cost of funds, and the provision of better information on new contract awards and future demand for construction.

Operating capital

Among the 20,000 incorporated firms in construction, equity financing is proportionately much lower than in manufacturing or wholesale trade. Conversely, short-term debt, especially loans, accounts for a larger share of current liabilities. In 1972, bank loans accorded to construction contractors totalled $843 million. This represents about 6 per cent of all business loans advanced by banks.

Loans for the purchase of construction equipment seem to be one area where lending is curtailed in tight-money periods. Partly for this reason, but also because of the advantage to the contractor of having equipment on hand only as needed, there appears to be a marked increase in the leasing of equipment by construction firms.

Technology

Technological change in construction tends to be gradual and comprises a wide variety of individual developments in materials, equipment, and methods, with higher rates of diffusion in the field of equipment and lower rates in methods. Technological change does not show much relationship to instability in the industry.

Measured in terms of investment in machinery and equipment, the construction industry performed favourably compared with manufacturing and mining during the 1950s but less favourably during the 1960s.

Measured by expenditures on research and development, outlays for construction were relatively small. In 1971, these expenditures were recorded at $17 million, over half of which was advanced by the federal and

provincial governments. The $6.3 million spent on construction research and development (R&D) by all industries represented only 1.7 per cent of their total R&D expenditures.

Prices and productivity

Throughout the two decades since 1950, materials prices rose at a considerably slower pace (1.7 per cent annually) than either wages (5.8 per cent) or prices of machinery and equipment (3.4 per cent). Construction firms continually introduced improved materials and labour-saving methods. This kept unit labour costs down to an annual rate of 3.0 per cent during the 20-year period.

Productivity per man-hour increased at a slower rate than in goods-producing industries, but at a faster rate than in service industries. The gain in output per construction worker averaged 2.5 per cent per year between 1951 and 1971.

This gain in labour productivity was achieved without the employment displacement or very heavy capital investment of certain other industries, such as agriculture and mining. The benefits of increased productivity in construction were not evenly distributed among labour and capital. The labour-income share of output increased over the period, while the total-profits share declined. The share of corporation profits remained about the same, while that of unincorporated profits declined considerably.

Construction Labour

The labour force

In 1972, out of a total of over 8 million persons employed in Canada, nearly 600,000 worked in construction. This includes a regular body of tradesmen and labourers numbering between 400,000 and 500,000, and an additional 100,000 to 200,000 who drift in and out of the industry in response to employment conditions.

Insecurity

The impermanent and shifting nature of construction work means that few workers have continuing attachments to a particular employer. The average job lasts

about seven months. Over half of construction tradesmen will not be working for the same employer a year hence.

Although there has been considerable reduction in seasonality in the industry, much remains. In highways, hydro, and other engineering construction, for example, summer employment averages about 60 per cent higher than winter employment. Even in building construction, where most of the advances have been made in year-round techniques, summer employment runs about 28 per cent higher than mid-winter.

For construction workers, therefore, cyclical instability tends to be associated with short-term jobs, seasonality, and unemployment rates three times as high as for male workers elsewhere in the economy. In trough years of the cycle, winter unemployment levels for construction workers as a whole have risen as high as 25 per cent, and considerably higher in some provinces.

With large numbers of workers entering and leaving construction, the industry gives the appearance of high worker mobility. This is somewhat deceiving. Among organized tradesmen there is little interoccupational mobility; journeymen specialize in their own trades. Although there is considerably more geographic mobility, interregional differences in construction wage rates persist.

Unions

Apart from Quebec, where union membership is compulsory, commercial, institutional, and industrial construction is 70 to 90 per cent unionized; road and bridge construction, 40 to 50 per cent; and residential construction, 5 to 10 per cent.

Because jobs are generally of short duration and there is a high probability of unemployment, construction workers look to their trade union local rather than their employer for security. Thus, in addition to their usual role in the collective-bargaining process, construction unions act as suppliers of job orders through locally administered hiring halls.

Many federal, provincial, and municipal laws and regulations exist to cover matters such as employment,

safety, hours of work, and overtime. Most employers give high priority to matters of safety and working conditions, but there are still frequent instances of neglect. In the unionized sectors, the collective agreements usually have explicit clauses about matters of safety and working conditions. However, the enforcement of government regulations—which is particularly important in the unorganized sectors—rests with government inspectors.

While most unions administer their own health, welfare, and pension programs, there are problems associated with coverage, continuity, funding, and portability. Only in Quebec does a construction worker have an assured, portable, multitrade pension plan.

Industrial relations

While recent industrial relations legislation has encouraged the formation of employer associations "accredited" to bargain over wider areas or trades, there is not much evidence outside Quebec that multitrade bargaining has caught on. The trend so far is to wider-area, single-trade agreements. While these offer more orderly bargaining processes and reduce the number of individual strikes, they also enlarge the extent and impact of possible strikes.

Industrial relations in the construction industry in Quebec present some unique features, including compulsory membership and multiparty, multitrade collective bargaining. Quebec has narrowed construction wage differences relative to other provinces and between skilled tradesmen and unskilled workers. The system of work permits has not proven effective in stabilizing employment, however.

An analysis of pattern-setting collective agreements in Canada showed relatively little evidence of restrictive practices for the purpose of opposing technological change. There was, however, almost complete reliance on the closed shop and the hiring hall as the basis for regulating the supply of labour to employers. Despite occasional abuses, the hiring-hall system appears to serve the interests of union tradesmen and employers well, but whether it protects the public interest is less sure.

Apprenticeship and training

Instability adversely affects the apprenticeship system. Uncertain employment has contributed to very high drop-out rates, such that apprenticeships have been insufficient to supply enough journeymen to meet ongoing demands. Indeed, Canada traditionally has relied on immigration for skilled workers. Only in recent years has the number of skilled tradesmen entering Canada been less than that of graduates from apprenticeship courses.

Instability in the industry contributes to wasted effort and skills and to retraining expenditures. Each year, for instance, between 3,000 and 12,000 trainees take institutional courses under Canada Manpower programs to acquire and enrich their construction skills, but between 30,000 and 55,000 construction workers take adult training courses for nonconstruction activities.

Construction wages...

Construction workers have made dramatic wage gains. In 1951, construction wages were on a par with manufacturing. Between 1951 and 1965, construction wages rose annually by about 6 per cent (compared with 5 per cent in manufacturing); from 1966 to 1971, they rose by 7 to 15 per cent annually (compared with 6 to 10 per cent in manufacturing); and from 1972 to 1973, by about 9 per cent. As a result, in 1972, average hourly construction wages stood at $5.15 compared with $3.54 in manufacturing.

In relative terms, unskilled labourers have improved their wage position from about 60 per cent of the electrician/plumber rates in 1951 to close to 70 per cent in 1971. But the absolute difference has widened by $30 to $60 per week.

While construction tradesmen average only 38 working weeks per year, their average annual incomes exceed those of their fellow tradesmen in other industries, who average 44 working weeks per year. The earnings of construction tradesmen have moved from 80 per cent of the national average for all tax-paying males in 1961 to higher than average in 1971.

...and benefits

In recent years, unions put increasing emphasis on fringe benefits. Ten to fifteen per cent of the pay package

to unionized construction workers now goes towards fringe benefits, such as sickness and disability insurance, pensions, and vacation pay. The nonunion worker, however, has less secure employment and enjoys few, if any, of these fringe benefits.

More than half of all construction workers average 10 to 12 weeks of unemployment insurance benefits per year. In 1973, this meant roughly $880 per beneficiary. At current levels of UIC benefits and contributions, unemployment in the construction industry probably costs other Canadians, in terms of an annual transfer to the industry, about $170 million, much of which is associated with seasonal unemployment.

In short, with higher wages and fringe benefits, better public health and pension protection, adult training alternatives, higher UIC benefits, and reduced seasonality, construction workers are not as financially insecure as they were even a decade ago.

The Dimensions of Instability

Growth and instability

The economy, the total investment sector, and construction have been markedly more stable since the Second World War. Measured in terms of variations from trend, Canada's instability in residential construction dropped from 26 per cent in the 1926-39 period to 11 per cent in the 1948-70 period and, in nonresidential construction, from 32 per cent to 10 per cent. From the 1950s to the 1960s, there was a notable improvement in the performance of the Canadian economy, with faster growth and greater stability in general. Although construction investment slowed, there was an improvement in its stability.

Over the 1948-70 period, Canada's economic growth was faster and more stable than that of the United States. Also Canada's investment was more stable, but construction in Canada contributed much more to the instability of the economy.

Compared with other industries, construction ranks high in cyclical instability of output but near average

in cyclical instability of employment. From 1948 to 1970, man-hours of employment in construction and manufacturing, combined, accounted for two-thirds of the instability of all employment.

Although wages and prices in construction and manufacturing moved together, they rose more rapidly in construction and were more unstable.

Interactions

Each of the three principal construction sectors—government, residential, and private nonresidential—accounted for about one-third of total construction, and each contributed one-third to total construction instability. There were, however, considerable differences among the components of each of these sectors. Of the 20 industries comprising manufacturing, for example, pulp and paper, primary metal, and automotive and transportation equipment industries together accounted for half of manufacturing's cyclical instability in construction investment.

Our search for the underlying sources of instability in construction investment led to an examination of four sets of factors: monetary, fiscal, supply, and demand. If, for example, the money supply had been stabilized along its long-run growth trend during the 1955-68 period, instability in residential construction, and to a lesser extent industrial construction, would have been reduced. A stable industrial output would also have contributed substantially to greater construction stability. The most striking improvement in the stability of industrial construction, however, would have come through partial rescheduling of major construction projects.

Because of their basic interdependence and complex linkages, various sectors of the economy, in turn, are affected by construction instability. An increase of $100 million in expenditures for residential construction, for instance, could generate a series of interacting demands that would add an additional $50 million worth of expenditure to the economy and over 10,000 jobs outside the construction industry. These interactions, particularly with manufacturing, provide a partial explanation of the parallels in wage and price developments in both sectors.

Private nonresidential construction contributed more to the instability of the *economy* than residential or government construction. Certain policy measures would have been more effective in stabilizing industrial construction than residential or government construction. Only a policy package could have reduced the instability in all three sectors.

Regional aspects of instability

Different regional rates of growth in construction expenditures over the past two decades contributed little to greater regional balance in the economy. There was some decline in the annual rate of growth in construction in the 1960s over the 1950s (British Columbia was slightly higher and Quebec much lower). On the other hand, except for Quebec, there was a general improvement in stability.

Many construction materials must be "imported" from other regions. Ontario and Quebec together supply virtually all of their own construction materials. The Atlantic Region, by contrast, "imports" 70 per cent of its materials; the Prairies, close to 50 per cent; and British Columbia, 40 per cent. Partly because of these linkages and the concentration of the output of construction materials in the two central provinces, instability of construction demand in other provinces can accentuate instability in the manufacturing sectors of the central provinces.

Residential Construction

Housing starts

The availability and cost of mortgage funds, the pattern of household formation, income levels, and housing prices are the main factors influencing the demand for new housing.

Between 1950 and 1972, housing starts grew at a rate of 4.4 per cent per year, while the population grew at 2.1 per cent. After allowing for demolitions and conversions, the per capita stock of dwellings increased, and the basic quality improved. Although the population of Ontario and British Columbia grew fastest since 1951,

the rates of housing starts, relative to population growth, were highest in the Atlantic Region, Quebec, and the Prairie Provinces.

As a result of changes in household formation and rising land costs, in the 1960s over half of the total starts were multifamily dwellings, whereas in the 1950s only one-third were multifamily.

Instability in housing starts is essentially an urban phenomenon, with swings in major metropolitan areas being twice as great as the national average.

While instability in housing starts has been pronounced, it decreased by 10 per cent in the 1960s compared with the 1950s. In the 1950s, the instability was concentrated in single-family units but, in the 1960s, it shifted to multifamily dwellings. Over the 1951-70 period, Ontario accounted for more instability than its share of total starts, and Quebec for less than its share.

Mortgage funds

The flow of mortgage funds reflects credit conditions as well as monetary policy and programs, such as those of the Central Mortgage and Housing Corporation. The latter now has an annual budget of close to $1 billion, most of which is directed towards encouraging the provision of accommodation for low-income people.

Residential construction financed by conventional mortgages, and by private funds under the National Housing Act, accounted for a considerable portion of the instability in the 1951-70 period. Although CMHC funds were an important component of instability in 1959 and 1960, over the 1951-70 period as a whole, they exercised a stabilizing influence on housing.

Construction costs

Rising construction costs were responsible for over 40 per cent of the increase in total home-ownership costs over the past two decades. Other influences included higher land cost, increased property tax, and higher mortgage interest rates.

Construction costs and housing prices are subject to a "ratchet" effect. This is because each upturn in the demand for housing puts pressure on wages and the costs of building materials, but downturns do not result in

tangible cost reductions because of the downward rigidity in costs.

Although shelter costs increased rapidly, there is little doubt that the consumer today is better off than he was a decade ago.

Housing needs

It is estimated that from 1971 to 1981, Canada will need an average of 250,000 new housing units per year. An important question is whether there will be enough dwellings within the financial reach of low-income households.

Our analysis indicates that more stable growth in housing starts would significantly retard future increases in housing costs. With increased stability in residential construction, therefore, more and better housing could become financially accessible to the poor, and all participants in housing construction itself would probably also benefit.

The Role of Governments in Instability

Government construction . . .

Governments, at all levels and including enterprises such as Hydro-Quebec, Air Canada, and CNR, account for about a third of all construction. Over the 1951-70 period, construction spending by the government sector moved cyclically with respect to construction as a whole. This applies especially to the federal and provincial levels of government.

At each level of government, spending on construction activities tends to rise and fall depending on whether per capita incomes are growing more or less rapidly. When the economy is booming, the need for public spending on certain kinds of construction also tends to grow.

The federal share of construction spending has dropped sharply over the past two decades. Twenty years ago it accounted for a third of all government spending on construction. In 1972, however, of the $5.8 billion total government construction expenditures, the federal government accounted for less than one-sixth;

municipal governments, for nearly one-third; and provincial governments, for over one-half.

... and its share of instability

While government spending on construction has not become any more unstable, with residential and private nonresidential construction instability dropping substantially, the relative share of governments in total construction instability rose sharply over the past two decades.

Overall, government expenditures on construction account for about one-third of all construction instability, very close to their relative importance in the total volume of construction activity.

The federal government accounted for one-third of total government construction instability over the 1951-70 period; the provincial governments, for one-half; and the municipal governments, for one-seventh. The federal government, therefore, accounted for more of the instability than its share in expenditures.

Government enterprises, which operate much like large private firms, account for about one-third of government construction expenditures but for close to two-thirds of the instability. Most of the remaining instability associated with government spending is traceable to government departments; and about two-thirds of this, to provincial departments.

At least half of all measured cyclical variation in government construction spending over the last two decades has been due to three types of public spending closely associated with Canada's growth and industrial output: pipeline construction, electric power construction, and highway construction. Construction of municipal schools and hospitals, however, has moved counter to total public construction about as often as with it.

The government share in instability varies somewhat from region to region. Except for the Atlantic Region, however, the differences are not large. What stands out is that in no region did government expenditures on construction run counter to the total construction cycle over the 1951-70 period. Just as in Canada as a whole, government sector expenditures added to regional instability in construction.

The indirect role of government

With respect to indirect influences of government on construction activity, the impact of general monetary policy has been destabilizing, especially for residential construction. The impact in recent years of regional development policies on construction instability has been small, and largely confined to the Atlantic Provinces.

While past clustering of major resource-oriented or transportation activities has added to construction instability, future clustering should not be assumed to be inevitable. With the long time lags involved between the planning, approval, and construction stages, federal-provincial co-operation in the timing of major construction projects seems desirable.

CONSENSUS MESSAGE OF THE BRIEFS

A careful inventory and tally were kept of the various causes, effects, and remedies of the construction cycle cited in the 53 briefs. Without implying endorsement, we present the consensus message of the briefs.[4]

Causes

According to the briefs, there are both external causes and internal industry sources of cyclical instability in construction. The external causes were considered to be more important than the internal ones. The two main external sources were felt to be the government sector and the economy in general. Both of these influences are mainly on the demand side.

External causes

The two most frequently mentioned causes of cyclical instability within the government sector were: the use by government of construction as a "valve" in its stabilization measures, and improper and inadequate stabilization planning by government. It was also felt that co-ordination among the three levels of government

[4] The consensus message does not necessarily apply, of course, to any particular brief. There was a wide variety of opinion, and some contradictions, among the briefs.

on construction projects and policies is limited and slow and that construction is subjected to excessive regulation and taxation by all three levels of government.

The most frequently mentioned cause within the economy in general was said to be the ebb and flow of investment funds, both domestically and internationally.

Internal causes

The internal industry sources cited have to do mainly with the nature and characteristics of construction activity. The two most frequently mentioned were the ease of entry into the industry, with its effects on scale and competition, and inadequate data for good business decisions.

Effects

Although the briefs recognize that the effects of the construction cycle are felt in various ways and places, the major impact was said to be on the construction industry and its affiliated industries and services.

The most frequently mentioned effects of cyclical instability on the construction industry itself were: (1) inefficiency and higher costs, (2) higher risks, lower profits, and fragmentation, (3) employment swings, leading to (4) inadequate manpower planning and supply, and to (5) insecurity and conflict in industrial relations. The briefs said that cyclical instability within the industry has many and various harmful effects throughout the economy, particularly on allied manufacturing and professionals.

Remedies

According to the briefs, the two most promising and effective areas for remedying the construction cycle are the government sector and the construction industry itself, especially the former. Although basic proposals were made with respect to broad stabilization policies (fiscal and monetary policies), better government planning and programming of expenditures on

construction, and leadership in joint public-private scheduling of construction work, were most frequently suggested.

Remedies by government . . .

More specifically, the recommendations most frequently made with respect to planning and scheduling were that (1) a body of the major parties involved, including the three levels of government, should be organized to define required growth rates, co-ordinate planning, and schedule development accordingly; (2) large national projects should be included in long-range planning; (3) government construction should be varied counter to that of the private sector; (4) government should provide more information on its future activities; (5) government should set up an information clearinghouse for assessing and forecasting purposes; (6) statistics measuring construction volume, costs, employment, and productivity should be improved or developed for appraising past performance in the industry and for forecasting and planning purposes; and (7) construction should not be used as a valve.

Various government tax and loan policies also were proposed, the most frequently mentioned being that: (1) the taxation system should recognize the unique nature of construction operations; (2) the home-owner should be permitted to deduct mortgage interest from his taxable income; (3) the 11 per cent sales tax on construction materials should be cancelled; (4) tax concessions should be granted to construction workers required to travel to find work; and (5) improved mortgage and other financing, and certain interest subsidies, should be provided.

An assortment of other remedies falling within the government sector were proposed in the briefs, including, for example, the quick adoption of uniform building standards and codes.

. . . and by the industry

Proposals addressed to the industry itself had to do mostly with management and industrial relations: (1) management should promote increased demand for construction; (2) management and labour should participate with government as a tripartite body to assist in

directing and developing new demand; (3) management and labour should strive to modify the adversary system and to achieve more mature and stable industrial relations; (4) greater support should be given to manpower planning, training, and development; and (5) the industry should provide more complete and accurate data on construction projects.

The briefs suggested that customers should plan and schedule their construction on a longer-term basis, taking into account other ongoing or new projects. To facilitate this, participation in client-contractor councils was proposed. It was also felt that the educational system should give more attention to the operations of the industry and offer courses with direct application to construction.

INSTABILITY AND STABILIZATION

The underlying *causes* of instability in construction are difficult to isolate because demand for construction comes from numerous sectors of the economy, all of which are interrelated. Therefore, the instability of one sector is transmitted to the next. The ebb and flow of investment funds are also dependent to some extent on international economic conditions.

The immediate *sources* of instability can more readily be identified, however, by determining the extent of instability of each of the three key construction sectors of the economy — government, residential, and private nonresidential — around its own growth trend. Over the two decades after 1950, each of these sectors accounted for roughly one-third of total construction expenditures and for approximately one-third of the instability in construction activity. However, each exhibits a different construction "mix" and distinct investment decision-making processes.

At each level of government, public spending on construction is related to incomes and business conditions, and hence is cyclical rather than countercyclical. Instability in residential construction is related to the flow of mortgage funds, income changes, and, at times, CMHC loans, whereas instability in industrial construction depends mainly on industry output, industry selling prices, and construction prices.

Construction profits are especially unstable. Cyclical instability in construction also renders more difficult the already fragmented situation on the labour relations side, caused by high seasonality and discontinuous employer/employee relations.

The nature and extent of construction cycles vary from province to province. Effective stabilization measures would need to take account of important regional differences.

Although not all the benefits and costs associated with stabilizing construction around its growth trend can be quantified, our conclusion is that the benefits do exceed the costs, provided the degree of stabilization sought is realistic and that efficient stabilization methods are adopted.

A major benefit of stabilization would be the better utilization of labour and capital in construction and the supplier industries. This means that stabilization would provide additional capacity to produce a greater output without intensifying price pressures in the economy.

The potential savings of labour and capital resulting from total stabilization would probably lie somewhere between $400 million and $600 million a year, assuming that the freed resources were put to productive use elsewhere in construction or in the economy. But since total stabilization would involve too much regimentation, the annual savings of labour and capital from a realistic degree of stabilization would be substantially less than this.

A potential major cost of stabilization stems from the need to modify the timing of construction spending by firms, governments, and households in order to achieve more stability.

Greater stability in residential construction would not only benefit the participants, but would reduce housing price pressures and thereby bring adequate housing within the reach of more low-income people.

Various possible ways and means of achieving more stable growth in construction are considered in Chapter 8, the most promising options being:

—federal and provincial initiatives, in co-operation with industry, to influence the timing of very large projects, with a view to smoothing out the combined flow of spending on construction;

—application by all levels of government of a policy of more stable growth in construction spending by both government departments and enterprises;

—use of the market mechanism to encourage stabilization of construction in the private sector (this could consist of a financial

incentive that would be applicable at times and in regions where construction activity was depressed and of a special levy designed to curb construction at times and in regions of high activity); and

—stabilization of CMHC loans for low-income housing purposes and concerted efforts by all levels of government to provide an adequate and stable flow of low-income housing.

Possible ways and means of alleviating the effects of cyclical instability on the construction industry were also considered, including better information on planned construction spending such as capital appropriations and contract awards, more rigorous and uniform enforcement of labour standards, and the universal application of portable pension plans.

Turning to the prospects of achieving more stable growth in construction ahead to 1980, present indications are for a strong construction boom and for more instability if major energy resource developments and the construction of airport and public transit facilities are clustered. Based on past experience, the prospective rate of construction would be unsustainable and would eventually lead to a slump. If the construction cycle is not to repeat itself in this decade, remedial measures aimed at achieving more stable growth are needed.

BASIC CONCLUSION AND RECOMMENDATIONS

Our basic conclusion is that more stable growth in construction is desirable and should be widely adopted as an important and urgent objective. Cyclical instability of construction is costly, and greater stability would make it possible to provide more construction without adding to price pressures.

Following is a list of our policy proposals for achieving more stable growth in construction. The first recommendation deals with the general approach that we are proposing, and the other recommendations are related to applications of this approach. For the conclusions leading to these recommendations, see Chapter 9.

Recommendation 1

We recommend pursuing the goal of more stable growth in construction by increasing the stability of its main components around their prospective growth trends, taking full account of regional differences.

Recommendation 2

We recommend that simultaneous peaking of major construction projects be avoided as far as possible. The responsibility for preventing simultaneous peaking should lie mainly with the federal Cabinet, which should undertake a periodic review of the schedules, and the prospective impact on the economy, of all forthcoming major projects in order to decide whether some rescheduling would be both feasible and desirable. In all cases there should be advance discussion and periodic review with any provincial government concerned. An immediate review of prospective energy and pipeline developments and the James Bay project should be the first step in this ongoing process.

Recommendation 3

We recommend that the federal and provincial/municipal governments determine target rates of growth for their departmental spending on construction, including joint programs, and pursue these targets along paths as stable as possible.

Recommendation 4

We recommend that the heads of large Crown corporations and other government enterprises be convened periodically by the federal Minister of Finance, in consultation with the provincial governments, to discuss their respective construction investment plans and schedules, with the object of achieving a smoother investment path for each government enterprise.

Recommendation 5

We recommend that the federal government introduce an investment levy and incentive program for the purpose of achieving more stable growth in construction in the private sector of the economy, excluding housing. The investment levy would apply only in specified construction boom periods, and the incentive would apply only in specified construction slump periods. The levy and incentive would be paid by, and to, the customer or client of construction on new projects put in place during the specified boom and slump periods.

Recommendation 6

We recommend that the federal sales tax on building materials be abolished, and that this be done as soon as construction investment conditions

permit and having taken account of the levy and incentive stabilization proposal in Recommendation 5.

Recommendation 7

We are encouraged by recent initiatives and plans of the different levels of government to provide for an adequate supply of dwelling units for low-income people, and *we recommend that future low-income housing efforts be organized and funded so as to ensure a smooth growth path over a period of years, on a regional basis, independent of any swings in other residential or nonresidential construction.*

Recommendation 8

Recognizing that these matters go beyond reducing cyclical instability in construction, *we recommend the convening of federal and provincial Ministers of Labour and Manpower, along with other ministers and senior officials, as appropriate, to establish, and to study the findings of, task forces (including representatives of construction labour and management) to be concerned with:*

(a) *more effective communication among union locals, employers, and the Canada and Quebec Manpower Centres, with a view to widening the opportunities for unemployed construction workers and increasing the availability of qualified workers for employers;*

(b) *the incidence, coverage, benefit structure, funding policies, etc., of construction welfare and pension plans, with the general objective of achieving a system of pensions covering all employees and portable from trade to trade and from province to province;*

(c) *the content and relevance of apprenticeship and related trades training, and the sequence of training in relation to the construction cycle, immigration policy, and manpower projections;*

(d) *ways and means to facilitate more orderly, phased construction activity throughout the year and to reduce the costs of idleness and of unforeseeable skill shortages associated with seasonality; and*

(e) *the achievement of greater uniformity of laws and regulations to which the Canadian construction industry is subject, including enforcement in the areas of labour standards and safety.*

Recommendation 9

We recommend that construction firms devote more attention to identifying the numbers and qualifications of managers needed for several years ahead, and that governments, construction firms, and educational institutions collaborate to ensure that appropriate education and short-course training are provided to meet these needs.

Recommendation 10

We recommend that Statistics Canada undertake the gathering and publication of improved information on construction activity and prospective demand from all sectors of the economy, designed for the use of construction clients in the planning of their purchases, of the construction industry in the planning of its operations to meet the demand for construction, and of the federal government department or agency operating the proposed construction investment levy and incentive program aimed at achieving more stable growth in private nonresidential construction. This economic information must be kept current and made available on a regular basis to all such users.

Recommendation 11

We recommend that the federal government provide additional financial encouragement to the National Construction Industry Development Foundation to enable it to sponsor or conduct economic research on specific construction problems and needs.

PART 1

NATURE OF THE INDUSTRY

1

Description of the Industry

There are certain physical and economic characteristics of construction that are helpful background for reaching an understanding of its instability. The purpose of this chapter, therefore, is to describe several key features of construction activity. The facets dealt with are arranged under four categories: the role and place of construction in the Canadian economy; the structural organization of the industry; some business management aspects; and the financing of construction firms.

CONSTRUCTION IN THE ECONOMY

Nature, Role, and Place of Construction

The cardinal role of construction in the economy has been aptly stated by Howenstine:

> Construction provides the sinews that an economy requires to create new jobs for its growing labor force, to maintain and strengthen its position in the international market, and to meet the growing domestic demands for better living conditions.[1]

"Construction" has been defined by Statistics Canada as the creation, renovation, repair, and demolition of immobile structures and the alteration of the natural topography of the ground. Construction—both the

[1] E. Jay Howenstine, "Rising Construction Costs and Anti-Inflation Policies: A Report on Western Europe", U.S. Department of Labor, *Monthly Labor Review* (June 1969), p. 9.

activity and the resulting product—is notably visible and tangible. The product tends to be both durable and immobile. Its weight and bulk fasten it to the land that supports it and, in this sense, it is "land-locked". Because of the immobility of the product, stockpiling is difficult and expensive.

These physical characteristics account for the spatial pervasiveness of construction activity. Its place in the expanding Canadian economy is almost everywhere. The location of operations is continually shifting and is sometimes in isolated areas of the country. Variations across the country in terrain, climate, building materials, and regulations, and in the nature of customer wants, are virtually unlimited. The intensity of these local wants also varies from time to time in relation to economic conditions. The impact upon a local economy of a construction project starting and finishing may differ from place to place, from time to time, and from one type of project to another. Being tied to the land base, construction activity is domestically oriented, although the business of its customers may be sensitive to international trading conditions, and certain construction inputs, notably financing, enterprise, special skills, and some machinery and materials, may move internationally.

The product of construction is tangible enough, but the responsiveness of the industry to shifting customer needs, and the temporary affiliation of the various participants in the production process, lead some of them to regard their contribution as more of a service. Business relationships among various producer groups are formed for purposes of undertaking a specific project and usually are discontinued once the work is completed. The impermanence of these relationships tends to strengthen the bond among individuals within their trade or professional group. This is accentuated by the passive role in relation to market demand that is traditional and typical among the producing groups involved. On the other hand, construction resembles an assembly process that is unique to each construction site. Perhaps the best description of the construction process, then, is that it is a hybrid of both manufacturing and service functions.

The economic role of construction is twofold. It helps to provide new capacity needed to satisfy additional demand, and it maintains or improves existing capacity needed to satisfy continuing demand. The product constructed may be a producer good such as a factory, or a consumer good such as a house. The impact of construction, however, is not limited to the response to new or existing demands. In the process, construction activity incidentally adds to the total demand for labour and other productive resources.

The degree of mobility of construction inputs varies from highly immobile land, at one extreme, to somewhat mobile labour and still more mobile materials, to highly mobile financing, at the other extreme. Furthermore, unemployment rates tend to be high in construction and contribute substantially to overall unemployment in the economy. Mention should also be made of the turmoil that has been such a conspicuous feature of labour relations in this industry.

Construction's claim to uniqueness does not rest on any single characteristic but rather on the combined package of features mentioned above. It can be seen to be an integral part of the fabric of the economy. Being both physical and pervasive, it reflects the mosaic of economic development.

To consider construction exclusively in economic terms, however, would do less than justice to the subject, for it has strong social and cultural overtones as well. Jobs in construction are not entirely an economic concern. The increasing involvement of government in housing reflects, at least in part, growing public acceptance of housing as a social right. This would tend to tie residential construction more closely to population growth and shifts, and to household and family formation and other social needs, and less closely to employment, incomes, and general economic activity. Also, in recent years, the impact of construction upon the natural environment has been receiving increasing attention.

It has not idly been claimed that construction "mirrors" economic, social, and cultural activities and values. The buildings and engineering projects with which people come in daily contact affect, in some complex way, their moods and attitudes, their effectiveness, and the quality of their lives. Conversely, the traditions, aspirations, and vitality of people are reflected in their settlements, their constructed environments. Such considerations have a bearing on this study in the sense that they reveal the extended importance of construction, and of its cycle, beyond economic matters, which are the main concern of the study, into a broad spectrum of Canadian life.

Size, Shares, and Selected Trends

One does not have to be a construction industry fundamentalist to state that construction is a very large and important activity in Canada. In 1972, $17 billion were spent on construction of all kinds. Although this all-inclusive figure has validity from a sales or capital investment point of view, it would overstate the industry's importance to compare it directly with the 1972 Gross National Product of $103 billion, which is

an aggregate built up by a value-added procedure to avoid double-counting. On a value-added basis, the construction industry accounts for about 6 per cent of the Gross Domestic Product. This may be compared with about 4 per cent for mining, 3 per cent for agriculture, and 23 per cent for the manufacturing sector as a whole. Some recent OECD figures suggest that Canada's construction industry accounts for a smaller share of the output of the economy than that of most Western European countries, and for a larger share than that of the United States.

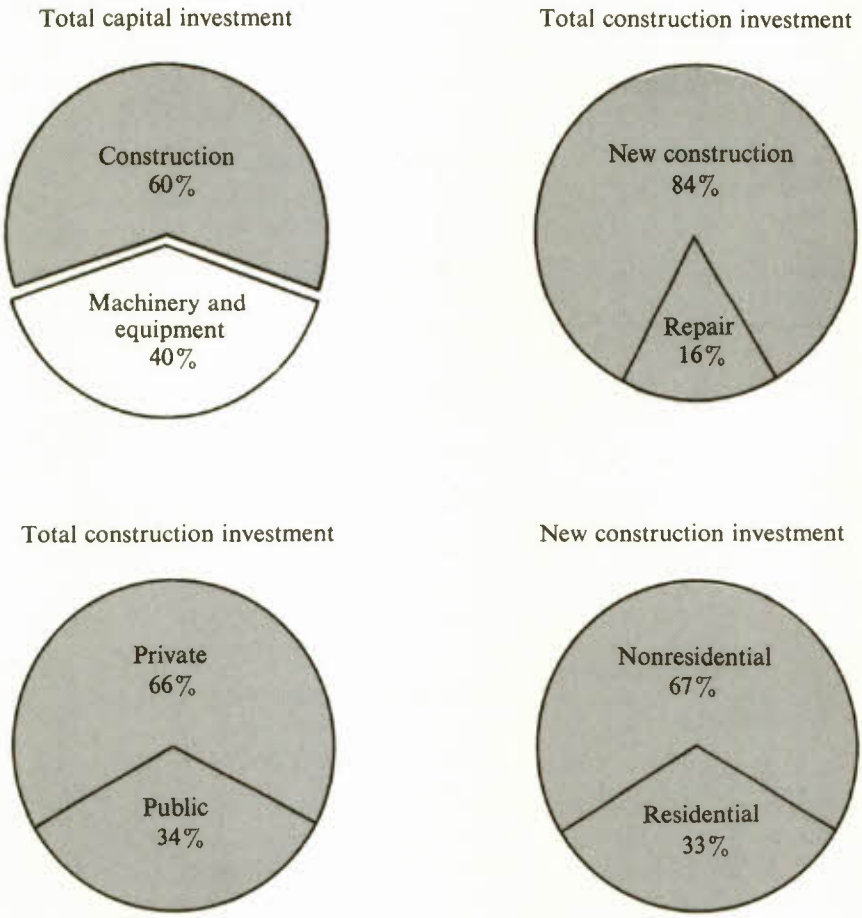
Employment figures give another indication of the importance of construction in the economy. Out of total employment in 1972 of 8.3 million, about 590,000 workers or 7 per cent were engaged in this activity.

Total investment and construction expenditures can be broken down in various ways, as shown in Chart 1-1. In 1972, total capital investment, including machinery and repair, was $28 billion, of which $17 billion or 60 per cent was construction. New construction accounts for a huge piece (84 per cent) of the total construction pie. The public sector accounts for one-third of total construction spending. "Public" here means federal, provincial, and municipal governments and includes both government departments and publicly owned business enterprises and institutions (Crown corporations, universities, and provincial and municipal hospitals and schools). Over three-quarters of construction work is done on contract by the "construction industry" itself, with the balance being performed by the labour forces of other industries and government departments. A higher proportion of new construction than of repair construction is performed by the "construction industry". Nonresidential construction accounts for two-thirds of new construction.

New construction can be divided into building and engineering, each of which can be further subdivided. Statistics Canada specifies 66 subtypes, plus four "other" categories. The important point for present purposes, however, is that some of the main construction sectors, such as residential, government, and private nonresidential, may have distinct characteristics, both on the demand and supply sides. These matters are examined in subsequent chapters.

Regional shares in total construction spending over the 1951-70 period were: Atlantic Region, 8 per cent; Quebec, 24 per cent; Ontario, 34 per cent; Prairie Region, 22 per cent; and British Columbia, 12 per cent. These shares reflect such things as the population of the region, its resource base, industrial mix, and rates and lines of economic development. Some shifting can take place from year to year in the size of these shares, depending on business conditions in particular industries and on government development programs. Certain metropolitan areas—

Chart 1-1
Selected Shares of Total Investment, Total Construction, and New Construction, 1972



SOURCE: Based on data from Statistics Canada and the Department of Industry, Trade and Commerce, and estimates by the Economic Council of Canada.

notably Montreal and Toronto, but also Hamilton, Vancouver, Edmonton, Saint John, and Winnipeg—have accounted for substantial portions of the expenditures on construction in their regions in recent years.

It should be noted that the statistical definition of construction excludes mobile homes, which have been growing in popularity, both in terms of numbers and as a proportion of residential construction. While the mobile home serves a number of purposes, it is increasingly regarded as low-cost permanent housing. In 1972, the number of mobile homes shipped accounted for 18 per cent of the total market for new single-detached dwellings (mobile homes plus conventional single-detached) compared with 4 per cent in 1963 and with 31 per cent in the United States in 1972.

Table 1-1

Output Shares of Major Input Categories in Construction, Selected Industries and the Total Economy, 1961

	Construction Industry	Transportation and Electrical Equipment	Paper Industry	Utilities	Total Economy[1]
			(Per cent)		
Materials	42	48	42	6	36
Labour	34	30	23	18	24
Purchased services	16	13	15	26	26
Government services	4	1	1	2	4
Capital	4	8	19	48	10
Total output	100	100	100	100	100

[1]Output of all industries, plus imports, less re-exports.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Some light is shed by Table 1-1 on the relative size of the linkages between the "construction industry" and other key categories of economic activity on the supply side. The table indicates the importance of materials and labour inputs in construction. Changes in demand for construction are transmitted mainly to the manufacturing sector through demand for construction materials and related services. Building construction, for example, has a major impact on the demand for lumber and wood products; iron, steel, and metal fabricated products; transportation; and wholesale services. Given these requirements, the impact of construction demand on other sectors of the economy can be traced, as in Chapter 5. In addition to this impact on the Canadian economy, a substantial proportion—about one-third—of the materials used in construction is imported. Table 1-1 also suggests that construction is a

labour-intensive industry, in the sense that its labour-capital ratio is high compared with the paper and utilities industries shown in the table and with the economy as a whole.

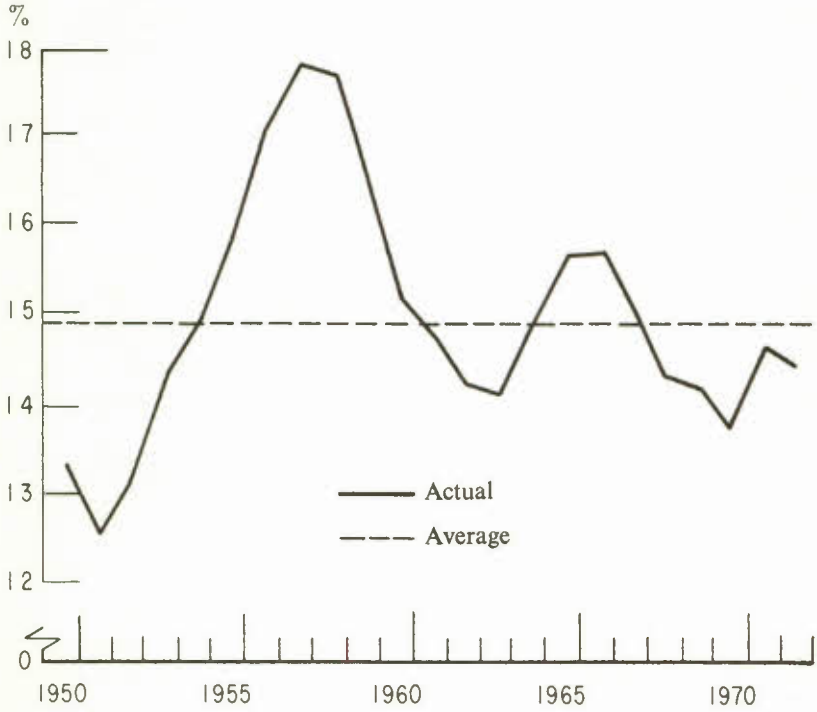
The construction industry is composed of a large number of small firms, a much smaller number of medium-sized firms, and a very few really large ones. The two main producer groups are general contractors and special-trade (or sub-) contractors, but there are many other associated or affiliated groups. Indeed, the industry is a rather loosely knit collection of various producer groupings, many of which are functionally interdependent in the production process. The OECD describes the industry as "fragmented" and "compartmented".

Various trends in construction will be considered wherever appropriate throughout the report. Only a few selected trends need to be mentioned at this time. Compared with pre–Second World War years (1926-39), capital investment of all kinds has been increasing, not only in absolute terms but as a share of GNP. In both pre- and postwar periods, investment in machinery and equipment accounted for about 40 per cent of total investment; and construction, for the remaining 60 per cent.

Over the period since 1951, investment in construction averaged an annual rate of increase of 4.7 per cent, with faster growth in the 1950s than in the 1960s. This rate of increase may be compared with a growth rate in GNP of 4.9 per cent over the 1951-70 period. Although construction grew at almost the same rate as GNP over the 1951-70 period as a whole, there were two main surges in construction, during 1952-57 and 1964-66. These surges exceeded the rate of growth of GNP in those years, as can be seen in Chart 1-2. The analysis of this instability is contained in Chapter 5, where it is also shown that the rate of increase in construction spending varied from province to province.

In spite of the long-run growth in construction output and employment in absolute terms, the latter declined relative to total employment in Canada—from about 9 per cent in 1950 to about 7 per cent in 1970. This was due partly to on-site developments in labour-saving technology and partly to a shifting of construction activity backwards to manufacturing-suppliers (i.e., prefabrication). Much of the labour content of prefabricated homes is added in the manufacturing plant rather than on the construction site. Unlike mobile homes, prefabricated houses are included in housing statistics. From 1968 to 1971, while total housing starts increased by about 12 per cent, the output of prefabricated houses doubled. The use of prefabricated components, such as exterior metal panels, wooden kitchen cabinets, and partitions, increased markedly as well.

Chart 1-2
Total Construction Expenditures, in Current Dollars, as a Percentage of GNP, 1950-72



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

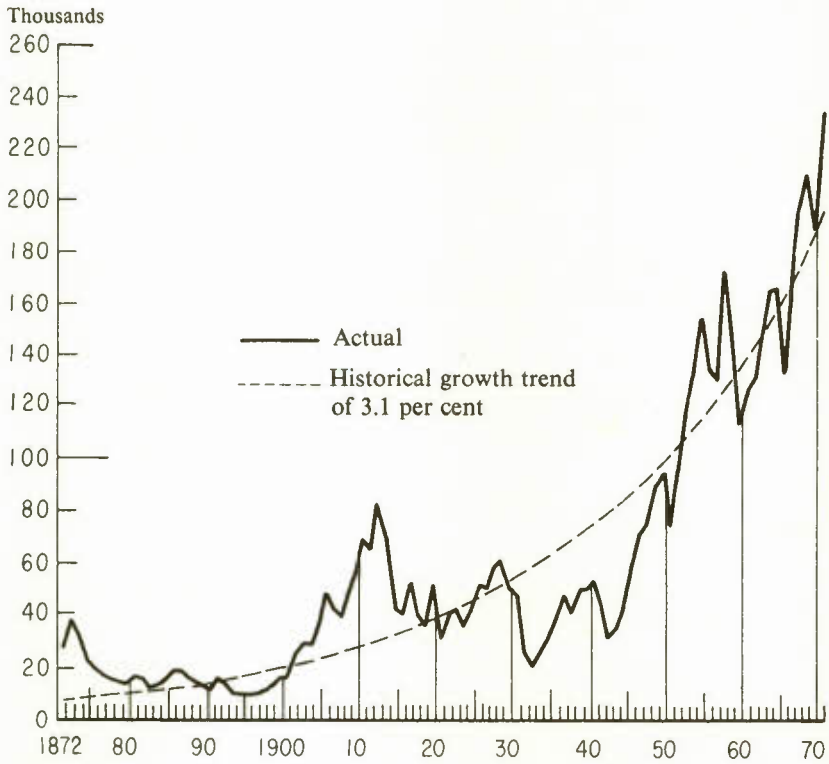
In sum, construction is a dispersed and compartmentalized, but expanding, industry. The expansion has been in absolute, rather than relative, terms during the last two decades. It has also been highly volatile, which is the focus of this study.

Historical Note

As mentioned, the history of the construction industry has reflected the growth and development of Canada. Over the past hundred years, there has been a shift from a rural, agrarian economy to an urbanized, "postindustrial" society. The path of economic development has been anything but smooth, however, and this has been reflected in the varying

tempo of construction activity. This is illustrated by the number of dwelling units completed each year over the 1872-1971 period, as shown in Chart 1-3. Surges and slumps in the industry have tended to coincide with economic prosperity and depression.

Chart 1-3
Number of Dwelling Units Completed, 1872-1971



SOURCE: Based on data from M. C. Urquhart and K. A. H. Buckley, eds., *Historical Statistics of Canada* (Toronto: Macmillan, 1965); CANDIDE project data; and estimates by the Economic Council of Canada.

There was a prolonged period of stagnation in housing, lasting from the mid-1870s to 1896, during which population emigration exceeded immigration. After 1900, there followed a strong surge of immigration, land settlement, and housing, lasting until the First World War. A slump in the early postwar years was succeeded by the boom of the latter part of the 1920s. Then came the Great Depression of the 1930s—a period during which housing construction plunged to its lowest

level in 30 years. The strong military-industrial effort of the Second World War encouraged the rapid expansion of the 1940s, which extended into the 1950s. The period since 1950 is covered by more detailed study throughout our report.

Although peaks and valleys in construction activity have been a notable feature of Canada's historical landscape, seldom has the policy issue been so clearly stated as in a submission in 1933 to the Royal Commission on Banking and Currency by the National Construction Council:

> If some means could be obtained of curtailing the almost avaricious demands by the public on the resources of the Construction industry during business peak periods, and at the other end of the cycle if some means could be provided for stimulating the industry—artificially if necessary—it would go a long way towards providing the stability which this industry so lacks.[2]

INDUSTRY ORGANIZATION

In this section we examine the way in which construction firms relate to each other and to their customers and suppliers.

Nature of Operations

As noted earlier, the demand for construction is derived from the demand for the output of the finished structure, whether that output be in the form of *producer* or *consumer* goods and services. Customers in all sectors of the economy from coast to coast purchase a wide range of construction products, such as houses, roads, and dams. Most customers are only intermittent purchasers of construction products. Typically (77 per cent of all construction in 1972), the arrangement between the customer and the builder is contractual.

Most construction projects are complex, both technically and commercially. There is considerable specialization, both among types of construction and among on-site operations of a particular project. Each operation or sequence of activities in this custom-type process uses special labour skills and capital equipment, and intergroup mobility is limited.

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[2] Royal Commission on Banking and Currency, *Hearings*, 8 Sept. 1933 (Ottawa: King's Printer, 1934), pp. 2728-9.

The larger projects require careful supervision to ensure that the many activities proceed efficiently. The traditional "specialists" in this supervisory activity are the general contractors, although, as described below, alternative approaches are in use. The trades specialists usually act as subcontractors. The general-contractor/trade-contractor relationship is a form of division of responsibility and specialization of skills. It is also a device for reducing financial vulnerability and spreading risks, in an industry subject to seasonal and cyclical swings and to locational shifts from project to project.

Typically, when a customer has decided to build, he calls for offers from the appropriate sector of the construction industry. Then, whether by a bidding process or by negotiation, a construction team is organized to undertake the specific project. Subtrades join the team as, and when, needed and then depart to join teams on other projects.

These teams are continually being reorganized from one project to the next, in patterns appropriate to the technical and commercial requirements of each project. This feature of temporary arrangements among, and within, construction firms is striking and perhaps unique. It is a major source of insecurity for participants, but it is a process that enables the industry to adjust quickly to shifts in market demand.

Although data are not available, there appears to be increasing use of "project managers" in place of general contractors. The project manager is engaged directly by the owner, usually on a fee basis, and is responsible for the entire project, including design as well as actual construction. Accordingly, he engages the architectural and engineering consultants and supervises the letting of contracts for the various construction phases to specialty contractors. On very large projects, a construction manager may also be engaged to organize and supervise the on-site functions.

In contrast to the traditional approach, wherein the design and specifications must be completed in detail before a general contractor can tender, be selected, and begin actual work, project management permits initial work to commence as soon as the first design phases have been completed. The potential reduction in the lag between the time a decision is taken and the actual construction is commenced permits less provision in the bidding for inflation and has important implications for the effective timing of major projects at different stages of the construction cycle.[3]

[3] The General Services Administration of the United States, which constructs and operates most federal buildings, indicated that the use of project management tends to compensate for insufficient management that can result from the process of competitive bidding by the subtrades.

A further option open to a buyer of construction is the "design-build" or turnkey approach, in which he outlines his needs in general to a contractor or to a number of contractors, who then submit their various proposals, and corresponding prices, for meeting the buyer's needs. The contractor is the only contact with the buyer, and the usual roles of the architect and contractor are reversed in that the latter supervises the work of the architect in designing a facility to meet the owner's needs.

Still another approach is "build-develop" in which a developer owns or acquires land and designs and constructs buildings that he may retain for income or sell after completion. Whereas all other methods take their timing from the owner, build-develop has the unique and significant feature of permitting the builder-developer to take some initiative in deciding when the actual construction phase best suits his own operation and the conditions in the market.

Structure of the Industry

The construction industry currently consists of approximately 80,000 firms, 25 per cent or 20,000 of which are corporate legal entities, with the remainder being partnerships and individual proprietorships. In 1956, there were 48,500 firms, of which only 14 per cent were corporations. Currently, the incorporated firms do two-thirds of the total construction business.

As shown in Table 1-2, 80 per cent of the 20,000 incorporated firms are in the smallest size group (net assets under $\$\frac{1}{4}$ million), but they do only a quarter of the total business of incorporated firms. In contrast, the number of construction corporations with net assets in excess of $5 million represented less than 1 per cent of the total in 1970, but they did a quarter of the business.

Within this broad structural pattern, there are, of course, considerable variations. A higher-than-average proportion of both numbers and sales of special-trade contractors (e.g., mechanical and electrical) are in the smallest size group, while relatively more of the highway, bridge, and street contractors and those engaged in "other" construction such as pipelines, transmission lines, and marine installations are found in the larger size groups.

In recent years, Statistics Canada has been building an annual census of the industry, and it is possible to report in more detail for 1970 on three subgroups having some similar characteristics, even though available

Table 1-2

Distribution of Incorporated Construction Firms, by Size and Type, 1970

	Number of Firms	Size in Million Dollars of Net Assets					
		Under ¼	¼–1	1–5	5–10	Over 10	Total
		(Number of firms in percentages)					
Building construction	7,518	74.6	19.3	4.9	0.6	0.6	100.0
Highway, bridge, and street	1,035	55.8	30.7	11.3	1.3	0.9	100.0
Other construction	719	55.9	30.0	10.6	0.7	2.8	100.0
Special trade	10,648	88.2	10.0	1.6	0.1	0.1	100.0
All corporations	19,920	80.1	15.3	3.7	0.4	0.5	100.0
		(Sales volume in percentages)					
Building construction	7,518	24.0	27.4	22.8	6.3	19.5	100.0
Highway, bridge, and street	1,035	9.3	22.8	37.1	13.0	17.8	100.0
Other construction	719	5.1	14.1	20.4	5.0	55.4	100.0
Special trade	10,648	42.8	29.5	18.1	2.9	6.7	100.0
All corporations	19,920	26.4	25.6	22.3	5.6	20.1	100.0

SOURCE: Based on data from Statistics Canada.

information covers only reporting firms. Some comments are also in order on the numerous, small, unincorporated businesses.

Highway Contractors

The value of sales of highway, road, street, and bridge contractors in 1970 was over $1 billion, representing about 7 per cent of total construction. As noted in Table 1-2, there were 1,035 incorporated firms in this group, accounting for just over 5 per cent of all construction corporations. The 101 largest firms reporting, each with sales over $2 million, shared 65 per cent of the total business. The 112 smallest firms, with sales less than $100,000, shared less than 1 per cent of the total business. Regional breakdowns in most cases show basically similar distribution patterns. The entire group showed a before-tax profit of 3.7 per cent of sales.

Data on the average age of these firms, by size group, show that almost all of the largest firms have been in road construction for over 25 years, while more than half of the smallest firms have been in this business for less than 15 years. This part of the industry appears to be one where firms grow gradually.

There are other differences among the road contractors that are connected with size. Larger firms, not unexpectedly, have much larger salaried staffs (engineers, cost accountants, etc.) and resort more to letting of subcontracts than the smaller firms. Except for the very smallest firms, all sizes tend to specialize.

Mechanical Contractors

Mechanical contractors are the installers of plumbing, heating, air conditioning, and other related work. In 1970, their sales were reported at $1.4 billion, or about 10 per cent of total construction. Membership in this group was about 4,250 firms. The top 223 firms—5 per cent of the total—accounted for about 55 per cent of the sales, while the smallest 1,643 firms shared only 3 per cent of the sales.

Electrical Contractors

In 1970, the sales of the 2,930 firms reporting as specializing in electrical contracting were valued at about $640 million, or 5 per cent of total construction. The top 97 firms shared 44 per cent of the business.

Small Unincorporated Businesses

Three-quarters (60,000) of the firms in the construction industry are unincorporated businesses, most of which are small, with gross sales averaging less than $100,000. These 60,000 firms account for only a third of total construction business. They tend to concentrate on repair, renovation, and maintenance. At times, they exhibit higher-than-average profits in relation to sales but, in terms of total profit as reported to the tax office, the typical small proprietor does not have a high annual income. Figures for this group for 1968 indicate that the average net income attributable to construction is about 20 per cent lower than that of an average construction employee. Some small proprietors do quite well, of course, but about two-thirds earned less than $7,000 in 1968. Growth of this group's membership over the years indicates that many people seek this opportunity to grow in a free-enterprise setting, but the income data show that few make their fortunes by this route.

Structure and Instability

How does the structure of the construction industry affect the construction cycle, and how is the structure affected by the cycle? The basic answer seems to be that the industry has adapted itself to the instability prevalent in construction investment. However, inherent in this adaptation is an absence of built-in mechanisms to dampen the impact of changes and shifts in demand. There is little capacity to induce sales of new projects to hesitant buyers or to build stocks of inventory. The firms are many and small, most having skills in construction operations rather than in financing complete projects. In short, the industry is structured for reacting quickly to a dynamic economy but, with the possible exception of the builder-developer, does not have any significant capacity for moderating the construction cycle.

Entry and Exit

Entry to an industry may be inhibited by several factors, the most important being the high costs of acquiring skills and capital, economies of mass production, which give established producers distinct cost advantages, and producer differentiation, which contributes to buyer preferences. Producer differentiation (here meaning the skill and qualification of the builders) can be a barrier to entry because customers may choose

contractors from lists of prequalified firms. Because construction exhibits such a broad spectrum of project types and sizes, these entry barriers operate with varying degrees of effectiveness.

As might be expected, ease of entry into the construction business is greater where firms are smaller. Entry into small-scale repair and renovation activities is not difficult. Tradesmen can become proprietors of their own businesses easily, and they do, although the skill barrier is important. Economies of mass production probably do not apply to most types of construction because of the custom nature of the demand. Larger projects require greater ranges of skills, however, and large amounts of capital. Often, customers of such projects choose contractors from carefully screened or prequalified lists.

If entry is easy, so is exit. Bankruptcy is one way out. Profits in the construction business are volatile. In the late 1950s, for example, when demand for construction declined, profits declined sharply and the rate of bankruptcies increased accordingly (Chart 1-4).

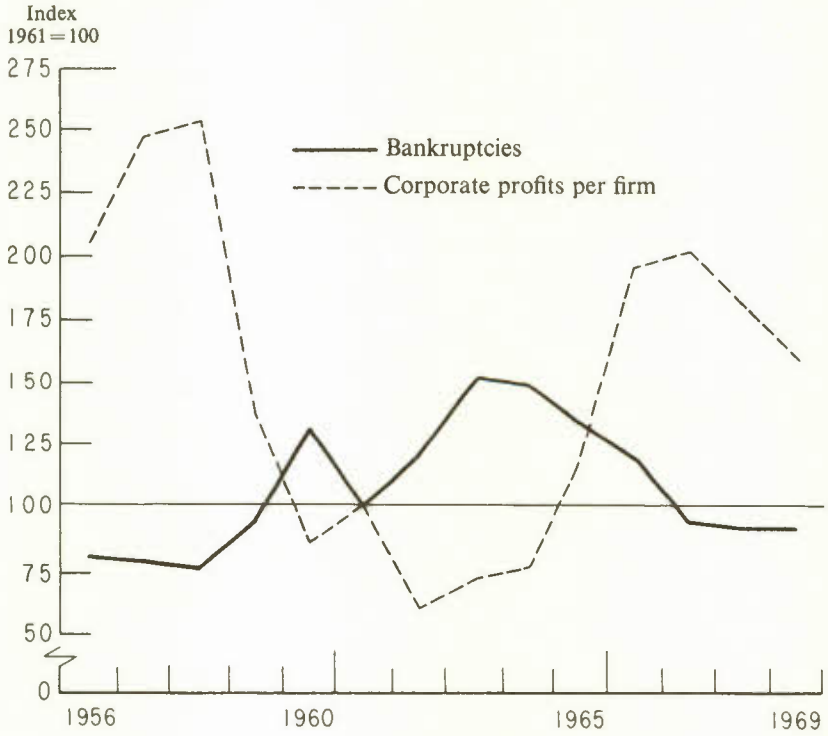
Over the period 1956-69, the average construction bankruptcy rate was 86.5 per 10,000 firms, including proprietorships and partnerships as well as corporations. However, this rate is not as high as might be expected. In fact, it has been just below that of manufacturing. The value of estimated liabilities has been a little above average for all business bankruptcies. An average construction bankruptcy in 1972 involved $111,370 in unpaid liabilities, some of which were eventually paid. The liabilities of bankruptcies of special-trade contractors tend to be smaller than for general contractors—which is not surprising, considering that a general contractor may owe money to several trade contractors.

Bankruptcy data tell only a small part of the exit story, however. Firms may also leave upon the owner's death or retirement, upon merger or voluntary winding-up of the business, upon financial failure other than formal bankruptcy, or simply by departure of "fly-by-night" operators.

Unfortunately, data are not available on these various nonbankruptcy departures from the construction industry. That the total number involved is large is indicated by some Quebec data. At the beginning of 1972, there were 14,453 employers registered with the Quebec Construction Industry Commission. During the year, 7,000 new employers were added and 5,000 withdrew. On the other hand, according to Dun and Bradstreet, only 114 construction firms went bankrupt in Quebec in 1972.[4] Even after making necessary allowances (e.g., for numerous inactive Construction Industry Commission registrants and a possibly unusual provincial situation or abnormal year), there remains a striking contrast

[4] Dun and Bradstreet, *The Failure Record through 1972* (Toronto, 1973).

Chart 1-4
Bankruptcies and Corporate Profits of Construction Firms, 1956-69



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

between figures on withdrawals and bankruptcies, which suggests that bankruptcy data far from convey the total outflow of firms from the construction industry or probably even the full incidence of financial failures.

In the spectrum of industry structures that ranges from monopoly at one extreme to perfect competition at the other, the construction industry tends toward the competitive form, except for some highly specialized firms operating in localized markets. The industry is a collection of interrelated subgroups that tend to specialize in technologically distinct activities. The business connections between the subgroups are only temporary, being limited to the technical and contracting arrangements of each project.

BUSINESS ASPECTS

In this section, we look primarily at the business climate and the internal management and planning of construction firms, especially corporations. Certain business aspects of both incorporated and unincorporated firms were covered earlier in the chapter, and the subject of financing is taken up in the next section. Much of the information was obtained by a coast-to-coast interview survey of firms in various sectors of the industry and from individuals familiar with the construction business.

Business Procedures and Climate

Although there are a number of variations, as already noted, the traditional sequence by which construction takes place flows from customer initiative to architect and engineer, to general contractor, and to trade contractors. Inherent in this traditional approach is the competitively bid, fixed-price contract. The critical areas of operation of construction firms were reported to be the selection of on-site personnel and the supervision of construction jobs, financial management, and bidding for new jobs.

As a typical first step, the architect translates the customer's requirements into a set of detailed plans and, with the help of an engineer, into detailed specifications. On the basis of these plans and specifications, general contractors are invited to submit bids for the actual construction. They, in turn, invite trade contractors to submit bids for specialized work such as plumbing, heating, air conditioning, and electrical facilities. The general contractor supervises, and assumes responsibility for, the work of the trade contractors. In these circumstances, the interests of trade contractors and those of the tradesmen themselves are often alike.

To provide some flavour of the business climate in which construction firms operate, one has to rely heavily on corporation statistics. The number of construction corporations and their sales and profits are shown in Table 1-3, for the period 1953 to 1970—the years for which data are available on a comparable basis. The number of corporations increased from 3,459 in 1953 to 19,920 in 1970, and the value of their sales increased from $1.7 billion to $9.1 billion. Net profits before taxes, in relation to sales, varied from a high of 5.4 per cent in 1953 to a low of 1.3 per cent in 1963. For comparison, in manufacturing, net profits

before taxes, in relation to sales, varied in the 1953-70 period from a high of 9.0 per cent in 1965 to a low of 5.4 per cent in 1970. The profit-to-sales data in Table 1-3 do not, however, reflect adequately the deterioration of business conditions in the late 1960s. It was under the unfavourable conditions toward the end of the 1960s, and within the perspective of chronic instability, that pressure began building up, from both management and labour, for an in-depth study of the construction cycle.

Table 1-3

Construction Corporations, Sales and Profits, 1953-70

	Number of Corporations	Total Sales	Net Profits[1]	Percentage of Total Sales
		($ Million)	($ Million)	
1953	3,459	1,743	94	5.4
1954	4,263	2,053	84	4.1
1955	5,307	2,321	72	3.1
1956	6,502	3,065	97	3.2
1957	7,521	3,609	124	3.4
1958	8,703	3,831	160	4.2
1959	10,197	4,044	134	3.3
1960	11,171	4,221	78	1.8
1961	11,811	4,288	91	2.1
1962	12,716	4,443	71	1.6
1963	12,710	4,667	62	1.3
1964	13,844	5,216	81	1.6
1965	15,315	5,531	190	3.4
1966	14,846	7,034	269	3.8
1967	16,183	7,615	302	4.0
1968	17,694	7,691	277	3.6
1969	19,203	7,906	274	3.5
1970	19,920	9,056	218	2.4

[1]Before taxes.

SOURCE: Based on data from Department of National Revenue and from Statistics Canada.

The year-to-year swings in the data of Table 1-3 are erratic and sometimes extreme. Comparing 1960 with 1959, for example, while the number of corporations increased by 9 per cent and sales by 5 per cent, net profit before taxes decreased by 42 per cent and, as a percentage of sales, by 45 per cent. In contrast, comparing 1965 with 1964, the number of corporations increased by 11 per cent; sales, by 6 per cent; profits, by 135 per cent; and profits-to-sales, by 112 per cent.

Profit variability is a major indicator of business risk. Compared with eight other industry groups, profits in construction have been highly variable, exceeded only by the agriculture, forestry, and fishing group (Table 1-4).

Table 1-4

Growth and Instability of Corporate Profits, Selected Industries, 1953-70

	Average Annual Net Profit[1] per Corporation	Average Annual Growth Rate	Instability[2]
	($ Thousand)	(Per cent)	
Agriculture, forestry, and fishing	5.8	2.1	38
Construction	13.6	−3.5	35
Mining	142.1	12.4	33
Services	9.5	1.3	19
Wholesale trade	22.1	1.8	18
Manufacturing	113.8	3.8	17
Utilities	75.6	0.7	16
Retail trade	15.3	0.5	13

[1]Before taxes.

[2]Instability here measures the average of absolute annual percentage variations around the 1953-70 growth trend.

SOURCE: Based on data from Department of National Revenue and from Statistics Canada, and estimates by the Economic Council of Canada.

If the liability-to-equity ratio is taken as another indicator of business risk, construction is very risky. In 1970, the liability-to-equity ratio in other nonfinancial industries ranged from a low of 0.6 in mining to a high of 2.0 in the service industries, compared with construction at 3.1 (Table 1-5). On the basis of working capital, however, risk in construction was just about average for nonfinancial industries.

Table 1-5

Leverage and Working Capital Ratios of Construction and Selected Other Industries, 1970

	Leverage[1]	Working Capital[2]
Agriculture, forestry, and fishing	1.8	1.0
Construction	3.1	1.3
Mining	0.6	1.7
Services	2.0	1.0
Wholesale trade	1.9	1.5
Manufacturing	1.0	1.7
Utilities	1.5	1.0
Retail trade	1.3	1.7

[1]Leverage $= \frac{\text{total debt}}{\text{total equity}}$.

[2]Working capital $= \frac{\text{total current assets}}{\text{total current liabilities}}$.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Risk and uncertainty are very real to construction firms. Workers, and suppliers of material to firms, have been accorded considerable protection by the Mechanics' Lien Acts of all provinces (and a Quebec equivalent). Customer risks can be reduced by the use of surety bonds, which is now done for at least 30 per cent of construction value. The risks that apply to the contractor stem mainly from unforeseen difficulties that increase his costs beyond what was estimated. His prospective receipts are usually fixed by his bid contract, at a stage when his costs can only be "guesstimated". Combined with demand instability, the results are volatile profits.

Table 1-6 indicates that the operating results of the approximately 20,000 incorporated construction companies, in terms of return on investment, declined sharply from 1968 to 1970, and the liability-to-equity ratio increased. The before-tax return on investment (net-profit-to-equity) declined from 22 per cent to 14 per cent. On an after-tax basis, the rate of profit to equity in 1970 was about 8½ per cent, which would be low for a business as risky as construction.

Table 1-6

Selected Performance Ratios of Incorporated Construction Firms, 1968-70

	1968	1969	1970
Net-profit-before-taxes/equity	0.22	0.19	0.14
Liabilities/equity	2.8	3.0	3.1

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Surprisingly, perhaps, the larger construction corporations appear to have experienced more financial instability during the late 1960s than the small ones. The size of operations often changes from year to year, sometimes dramatically. These changes go in both directions and probably reflect each firm's success at obtaining contracts, as well as aggregate cyclical swings.

The data from which the industry figures in Table 1-6 were compiled reveal wide differences in performance between types of construction and regions. Firms in engineering construction (other than roads and highways) and firms in Quebec exhibited considerably poorer performance than the averages shown in the table. Firms in building construction and firms in Ontario and the Prairie Provinces revealed better-than-average performance in the 1968-70 period.

Business Goals and Objectives

In general, the construction firms surveyed do not devote much attention to the setting of goals and objectives. "Goals and objectives" in this context refer to the type or segment of business a firm wants to be in, where it wants to operate, what it wants to accomplish, and how it plans to proceed. Only a few firms, or roughly 10 per cent of those interviewed, had such targets rather clearly identified, and over half of the respondents reported that they did not set explicit goals and objectives. In the Council's 1971 study on management, 20 per cent of a varied group of manufacturing, service, and utility firms had well-identified goals and objectives for at least five years forward, while approximately 30 per cent did not.[5] Even the construction companies that set goals and objectives usually regard them as short-term operating targets rather than longer-term guidelines or plans. No important differences were noted in the setting of goals and objectives among the different regions in Canada. These results are similar to the findings of a survey by the New Brunswick Department of Economic Growth in 1972 of 66 construction firms in that province. Approximately 14 per cent of the respondents reported they had detailed "long-range" plans but, in a number of the cases, the period involved was one year only.

Several of the contractors in our survey regarded cyclical instability as an obstacle to planning in general, particularly to their setting of goals and objectives. Another reason for this relative lack of planning may lie in the fact that, in many cases, decisions of customers determine the type of construction and the timing and location of projects, with construction firms simply responding to the demand.

Managerial Planning

Most of the firms surveyed reported that major decisions are usually made by senior management as a group, or by the chief executive after consultation with senior staff members. This team approach to decision-making seems to be associated with a trend to the use of more professional managers in construction.

Since relatively little emphasis was placed by the survey firms on the identification of goals and objectives, limited attention could be devoted by them to systematic determination of the numbers and qualifications of personnel needed. Some attention was given to the specifications of current jobs and the staff occupying them, but neither recruiting nor

[5] B. A. Keys, F. G. Thompson, and M. Heath, *Meeting Managerial Manpower Needs*, Economic Council of Canada (Ottawa: Information Canada, 1971).

training and development were based, to any wide extent, on a regular comparison of job requirements with the numbers and qualifications of present staff. Only 40 per cent of the firms surveyed reported that they maintained an up-to-date inventory of their personnel whereas, in the earlier Economic Council study of managerial needs, some 60 per cent of the group of general business firms had such an inventory.

A moderate amount of training was reported to be carried out on the job, but relatively little off the job, partly at least because of a scarcity of courses that are considered suitable. Training courses and programs are likely to prove of limited value unless the type and amount of training needed by the personnel are carefully identified and matched with appropriate programs. In a recent study by the Construction Industry Development Council (CIDC), construction executives expressed the desire for a considerable increase in off-the-job training courses appropriate to managerial and supervisory personnel. To stimulate this and other aspects of better managerial training, a construction industry educational institute is being considered by the CIDC.

Personal contacts are the main source of outside recruits to the management and professional ranks. General contractors supplement this source with recruits directly from university, while trade contractors and builder/developers tend to employ somewhat fewer graduates from universities in favour of those from community colleges. Many of the firms interviewed expressed a preference for obtaining as many as possible of their management recruits from their own operating ranks. They also reported a shortage of qualified management recruits. Although insecure employment prospects can be expected to accompany the construction cycle, thereby discouraging the recruitment of the best college graduates, the turnover of qualified management personnel was reported by the survey firms to be low and not to vary much from peaks to troughs of the construction cycle.

Decision-Making in an Unstable Business

One of the important decision-making areas examined dealt with measures taken by the management of construction firms to cope with swings in demand. One measure used frequently is the diversification of the operation to other localities, to other types of construction, or to other functions. (An example of the last would be that of a general contractor becoming a project manager or builder/developer.)

Another result occurs in the bidding process. In downturns, when competition is keener for the volume of work available, bids are typically

based on lower-than-normal, or desired, profit margins. Bidding on a less-than-full-cost basis was recognized in the industry as an unhealthy practice, but several firms indicated that it was done on occasion, especially on short-duration jobs when equipment was otherwise idle.

A third approach employed to cope with downturns is to lower overhead costs during slack periods. This is usually accomplished by reducing the scale of operation of the firm and/or reducing to a minimum the hiring of permanent staff. Leasing rather than buying equipment also reduces financial vulnerability. Although the incentive to cut costs by labour-saving investments increases during the downturns, the financial capacity for doing so decreases. Considerable emphasis was placed by most of the firms interviewed on their desire to keep their regular staff intact. Some of these personnel would, however, be released if the firms were in serious financial jeopardy during periods of severe slackness.

Business measures such as these, taken to help cope with the construction cycle, pose a challenge to managerial capacities. While the survey results indicate room for improvement in management training and practices in the construction industry, most of the solution to the specific problem of cyclical instability was felt to lie in providing the industry with better information on new contract awards and future demand for construction, in better planning and scheduling of construction buying, and in a more even supply and cost of funds.

FINANCING OF CONSTRUCTION FIRMS

In this section on how construction firms are financed, two kinds of financing are considered: operating credit and equipment financing. The financial structure of certain kinds and sizes of firms is shown, and construction is compared with some other industries. Mortgage (long-term) financing of structures is discussed in Chapter 6.

Our comments on financing are related mainly to operating capital, much of which is credit. Credit funds, which are very important in the business of construction, are mainly short-term in nature, but some are medium-term loans for such purposes as equipment financing, and some even derive from long-term mortgages.

Contractors are usually paid every 30 days by the buyer but, because of the procedure of holdbacks ranging from 10 to 20 per cent, working capital requirements become substantial when projects are large or extend over a lengthy period, or when several contracts are under way at the same time.

A large amount of credit, much of it short-term, is advanced by the suppliers of construction materials and equipment. Equipment-purchase loans, which can be considered short-term to medium-term, are discussed later. "Draw-downs" on mortgages as construction progresses can also be considered as an important source of operating capital. The most important source of formal short-term loans, however, is the chartered banks.

Over one-half of general bank loans are for business purposes, and about 6 to 7 per cent of the business loans are made to construction contractors. This proportion is in line with the importance of the industry in GNP and employment. Bank loans of various kinds to construction contractors at the end of 1972 totalled $843 million.

Table 1-7

Financial Structure of Selected Types and Sizes of Construction Corporations, 1970

	Type of Contractor and Size Group[1]		
	Special Trade	Highway, Bridge, & Street	Building
	Less than $¼ million	$1–5 million	Less than $¼ million
		(Per cent)	
Proportion of firms	88	11	75
Share of sales volume	43	37	24
Assets			
Current	66	54	72
Net fixed	22	35	16
Other	12	11	12
Total	100	100	100
Liabilities and Equity			
Current debt			
Short-term borrowing	12	11	12
Accounts payable	25	17	23
Other	10	15	14
Long-term debt	18	19	24
Equity			
Shares	9	5	6
Retained earnings	26	33	21
Total	100	100	100

[1]Size groups correspond to those of Table 1-2.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

To illustrate the financial structure of construction corporations, the profile of assets and liabilities of three types and sizes of contractor is shown in Table 1-7. The prime importance of short-term debt is indicated mainly by the borrowings and accounts-payable items of current liabilities. The long-term debt, although considerably smaller than current debt and smaller than equity, is by no means insignificant.

In order to place this characteristic financial structure of construction firms in perspective, comparison is made in Table 1-8 between construction as a whole and two other industries. Current liabilities are much more prominent in construction than in manufacturing. Short-term debt, especially borrowing, accounts for a larger share of current liabilities than in manufacturing and in wholesale trade. Equity financing, in general, and "shares", in particular, are much lower proportionately in construction than in manufacturing and wholesale trade.

Table 1-8

Financial Structure of Corporations in Construction and Selected Other Industries, 1970

	Industry		
	Construction	Wholesale Trade	Manufacturing
Number of corporations	19,920	24,493	21,811
		(Per cent)	
Assets			
Current	66	71	44
Net fixed	23	15	40
Other	11	14	17
Total	100	100	100
Liabilities and Equity			
Current debt			
Short-term borrowing	24	16	8
Accounts payable	21	18	9
Other	8	14	9
Long-term debt	23	16	25
Equity			
Shares	5	10	17
Retained earnings	19	26	32
Total	100	100	100

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

As an industry, construction is characterized by a very high degree of leverage and a somewhat lower-than-average working capital ratio. Abnormally high leverage (the ratio of debt to equity) of a firm usually means that the equity is low in relation to the size of its operations and, under these circumstances, losses on contracts could wipe out the firm's equity quite quickly. A low working capital ratio (current assets to current liabilities) indicates that a firm could encounter difficulty in meeting current debts as they fall due, because of the narrow cushion between debts and the assets available to discharge them.

Due to the low working capital and high leverage in construction (Table 1-5), the margin for error is relatively thin, especially during the downswing of the cycle when firms are competing aggressively for the declining volume of business. The existence of a small margin for error in an industry that is also characterized by large variations in the revenues of firms over time, and by unexpected variations in costs on its projects, causes investors to be very careful in lending funds to construction firms. Not all construction firms have found this to be a serious problem, however. Most of the firms surveyed reported that it was feasible for them to meet most of their working capital requirements either internally or by regular bank borrowing, and this situation prevailed regardless of the stage of the construction cycle. Nevertheless, it can safely be said that, to the extent that greater stability in construction reduces uncertainty of revenues and costs to the firm, such stability would serve to reduce the risks of investing in, and lending to, the industry.

As with operating capital, finances required for the purchase of new equipment tend to be derived from a construction firm's own funds or from bank borrowing, with a lesser amount from finance companies. Equipment loans are usually made for three years or less. Given the risk involved in even short-term construction loans, it is not surprising that bankers tend to make these equipment loans only to the more established firms. One danger is that the firm will tie up too much of its financial resources in fixed capital, which may lead to considerable difficulty in its working-capital position should there be a sharp downturn in its business. It should also be noted that loans for construction equipment seem to be one of the areas in which lending is curtailed in tight money periods, although this does not seem to apply as much to the better-established construction firms.

A marked increase was reported by the firms interviewed in leasing rather than purchasing equipment. This is confirmed by rental revenues to manufacturers and distributors of construction equipment in Canada, which increased by over 35 per cent from 1970 to 1972.

2

Elements of Change

While our previous chapter was mainly descriptive of various features of the construction industry, this chapter considers certain external and internal influences for change—technology; and prices, productivity, and costs.

TECHNOLOGICAL CHANGE

In this section, we indicate how technological change takes place in construction, and try to assess the rate of adoption of new technology by comparing investment in construction with some other industries in Canada and with construction in a few other countries. Consideration is given to some economic effects of the adoption of new technology, and to expenditures on construction research and development. An interview survey of the industry was included in our study of technological change, and, as mentioned in the Preface, the Science Council of Canada conducted a study for us on technology transfer and innovation in construction.

Technology Sources and Adoption Process

Rather than consisting of dramatic breakthroughs, technological change in construction tends to be gradual and includes a wide variety of individual developments in materials, equipment, and methods. Much of the new technology, especially that related to materials and equipment, has originated outside Canada and outside the construction industry narrowly defined. A major portion of this new technology was developed

in the United States and Europe, with modifications being made to suit Canadian conditions.

Those construction firms interviewed regarded manufacturer-suppliers as their most important immediate source of new technology. The Division of Building Research of the National Research Council was also considered a valuable source. Trade publications, travel, and the industry "grapevine" were regarded as important sources of information on construction technology.

A number of impediments exist to the introduction and use of new technology in construction. Inadequate communication, however, may be one of the main obstacles. In its study, the Science Council states that "there is a widely shared view among those associated with the construction industry that one of the major impediments to technology transfer and innovation in the industry lies in the lack of communication between the various functional parts of it".

The ingenuity and progressiveness of construction industry personnel are key ingredients in the adoption of new technology. The buyers of construction are usually not disposed to much experimentation on structures intended to last many years, leaving little incentive to the architects and engineers to innovate with design and materials. Other factors influencing the rate of diffusion of new technology include codes and standards, inspection and testing, information regarding specifications, evidence concerning costs and benefits, and the marketing strategies of manufacturers.

The risky nature of the construction business is an impediment. Contractors appear ready to adopt new materials and methods offering clear-cut advantages, but a number of them pointed out that construction is already sufficiently risky without getting involved with new, untried technology.

Buyers of construction, developers, architects, engineers, manufacturer-suppliers, and contractors must concern themselves about numerous laws, by-laws, and regulations. Without the approval of the agencies that write codes and standards, for example, it is almost impossible for new materials to become widely used.[1] Unless such approval is granted with

[1] The Science Council has stated that: "Although no one would deny the necessity for codes and by-laws, in many ways the local specification codes protect a fragmented traditional industry and hurt alternative efforts and innovations.... Better production techniques and the availability of better houses require uniform performance-based codes.... Provincial adoption of the National Building Code is essential in this respect." Science Council of Canada, *Cities for Tomorrow: Some Applications of Science and Technology to Urban Development*, Report No. 14 (Ottawa: Information Canada, 1971), p. 43.

some dispatch, it may be too costly to supply limited markets, causing the new products to be withdrawn.

The whole area of codes and standards seems to require continuing intensive study. In the interviews conducted for both this study and the one by the Science Council, on technology transfer and innovation, general support was voiced for the concept of the National Building Code and the progress that has been made towards its development. There was a strong consensus, too, that the Code should be applied much more uniformly across each province to eliminate unnecessary inconsistencies that are seen to exist frequently from municipality to municipality and that are bothersome for the construction industry. Support of the National Building Code was not universally enthusiastic, however, suggesting that continuing attention may be needed to the Code itself, as well as to its implementation. Recognition of matters of this type appears to have been reflected in the establishment of the Standards Council of Canada in 1970. In the Science Council report on technology transfer, the view is expressed that additional financial and staff resources should be provided to the Standards Council to enable it to "assume greater leadership responsibilities in matters associated with construction Codes and Standards".

According to the industry interviews, the highest rates of diffusion of construction technology take place in the field of equipment, then materials, and then methods. Equipment technology is diffused quickly because of the similarity of regional needs, the well-developed distribution system, the mobility of the equipment itself, and the improvements in the methods of acquiring equipment by renting and leasing, as well as purchasing. Materials move relatively quickly across Canada but are subject to many more institutional and geographic constraints (e.g., codes, and moisture and temperature variations) than is equipment. Changes in methods take place quite quickly on a local basis, but it takes time for the information to travel beyond the region. Construction is a local activity and one in which it is almost impossible to monopolize a method, as there are no patents, no effective way to keep onlookers from personally seeing construction methods on site, and no way to prevent construction workers from passing the information on when they move from project to project and from employer to employer.

By increasing the cost of construction equipment, the 12 per cent federal sales tax tends to discourage investment in new machinery and equipment. With the tax being applied at the level of the manufacturer, combining it with subsequent markups and provincial sales taxes results in significantly higher prices to the construction firm.

Economic Effects—Three Case Studies

Virtually no studies of the effects of technological change in construction could be found. Accordingly, three cases were considered—the tower crane as representative of equipment, plastic pipe as an example of innovation in construction materials, and prefabrication as a change in construction methods.

On the basis of the three case studies and in the opinion of most of those interviewed, technological change has little effect on cyclical instability in construction. It is evident, however, that when a change in technology results in reduced labour requirements, if the change is introduced during a downturn, the effect of cyclical instability on labour would be increased; if during an upturn, the effect would be the opposite.

The three cases of technological change cited also suggest that the pattern of adoption of these particular technologies has not been affected significantly by the construction cycle. Some of the industry people interviewed felt, however, that cyclical instability in construction tends to impede the development and use of new technology more generally. Unfortunately, there is no means of isolating the extent of this impediment.

The Tower Crane

The tower crane, which is used mainly in the construction of high-rise structures using poured concrete, was introduced into Canada in the late 1950s from Europe, where it had been in use for many years. The main economic advantages of the tower crane are said to be substantial reductions in on-site labour costs and in the time required to erect such structures. In the only cost comparison that was obtainable, that of a semi-actual, semi-hypothetical building project in England, using the tower crane in one instance and earlier-model hoisting equipment in the other, labour savings of around 20 per cent and a time saving of 25 to 30 per cent were indicated. Against these savings, the capital or rental costs of the tower crane must be taken into account.

No comparable data could be found specifically for Canadian conditions, but industry representatives indicated that savings of similar magnitudes would be reasonable here. Notwithstanding this lack of data, the tower crane has come into common use in Canada, suggesting that its advantages were sufficiently apparent that builders were prepared to introduce it without having access to specific savings figures. The lack of data seems to reflect, as well, some shortage of research and development work in Canada, especially in the construction equipment field.

Since the full advantages of the tower crane are obtained only if the equipment is in continuous use, builders might be expected to acquire such equipment only when stable or expanding conditions are foreseen. In practice, however, builders are reported to simply rent rather than purchase their crane requirements when prospects are uncertain. In general, it would appear that where the flexibility of leasing rather than purchasing equipment is available, cyclical swings do not present an obstacle to the use of such equipment.

Plastic Pipe

The use of plastics in construction, represented by plastic pipe as a specific example, has grown significantly in recent years. Canadian production of plastic pipe increased from 11.2 million pounds in 1962 to over 75 million in 1970. During the same period, the use of plastic pipe in Canada, as a proportion of total pipe consumption, increased from around 5 per cent to over 20 per cent.

The main advantages of plastic pipe have been its lower material cost and its greater ease of handling, which results in lower installation costs. In the spring of 1973, the price of one typical grade of plastic pipe was quoted in Ontario markets at around $63 per 100 feet, compared with $190 for comparable copper pipe and $1,066 for stainless steel. (The price of plastic pipe increased sharply during 1973, narrowing the margin between it and copper but, in the autumn of 1973, copper pipe was still quoted at 2.7 times the price of plastic pipe for comparable use.)[2] For a sample installation, the saving in labour cost for plastic over copper was estimated at around $25 and for stainless steel at several hundreds of dollars.

The data on both total consumption of plastic pipe and its proportion of all pipe used from 1962 to 1970 show steady growth, with no evidence of a cyclical pattern and no indication that the use of this material is related closely, if at all, to construction cycles.

Prefabrication

Prefabrication has become an important factor in construction and, in the opinion of most of those surveyed on the subject of technology,

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[2] Because of the rising price of petroleum, which is the basic raw material in plastic pipe, this price relationship may shift substantially. Also the price of stainless steel piping is reported to fluctuate widely.

is likely to increase in significance in the future. It ranges from the factory construction of complete buildings, such as mobile homes or major sections of buildings, to items such as room units, roof trusses, precast exterior panels, window and door units, kitchen and bathroom cupboards, plumbing components, and electrical circuitry. Some forms of prefabrication are referred to as "systems building" and "industrialized building".

Common to almost all prefabrication are the cost-saving advantages of standardization, mechanization, and better-organized production in a factory than on a construction site; better working conditions free of weather; and simplification of assembly, which reduces the need for skilled labour. A major factor offsetting these advantages is, of course, the capital cost of the factory and, in some instances, transportation.

An attempt was made to compare the cost of factory-produced window units, as a specific example of prefabrication, with those fabricated on site. No satisfactory data were obtainable for on-site costs, but the fact that virtually all window units are now factory-built indicates that the advantages of the prefabricated model have been clear-cut to the builder. Thus prefabricated window units appear to be a further example of technological change, which, like plastic pipe and the tower crane, have sufficiently clear cost advantages to warrant their use regardless of the construction cycle. In the case of items, such as windows, that can be standardized and stockpiled, with the production evened out, it can be expected that this type of change in technology would tend to modify some of the effects of cyclical instability in construction.

Other Indicators

An attempt was made to compare the rate of technological change in construction with other industries, to determine whether it is an advanced or a backward industry. Unfortunately, no direct evidence is available to answer this question, so we have had to settle for indirect or circumstantial evidence and tentative conclusions.

Investment in the construction industry in Canada during the 1960s performed favourably, compared with the United States, the Soviet Union, Finland, and Sweden. Compared with selected industries within Canada the annual rates of investment varied widely. Generally speaking, the rate of acquisition of machinery and equipment in construction was faster than in manufacturing and mining from 1951 to 1961, but slower from 1961 to 1971 (Table 2-1).

Table 2-1

Indexes of Investment in Machinery and Equipment by Construction, Manufacturing, and Mining, 1951-71
(1961 = 100)

	Construction	Manufacturing	Mining
1951	66	88	92
1952	79	103	111
1953	92	103	137
1954	99	84	146
1955	171	92	124
1956	186	131	217
1957	138	133	246
1958	130	93	118
1959	115	101	108
1960	100	108	108
1961	100	100	100
1962	74	110	147
1963	94	115	149
1964	137	150	166
1965	180	176	122
1966	170	210	217
1967	162	189	245
1968	163	158	250
1969	163	181	240
1970	167	213	287
1971	174	192	339

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

Other indirect indicators of mechanization are output per man-hour and total factor productivity. Interindustry comparisons of these measures are discussed in Chapter 5. It is shown there that, over the period since 1948, productivity in construction has increased at a slower rate than in most goods-producing industries, but at a faster rate than service-producing industries. This is not an unfavourable comparison, considering that construction is a hybrid activity, having both goods-producing and service-producing characteristics.

Productivity improvements did not advance at a steady rate. Output per man-hour in construction, for example, advanced rapidly from the early to the late 1950s, remained nearly constant during the early 1960s, and sharply accelerated again during the late 1960s. Some of the reasons for these changes are described in Chapter 3.

The leasing of machinery and equipment is not included in the foregoing comparisons. As indicated in Chapter 1, equipment-leasing has been increasing markedly, but data were not available to compare its prevalence in construction with that of other industries.

Expenditures on Research and Development

In terms of expenditures on research and development (R&D), construction is less impressive. The term R&D here refers to total scientific activity of a technological nature, including both "pure" and "applied" research, information gathering, testing, and feasibility studies.

Expenditures on construction R&D in 1971 totalled about $17 million. This total comprises $6.3 million spent by all industries; $5.9 million, by the federal government; $3.0 million by universities through federal grants; and $1.5 million by provincial governments.

The $6.3 million spent on construction R&D by all industries in 1971 represents only 1.7 per cent of total R&D expenditures by those industries and about 0.1 per cent of the value added by the construction industry. Data are not available on the construction industry itself but, of the companies surveyed by Statistics Canada for their R&D on construction, only a very small number of construction firms reported any R&D activities, and their outlays are understood to have been quite modest. This is not very surprising, however, for a fragmented industry composed of about 80,000 firms, most of which are small, many of which are very small, and almost all of which have little or no research capability. Moreover, since research on materials and equipment tends to be the responsibility of the manufacturer rather than the construction firm, and since new methods are usually available to all users, the prime concern of construction companies is likely to be limited to keeping abreast of innovations developed by others.

Federal government expenditures on construction R&D—$5.9 million for 1971 and estimated at $5.8 million for 1973—represent 0.9 per cent of total federal government outlays on R&D and related scientific activities. By comparison, federal government spending in agriculture in 1971 represented 8.1 per cent of total federal R&D; and in manufacturing, 16.4 per cent.

As indicated above, the university sector carries out some construction-related R&D financed by federal grants. In addition, some universities do construction-related R&D that is sponsored by other levels of government, by industry, or by industry associations such as the Canadian Institute of Steel Construction.

Some construction-related R&D is performed by provincial government departments and by provincial research councils. Precise figures are not available, but it was estimated that around $1.5 million of annual provincial R&D outlays would be applicable to construction. A new Directory of Federally Supported Research in Universities should, in

future, provide more accurate information, not only on university research activities but also on research being carried out at all levels of government and in industry.

The $17 million estimated for construction R&D in 1971 amounts to about 0.3 per cent of the value added in construction that year compared with overall R&D expenditures amounting to 1.2 per cent of Canada's Gross National Product. Because of difficulties such as defining, identifying, and collecting construction-related R&D data, the foregoing may not represent total R&D activity on construction in Canada. In 1973, the Director of the Division of Building Research of the National Research Council estimated such expenditures at not less than $20 million per year and possibly $30 million.[3] Even if these figures are accepted, to allow for unidentified R&D, total expenditures would amount to less than 0.6 per cent of construction value added. While no optimum amount of R&D has been established for construction, this level seems low—particularly on the part of the federal government, comparing its research activities on behalf of construction with those of agriculture and manufacturing. We would emphasize, however, that when research activities are being considered, rather than concentrating on expenditures, attention should be focused on work that appears to be needed, its estimated cost, and the benefits that might reasonably be expected to result.

The Director of the Division of Building Research recently outlined a range of areas where R&D is considered to be needed. Some of the areas that have come to our attention include the effects of technological change, in particular the impact of new technology on construction costs; the most appropriate types of contractual approach under different circumstances; and new construction methods and concepts generally. It would be appropriate for some national body, such as the National Construction Industry Development Foundation, to assess overall R&D priorities and recommend or initiate suitable action.

PRICES, PRODUCTIVITY, AND COSTS

In this section, the major price, productivity, and cost developments of construction are described, with emphasis on trends and changes in various labour, capital, and land inputs over the past two decades. In a primarily market-based economy, prices of the construction industry are

[3] N. B. Hutcheon, "Research for Construction", Report to the President of the National Research Council, Ottawa, 1973.

largely determined by forces of supply and demand. Prices for structures depend on what buyers are willing to pay and on what suppliers are willing to sell for. General economic conditions, financial institutions, and land development policies not only provide the general setting for these demand and supply forces but, at times, stabilize or destabilize them. Some of these aspects are examined further in subsequent chapters.

Prices

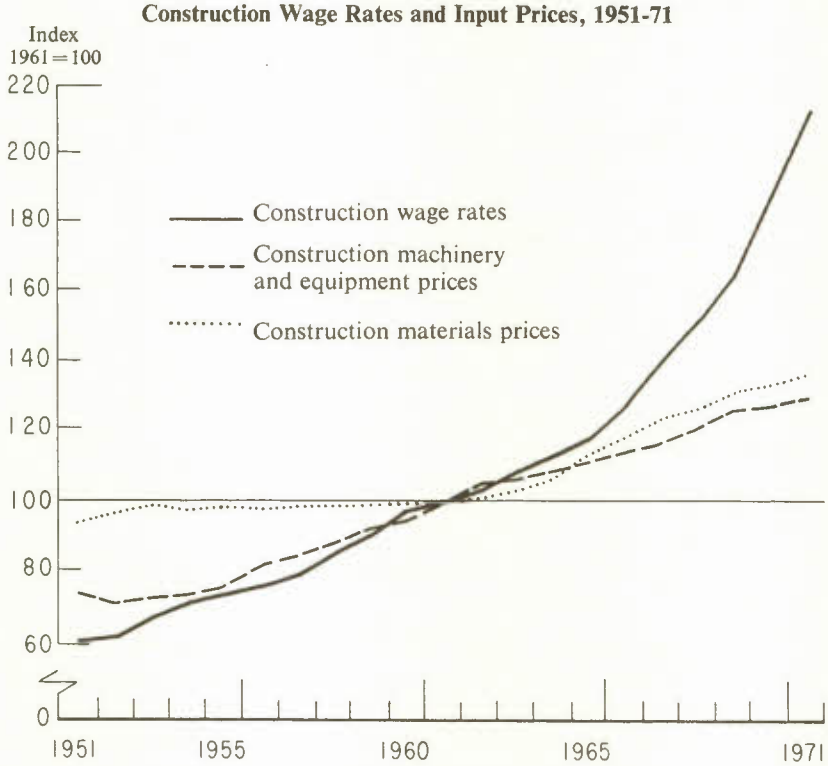
As with other prices, rates for construction labour, capital, and building materials are determined in a market. In the labour market, construction firms, contractors, and subcontractors indicate their labour requirements or labour demand, and workers represent the labour supply. On the demand side, the trend of construction wages is influenced by productivity improvements from the use of new materials, investments in new machinery and equipment, and more highly skilled labour. Short-run variations around this trend are dependent on the buoyancy of the economy; the level of residential, governmental, and industrial construction; and the regional distribution of construction activities. On the supply side, the wage trend is affected by demographic developments and the wage and income trends in other industries, with variations arising from short-term labour scarcities, union demands, and temporary shifts in wage-rate differences among construction trades. The price established in this labour market is the construction wage rate—the price per hour of construction labour.

Construction firms are also in the market for capital. They require working capital and capital for investment in machinery and equipment, and buildings. These aspects of financing were described in Chapter 1. A distinction is made between the financial needs of construction firms and developers. In a strict industrial classification, the construction industry is not involved in financial arrangements for land accumulation, land development, or real estate mortgages. These are matters of concern to developers or purchasers of the final product. At times, of course, construction firms perform the functions of both builder and developer.

In the market for materials, the builder, in the short run, has little choice but to buy at prevailing market prices. In the longer run, he can moderate the impact of price increases by taking advantage of the continuous flow of new, and in some ways cheaper, construction materials supplied by the manufacturing industries. This not only leads to a substitution of one building material for another but often helps to reduce the labour requirements on the building site.

Although the prices of construction labour, capital, and materials advanced concurrently during the past two decades, they did not all increase at the same rate. Wages rose more rapidly than prices of other inputs. As indicated by the index of construction wage rates, there was some variation around the long-run trend; a fairly steady advance of wage rates during the 1950s; a slowdown during the early 1960s; and a marked acceleration during the late 1960s that carried over into the beginning of the 1970s. The slower rate of advance in machinery and equipment prices may have been due, in part, to a very competitive supply situation, with new equipment coming from both domestic and foreign producers; a good supply of used equipment, often in excellent condition; and an increasing acceptance of equipment-leasing. The rise in prices of construction materials from 1951 to 1971 was much less than the rate of wage increase. Throughout the period of the 1950s, material prices remained practically unchanged, but they increased during the 1960s at about the same rate as machinery and equipment prices (Chart 2-1).

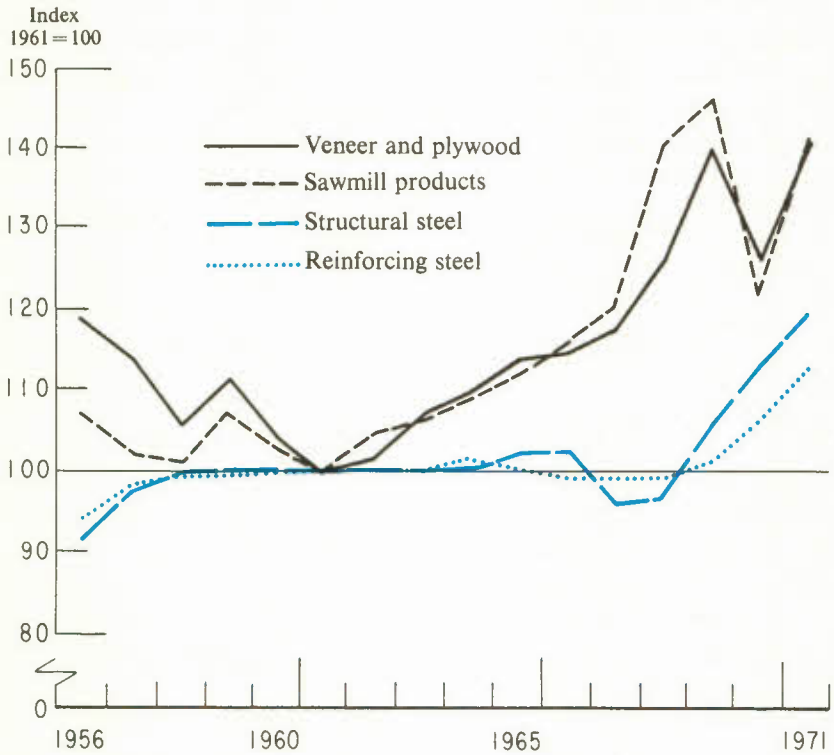
Chart 2-1
Construction Wage Rates and Input Prices, 1951-71



SOURCE: Based on data from Statistics Canada.

There were some notable differences in price developments of construction materials, depending on export or import content. For example, some of the manufactured wood products with a high export content were affected by changes in U.S. market demand. During the late 1960s when U.S. demand for residential construction was strong, the prices for Canadian veneer, plywood, and sawmill products rose above the long-run trend (Chart 2-2).

Chart 2-2
Price Developments of Selected Construction Materials, 1956-71



SOURCE: Based on data from Statistics Canada.

Construction materials with a high import content showed a different pattern. For both structural and reinforcing steel, prices during the period 1957-64 were relatively stable, despite substantial changes in domestic construction demand, probably because of adjustments in imports. Later, from 1966 to 1968, weak construction demand and strong competition

from Japan depressed the price of structural steel in particular. Then renewed domestic demand and a reduction in offshore supplies accentuated the price rise.

It appears that over the period 1957-64 exports or imports of construction materials, the latter accounting for about one-third of Canada's use, did not intensify the degree of price instability. This has not been so since 1968, however, when inflationary price pressures raised material prices domestically and internationally. And there is no assurance that Canadian imports of construction materials will ensure greater price stability in future.

So far, we have looked at price developments of labour, material, and capital inputs of the construction industry. We have also noted that, in the strict sense of the word, the industry is not involved in land development. In reality, however, construction firms sometimes function as both builders and developers. As developers, they purchase, assemble, hold, and develop land, and arrange for related financing. These service functions are provided at a cost and, even when construction firms are not engaged in land development, the development costs are always a component of the final price of the structure.

As with other prices of construction inputs, the price of land is determined by forces of demand and supply. With continuous population growth, rising per capita incomes, and greater production requirements, the demand for commercial, industrial, and residential land expands. Because, by nature, any land area is limited, its supply is said to be "inelastic". For example, the supply of land in a metropolitan centre is very limited, and land along the city fringe is not a ready substitute for commercial land downtown. With rising demand for its use, land prices go up and returns to land ownership increase.

Through development, however, the supply of *usable* land can be increased. Newly serviced areas at the city fringe increase the supply of land for residential construction and can make it more of a substitute for land in the city core. New rapid-transit systems increase the supply of land for commercial uses, and new zoning by-laws and changes in tax structure may increase (or decrease) the supply of land for commercial, industrial, or residential uses. Although land development of this sort increases the supply of usable land, it also raises the value of the land. As it can be put to better use, land commands a higher price. Thus rising land prices reflect both returns to land ownership and costs of development.

According to sample surveys conducted in the downtown areas of Montreal and Toronto, commercial property prices increased from 1953 to 1972 at average annual rates of 6 and 8 per cent respectively. Year-to-

year variations around the long-run trends were more closely related to developments within the city than to the ups and downs of the national economy. In both cities, construction of subway transit systems gave rise, at times, to sharply higher prices of commercial properties in the city centre. In Montreal, construction of Place Ville Marie created an additional redevelopment boom, which had a strong but only temporary effect on commercial property prices.

Within the metropolitan regions, prices of industrial land varied greatly. In both Montreal and Toronto, as expected, prices of industrial land were highest near the city centre and lowest along the city fringe. Aside from this general effect of location, however, there was evidence that industrial land with better access to transportation facilities, yet as distant from city centre as other land, was higher-priced.There was also evidence that, in certain areas of Toronto, industrial land that was comparable in other respects was lower-priced because of insufficient disposal facilities for industrial waste.

Prices for residential housing have increased across Canada. In most major cities, prices of existing residential properties, as reflected in price quotes of the Multiple Listing Service, increased over the past decade at rates of 4 to 8 per cent per year. The price increases varied among cities, being exceptionally low in Montreal and very high in Victoria (Table 2-2).

Table 2-2

Price Increases in Residential Property, Construction, and Land, Selected Cities, 1961-71

	Residential Property Prices			
	Multiple Listings of Existing Housing	Prices of New NHA Houses[1]	Construction Costs per Square Foot[1]	Land[2]
	(Average annual percentage increase)			
Calgary	6.3	5.7	4.2	7.9
Edmonton	7.4	6.2	4.1	8.0
Moncton	7.0	4.6	4.1	8.7
Montreal	0.0	2.5	3.8	0.7
Ottawa	5.6	5.9	3.4	6.9
Quebec	4.5	3.3	3.9	4.3
Regina	4.1	3.2	3.3	6.2
Toronto	7.9	7.5	5.3	9.4
Vancouver	8.6	5.6	5.0	8.9
Victoria	9.7	6.5	5.2	15.0
Winnipeg	3.6	4.4	4.1	5.7

[1]Estimated costs of new bungalows financed under the National Housing Act.

[2]Land data refer to prices paid for lots for new bungalows regardless of the extent of servicing or the method of financing.

SOURCE: Based on data from Canadian Real Estate Association, Central Mortgage and Housing Corporation, and estimates by the Economic Council of Canada.

Similarly, the prices of new homes increased all across Canada, but the regional differences, as reflected in prices of homes built with NHA financing, did not range quite as widely.

As shown in Table 2-2, construction costs per square foot advanced less rapidly and more uniformly across Canada than prices for existing or new houses. By contrast, prices of land for new residential construction increased faster than prices of either existing residential properties or of new houses. Also, the regional variations in price increases in residential land were far greater. Over the past decade, the price for residential land in Montreal, for example, remained almost unchanged, whereas in Victoria it increased very rapidly. To some extent these diverging regional trends were associated with different rates of population growth, but regional differences in rates of economic growth and growth of per capita incomes, and differences in availability and accessibility of land for residential construction, also contributed.

Productivity and Costs

Over the past two decades, new technology in the construction industry contributed much to greater efficiency. As in other industries, a good part of this gain came from investment in new machinery and equipment. In this process the cost of machinery and equipment invested per unit of construction output increased about 20 per cent faster than did machinery and equipment prices. By contrast, labour costs increased at only half the rate of labour wage rates. This gives an indication of the pace of substitution of capital investment for higher-priced labour. But it was not the only way in which the industry managed to hold down

Table 2-3
Comparison of Cost and Price Trends in the Construction Industry, 1951-71

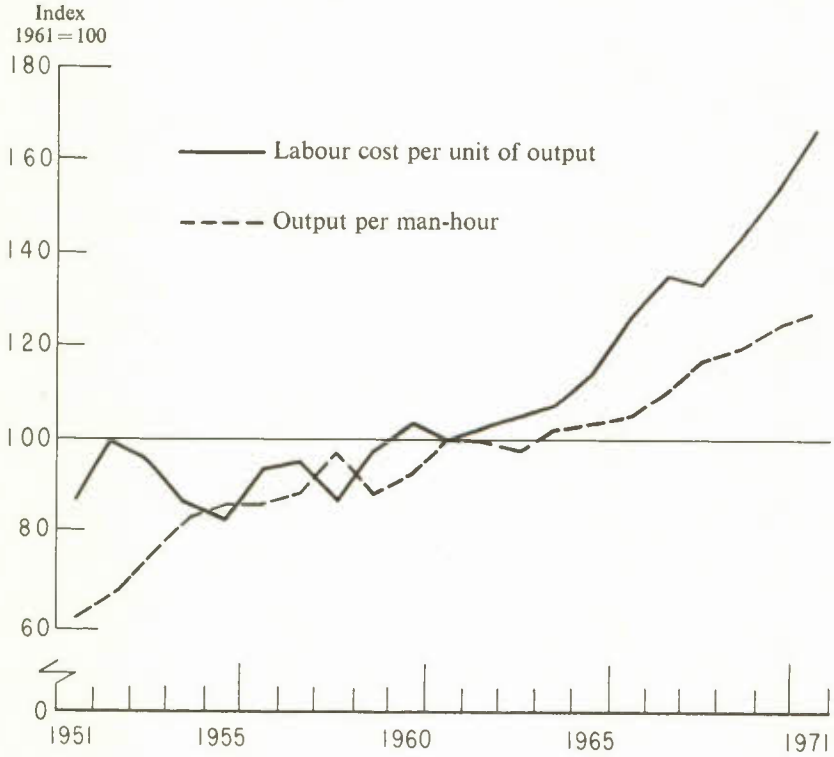
	Average Annual Growth Rate		Cost/Price Ratio[1]
	Unit Costs	Prices	
	(Per cent)		
Labour	3.0	5.8	0.52
Machinery and equipment investment	4.0	3.4	1.18
Construction materials	1.0	1.7	0.59

[1]The cost/price ratio is the growth rate of unit costs divided by the growth rate of prices. A ratio smaller than 1.0 indicates a downward adjustment in the use of a particular input; and a ratio greater than 1.0, an upward adjustment.
SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

costs. Although prices of construction materials did not rise as fast as wage rates or machinery and equipment prices, the industry achieved some further savings in material costs. Whereas material prices increased at an annual rate of 1.7 per cent, material costs per unit of output rose by only 1.0 per cent per year (Table 2-3).

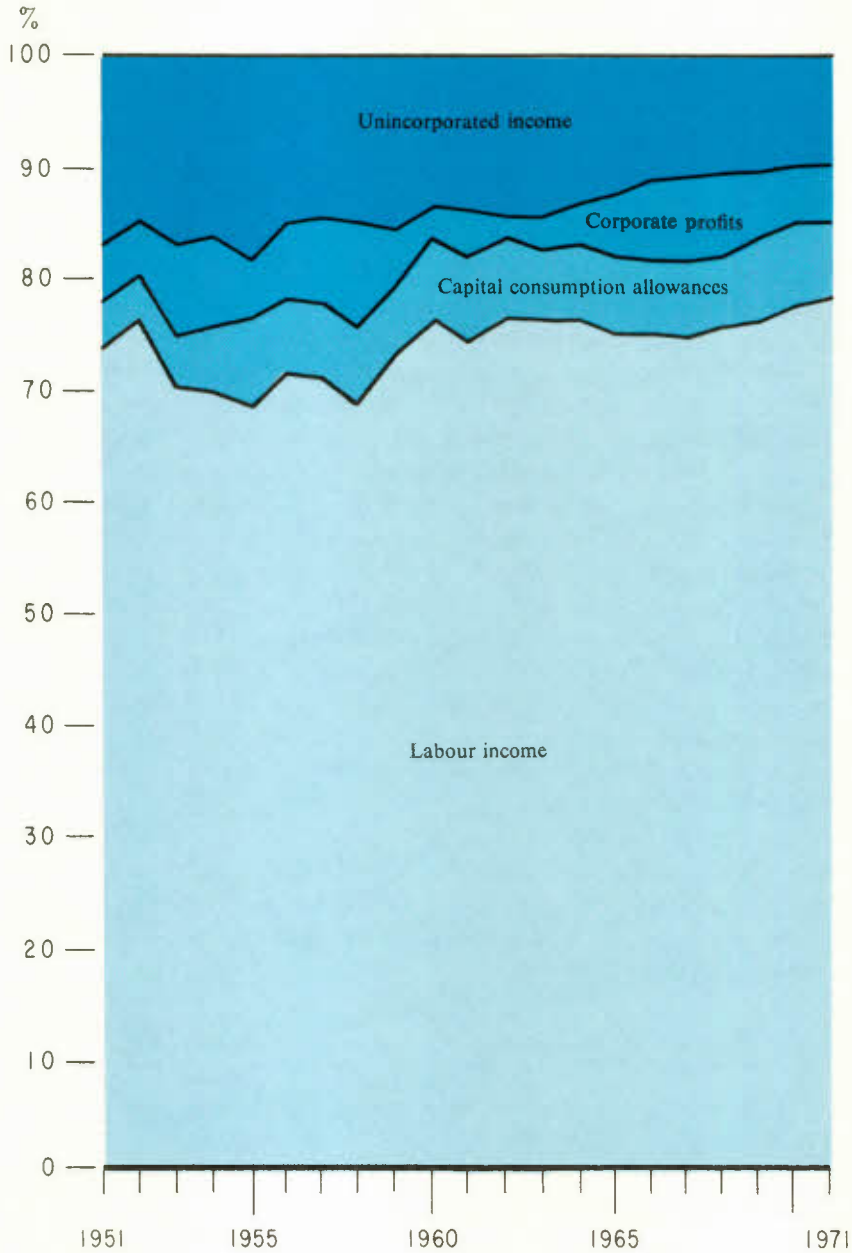
Capital investment in new construction machinery and equipment, as well as some of the improvements in new materials, contributed to greater labour productivity. Measured in terms of output per worker, labour productivity in the construction industry increased from 1951 to 1971 at a rate of 2.5 per cent per year. Measured in terms of output per man-hour, it increased at 2.9 per cent per year. This rate of 2.9 per cent per year can be compared to an economywide gain in labour productivity of 3.2 per cent and a gain in manufacturing of 4.0 per cent. Thus the gains in labour productivity in construction were near the average.

Chart 2-3
Construction Labour Costs and Productivity, 1951-71



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Chart 2-4
Factor Shares as a Percentage of Gross Domestic Product of the Construction Industry, 1951-71



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

The 2.9 per cent gain in construction output per man-hour was only half as much as the 5.8 per cent gain in construction wages, and it nearly matched the 3.0 per cent increase in labour costs per unit of output (Chart 2-3). This implies that all the productivity gains in output per man-hour (and a little more) were absorbed by greater unit labour costs. If construction labour received the full return for gains in labour productivity derived from improved material inputs and better machinery and equipment, it is of interest to determine how the other factors of production fared.

To provide some indication of how the gains of greater productivity were distributed among labour, capital, and entrepreneurship, one can look at long-run trends in factor shares (Chart 2-4). Over the past 20 years, the share of labour income in construction output was greater during the 1960s than the 1950s; capital consumption allowances for new investment in machinery, equipment, and structures remained fairly constant after 1955; corporate profits varied considerably around the same level; and the share of unincorporated incomes declined significantly. With the gains in output per man-hour having gone to labour and the share of corporate profits having remained relatively constant, it was unincorporated business that bore the brunt of the adjustment by way of a loss of part of its income share. This probably reflected the inability of smaller firms to keep up with productivity improvements, which often require heavy investments in machinery and equipment. It is likely that a shift from self-employment to employment in larger construction firms resulted and that this added to the income share of labour. Also, the rise in the income share of labour involved a "catching-up" of wages in construction to wages in manufacturing.

On the basis of growth rates and shares of the various construction costs, major components of the rise in these costs can be identified. A simplified breakdown of cost components shows that, over the past two decades, materials and labour accounted for three-quarters of the rise in construction costs (Table 2-4).

Table 2-4
Share in Rise of Construction Costs, by Major Cost Component, 1951-71

	Share
	(Per cent)
Labour costs	35
Material costs	43
Capital and other costs	22
Total construction costs	100

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Earlier in this section, it was shown that labour and machinery and equipment costs per unit of output increased more rapidly than material costs. This is quite consistent with the finding that material costs contributed most to the rise in construction costs. The explanation is that materials accounted for a larger share of total costs than either labour or capital. Had the growth rate of material cost per unit of output been as large as that of labour or capital, its contribution to the change in construction cost would have been much larger.

Construction costs, as such, do not include costs of land or, for that matter, various other costs that are included in the final purchase price of new buildings or engineering structures. An analysis of residential building costs indicates that, over the past 15 years, rising land prices contributed more than a proportionate share to the total cost of new housing. For example, in most major cities, land accounted for less than 20 per cent of the cost of new NHA-financed single-detached dwellings, but it contributed 30 per cent to the rise in total building costs. Part of the rise in land prices can probably be attributed to improved development of building lots, but a larger part is probably due to demand-supply conditions.

Table 2-5

Residential Building Costs and Contribution of Land and Construction to Cost Change, Selected Cities, 1958-72[1]

	Building Costs		Contribution to Cost Change		
	Total Cost in 1972	Average Annual Change	Total Building Cost	Construction Cost	Land Cost
	(Dollars)	(Per cent)		(Per cent)	
Calgary	24,898	5.1	100	69	31
Edmonton	27,414	5.6	100	69	31
Halifax	27,644	6.1	100	71	29
Moncton	20,715	4.4	100	69	31
Montreal	18,596	2.0	100	96	4
Ottawa[2]	27,514	5.3	100	73	27
Quebec	19,720	3.1	100	81	19
Regina	19,032	2.6	100	68	32
Saskatoon	17,573	2.9	100	61	39
Toronto	32,035	6.4	100	57	43
Vancouver	30,474	5.5	100	58	42
Victoria	28,642	5.9	100	57	43
Winnipeg	23,691	4.1	100	73	27

[1]Estimates relate to the cost of new bungalows financed under the National Housing Act.

[2]Estimates include Hull after 1968.

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

This is evident in regional cost comparisons. Across Canada, costs of new NHA-financed single-detached dwellings ranged from below $20,000 to above $30,000 in 1972 (Table 2-5). Prices were generally lowest where the annual changes in building costs were below average and where land costs contributed least to the rise in total costs. In Montreal, for example, the total building cost increased at only 2.0 per cent per year and land contributed only 4 per cent to this change in costs. By contrast, in Toronto, building costs for the same type of building increased at a rate of 6.4 per cent per year, or about three times as fast as in Montreal, and land contributed over 40 per cent to this change in costs.

These cost comparisons relate only to a particular type of residential construction and, even then, cover only part of the new-home-ownership costs. According to our survey results, covering the years 1953-72, prices of *commercial* properties in the downtown areas of Montreal and Toronto increased at annual rates of 6 and 8 per cent and were not as far apart as the *residential* price trends of these two cities.

It is not known to what extent similar cost estimates for other types of structures varied regionally, because regional price data for such land costs were not available. A more detailed analysis of residential construction and of regional construction activities is contained in Chapters 5 and 6.

3

Construction Labour

The purpose of this chapter is twofold: to examine how demand instabilities in construction affect employment, wages, and productivity of workers in the industry; and to consider the effect of these instabilities on a system of industrial relations that strives to balance construction labour's need for security with employers' needs for productive efficiency and flexibility. First, we look at the sources of construction labour and at how cyclical and seasonal variations affect the demand for certain trades. We then examine the relative mobility of construction workers, their wages, and what working security they enjoy. Finally, we look at evolving patterns of collective bargaining in the industry and the changing profile of legislation affecting construction labour. This includes a special section on Quebec.

THE CONSTRUCTION LABOUR FORCE

Despite wide variations in their numbers from season to season and from year to year, almost 600,000 men, on average, now work at construction industry jobs. This amounts to close to 7 per cent of Canada's total working population and to 10 per cent of Canada's male labour force, distributed regionally as shown in Table 3-1. Between 1951 and 1971, the industry's labour force averaged a rate of increase of 2.4 per cent annually.

The fragmented, localized, and seasonal nature of construction activity encourages excess capacity and a less-than-continuous use of capital and labour. Most employers use labour much as they do equipment—hiring and releasing workers as projects begin and terminate. Individual jobs are phased in and out, and work crews are formed and dissolved. In any given

year, a worker may be employed by several contractors on a variety of job sites. Few have enduring attachments to a single employer; indeed, the average job tenure with one employer lasts about seven months. Less than 40 per cent of the permanent tradesmen are likely to be working for the same employer a year hence.

Table 3-1

Construction Industry Labour Force, 1972

	Number	Proportion of Canada's Labour Force	
		Male	Total
	(Thousands)	(Per cent)	
Canada	590	9.9	6.6
Atlantic Region	63	13.2	9.0
Quebec	143	8.7	5.9
Ontario	213	9.6	6.3
Prairie Region	97	10.0	6.8
British Columbia	74	11.6	7.8

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Even in summer, the checkered pattern of construction demand frequently results in pockets of unemployment and shortages of labour occurring at the same time. These shortages may be filled by unemployed construction workers from elsewhere, workers moving from other occupations, and immigrants, students, or others from outside the regular labour force. In short, the construction labour force should not be thought of as an identifiable, uniform group, but rather as an easily entered, easily left, pool of unskilled or semiskilled workers centred around a permanent core of registered or certified tradesmen, who themselves shift between job sites, between contractors, or between new construction and repair and maintenance work.

There is no real way of knowing precisely how many workers drift in and out of the industry. However, partial information drawn from the Commission de l'industrie de la construction du Québec and the federal Unemployment Insurance Commission (UIC) suggests that, in addition to the regular body of permanent construction tradesmen and labourers, a large number of men work part of the year in construction.

For Canada as a whole, one can identify the following overlapping groups among construction workers:

- about 425,000 journeymen, craftsmen, apprentices, and labourers generally attached to (though not necessarily continuously employed in) construction jobs;
- about 75,000 self-employed journeymen, contractors, and subcontractors who may, from time to time, work as employees of other contractors or subcontractors;
- a small but growing nucleus of white-collar managerial, engineering, architectural, and clerical personnel;
- a constantly changing group of unemployed workers between jobs, accounting for from 6 to 25 per cent of the construction work force, or 40,000 to 150,000 men, depending on the season and the construction cycle;
- about 50,000 seasonally employed students; and
- another 150,000 men who drift in and out of construction and other types of work, as opportunities present themselves, of whom only about one-third will be in construction jobs at any single point in time.

In addition to those working for construction contractors, another 150,000 or so construction tradesmen work for firms in manufacturing or other sectors of the economy. Indeed, among the trades of those registered with the Unemployment Insurance Commission, close to half of the electricians and sheet-metal workers and one-third of the painters, plumbers, and carpenters work in industries other than construction. In this chapter, however, unless otherwise specified, attention is confined to labour and industrial relations within the construction industry itself.

Over the past two decades, the progressive adoption of more specialized or more powerful equipment, new building materials, new methods of prefabrication, preassembly, and the like, have radically altered the roles of many traditional trades. So, too, has the continuing shift towards high-rise construction in both the residential and commercial fields. However, it is in the engineering sectors of the industry that some of the most spectacular labour-saving innovations have been introduced, including turbo-charged diesel bulldozers with horsepower ratings of up to 1,000 units; two- and three-bowl roadscrapers that can carry 75 to 150 tons of earth; automatic welding equipment for oil and gas transmission lines; mobile pipe mills that make continuous pipe from sheet-metal material, with sections up to 1,000 feet in length; pneumatic systems to

move concrete and plaster; and even helicopters to handle such large awkward units as preassembled electrical installations. Such innovations have led to a much more pronounced increase in output per worker and displacement of labourers than in the residential and other building sectors where technology has advanced more slowly.

The factors giving rise to unstable expenditures on construction add to the uncertainties facing construction labour. For Canada as a whole, however, the cyclical swings in construction employment over the past 20 years have not been as wide as the corresponding swings in real dollar expenditures.[1] This was because the periods of peak construction activity were marked by large-scale engineering projects and the use of a great deal of heavy equipment. In slower periods, proportionately more construction activity was carried on in residential and nonresidential building and repairs, which are relatively more labour-intensive than the engineering works.[2] However, this is not to discount the seriousness of cyclical swings. Employment instability in construction because of cyclical factors alone has been more than twice as severe as that in manufacturing, involving about 30,000 jobs from peak to trough.

Different trades have different employment cycles, depending on the construction sector. Residential construction responds mainly to changing income and mortgage credit conditions, so that employment opportunities for trades prominent in residential construction—carpenters, painters, bricklayers, etc.—vary as these conditions rise and fall. Nonresidential building responds more directly to business expectations; thus trades that are characteristic of this sector—sheet-metal workers, boilermakers, plumbers, and mechanical workers—confront a somewhat different cycle of demand. Similarly, highway, electrical power, and oil and gas developments have their own employment cycles, which are often related to government decisions and very large projects.

During the 1960s, construction employment in Ontario grew at a relatively steady pace. But, in all other provinces, cyclical employment instability considerably exceeded the aggregate Canadian level. Chart 3-1 shows construction employment in the building and engineering sectors, by province, over the 1961-71 period and reveals the lack of uniformity of construction employment from sector to sector and from place to place.

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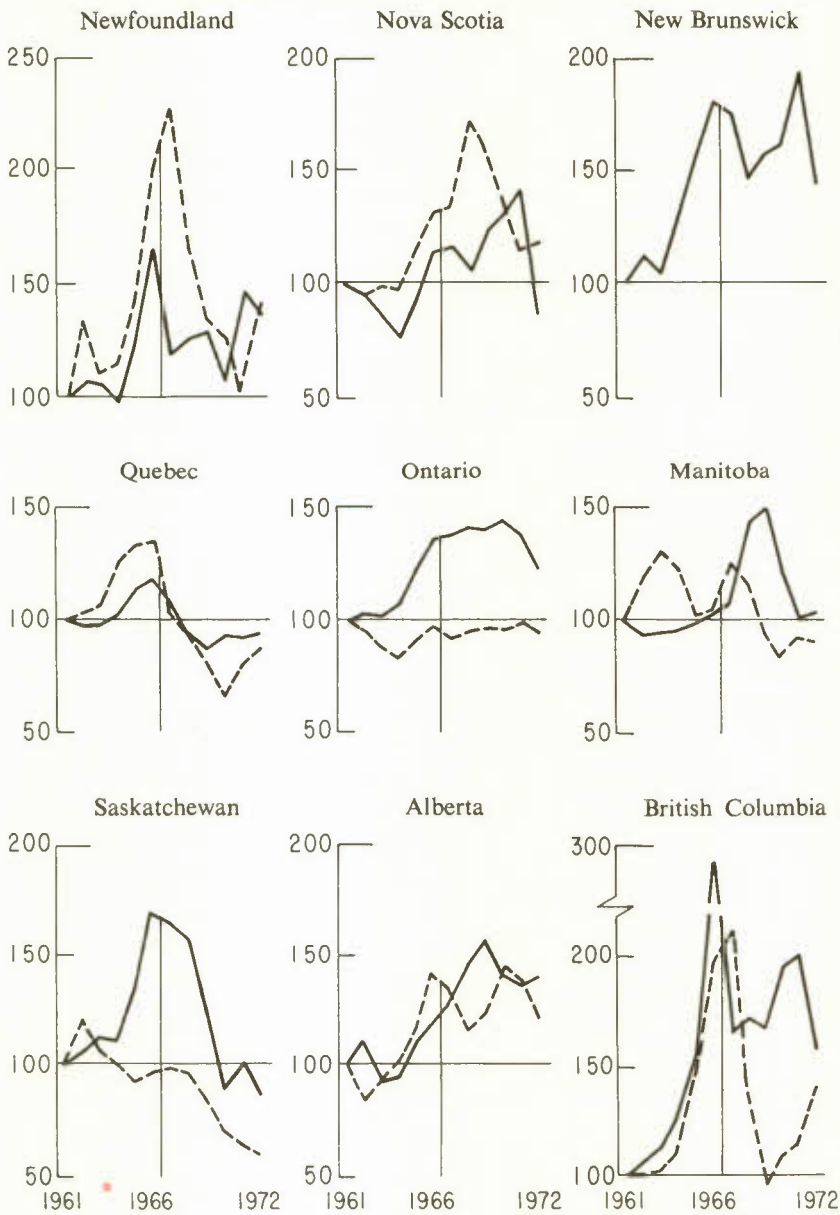
[1]The average percentage deviation from log linear trend of annual construction employment was only half as wide as the deviation of annual constant-dollar construction expenditures over the 1951-71 period.

[2]For example, estimates of the Economic Council of Canada indicate that in 1961 less than 25 cents of the construction dollar spent on most engineering works went to labour, compared with roughly 30 cents in housing and 50 cents in repair construction.

Chart 3-1
Indexes of Annual Employment in Building and Engineering Construction, by Province,[1] 1961-72

(1961 = 100)

Building ——— Engineering - - -



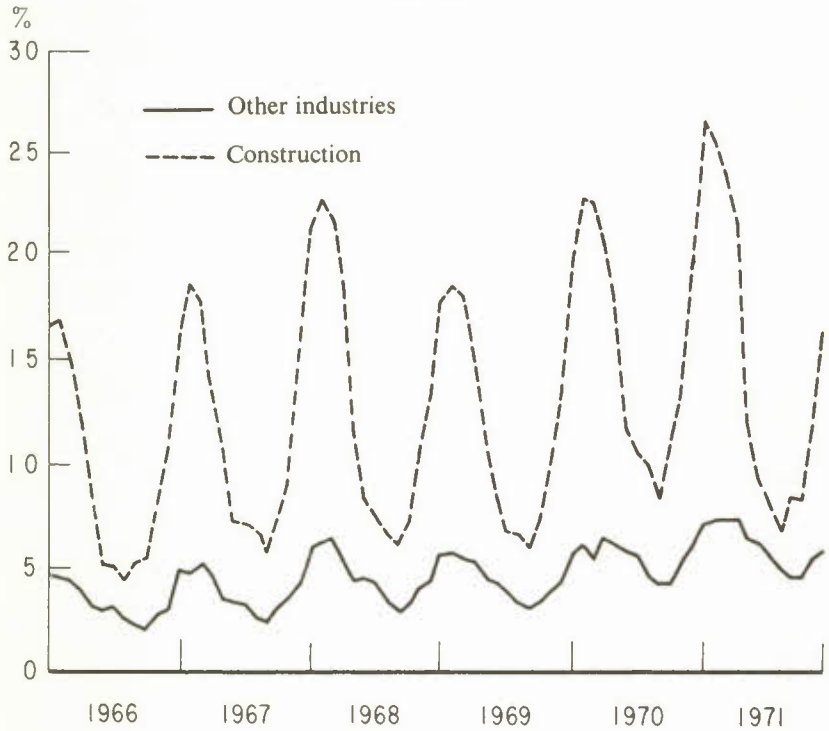
[1] Derived from the establishment survey of Statistics Canada, which includes all firms with 20 or more employees but only a sample of smaller firms. Complete data on engineering construction are not available for New Brunswick. In the case of Prince Edward Island, too few firms were covered to provide reliable estimates.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

These separate cycles provided some countervailing influences because, if all construction activities had risen and fallen at the same time, there would have been much more unemployment in trough periods and more severe shortages and inflationary pressures in peak construction years.

In addition to cyclical swings, the seasonal nature of construction work is a burden on construction labour. Indeed, when the cyclical and seasonal elements are combined, year-to-year employment in construction is four times as unstable as it is in manufacturing. In trough years of the cycle, winter unemployment rates in construction have risen to 25 per cent in Canada and considerably higher in some provinces.

Chart 3-2
Seasonal Unemployment Rate of Males in Construction and Other Industries, 1966-71



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Some 150,000 to 200,000 jobs emerge and disappear between the January-February troughs and the August-September peaks (Chart 3-2). In highway, water and sewer, hydro, and other engineering construction, summer employment averages close to two-thirds higher than winter

employment. In building construction, summer employment runs about one-quarter higher than in mid-winter. The relative severity of these seasonal variations is greater in the Maritimes and the Prairies than in Ontario, Quebec, and British Columbia.

Many construction firms and contractors have succeeded in reducing the extreme seasonality of construction employment. Polyethylene wind barriers, interior heating units, cold-resistant concrete, and other materials are making it possible to work during winter on residential and other buildings. In highway construction and other heavy engineering projects, it is less a case of moving to year-round activity than of using more specialized heavy equipment and fewer unskilled workers in the summer.

In the face of continuous change in the pace and location of construction activity, it is not surprising that there is a substantial movement of workers among jobs and geographic locations. With large numbers of workers entering and leaving construction, the industry displays considerable mobility. Instability thus has its repercussions on other industries. When construction is slack, for instance, some construction workers move to logging, pulp and paper, mining, and other industries using mainly male labour. During construction booms, the flow usually reverses and can, on occasion, make it difficult for these other industries to find good workmen. With respect to the core body of organized construction tradesmen, however, there is much less mobility as journeymen tend to specialize. Some carpenters specialize in heavy construction; others, in residential and finishing work. Similarly, some electricians specialize in residential and repair work; others, in heavy construction jobs; and still others, in industrial maintenance.

Geographic mobility is more pronounced than intertrade mobility. Our examination of representative job histories of electricians, plumbers and pipefitters, carpenters, heavy equipment operators, and labourers registered at Canada Manpower Centres in different parts of the country found little occupational or industrial mobility but considerable geographic mobility. Half or more of the sample workers moved geographically between their last three jobs (Table 3-2).[3]

Has the higher scale of unemployment insurance benefits, as some employers allege, discouraged mobility and encouraged idleness in the face of persisting skill shortages in some areas? No positive answer can

[3]The data must be interpreted with caution, since it is usually nonunionized contractors who hire through Canada Manpower Centres. Union locals, through the hiring-hall system, give preference to their own members and allow employers to use outside nonunion labour only when virtually all their members are employed. The data may, therefore, overstate the geographic mobility among the organized corps of construction tradesmen.

Table 3-2

Mobility of Construction Workers[1]

	Same Occupation			Same Industry			Same Location		
	Last Job	Second Last Job	Third Last Job	Last Job	Second Last Job	Third Last Job	Last Job	Second Last Job	Third Last Job
	(Per cent)								
Electricians	100	98	91	90	93	92	62	61	50
Plumbers, pipefitters	98	88	86	96	90	94	48	43	46
Carpenters	98	94	94	96	94	100	67	71	51
Heavy-equipment operators	96	92	88	95	92	85	58	40	46
Labourers	90	87	80	87	80	68	58	45	43

[1] Job history of workers seeking employment at 20 representative Canada Manpower Centres in March 1973. Greater mobility is indicated by a lower percentage.

SOURCE: Based on data from Department of Manpower and Immigration and estimates by the Economic Council of Canada.

be given, because the increases in UIC benefits are too recent and the information on individual responses is incomplete. Moving involves risks, particularly where families are concerned. Undoubtedly, unemployed workers weighing the alternatives take potential UIC benefits into account no less than they do the wage and duration of a job elsewhere and the costs of moving and living away from home.[4] The more expert tradesmen are usually married, and such evidence as we have indicates that the main deterrents to filling skill shortages remain, on the one hand, the inability of employers to provide continuous employment and, on the other hand, the human costs of repeated rounds of family separation. We have made a general inspection of Labour Force Survey and UIC data since the recent unemployment insurance legislation but, so far, have found no indication that the work/leisure responses of construction workers have altered significantly.

To overcome barriers to mobility associated with the different provincial standards of journeyman qualifications, federal and provincial departments have developed what is known as the Red Seal Program, by which certified journeymen in one province are recognized as being qualified to work in another. Most construction occupations are covered by the Red Seal Program, which encompasses all provinces, and Quebec has gone so far as to recognize it in its own legislation. The Program, of course, has to do with provincial recognition, and union locals are under no obligation to issue temporary union cards to journeymen from outside the province. Hence the main beneficiaries to date of the Red Seal Program have been large national contractors moving key workers from construction sites in one province to another. In 1971-72, over 35,000 journeymen, almost all of whom were in the construction trades, held interprovincial "red seals", up sharply from about 25,600 in 1970-71.

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[4]Take the case of a father of two, facing roughly 11 weeks' idleness (the average duration for most unemployed construction workers), who has enough UIC entitlements to cover that period at home. Suppose he has a chance to work a considerable distance from home for $6 per hour (a rough average of the basic rates for organized skilled and semiskilled tradesmen in Quebec and Ontario in 1973). Suppose he gets the job and that it lasts the full 11 weeks—outcomes that are never certain. How much better off would he be? Our calculations indicate that, after deducting the extra income tax (close to $500) and the expenses of travel and living away from home (we assumed board and lodging at $7.50 per day, which is half the daily amount available under the Canada Manpower Mobility Program), the net gain to him would be about $1.50 per regular hour worked. And when account is taken of the normal family advantages of his being at home, of the home improvements, or odd jobs, etc., that he could be doing while still drawing UIC benefits, and of the rigours of outside construction jobs if it is winter, he may prefer drawing his UIC entitlements to taking work elsewhere.

WAGES, PRODUCTIVITY, AND EARNINGS: THE INTERACTIONS

We have seen that investment is the most unstable of the main elements shaping aggregate demand and, since construction accounts for the major portion of all new investment, it is not surprising that the construction industry experiences periods of more than proportional tightening and relaxation in the use of labour and other resources. This cyclical instability in the industry aggravates wage and cost pressures, and it prompts unions to demand more than proportionate wage increases on the grounds of offsetting high cyclical unemployment in addition to the other factors that contribute to the insecurity of construction work.

The increase in construction wages and earnings over the past 20 years has been dramatic. In 1951, construction workers averaged the same hourly wage as workers in manufacturing ($1.19 in construction and $1.18 in manufacturing). By 1972, the average hourly construction wage stood at $5.15 (compared with $3.54 in manufacturing)—more than a threefold increase over 1951 and up to almost 50 per cent above manufacturing in 1972. These developments reflect both demand/pull and cost/push factors,[5] and may also indicate a progressive displacement of low-skilled labour out of construction.

The wage gains in construction occurred in different stages. From 1951 to 1965, construction wages rose by about 6 per cent annually (compared with 5 per cent in manufacturing). From 1966 to 1971, they rose by 7 to 15 per cent annually (compared with 6 to 10 per cent in manufacturing). In 1972 and 1973, the annual increase in construction wages averaged slightly less than 9 per cent, about the same as in manufacturing. In both these years, union negotiators put particular emphasis on fringe benefits and working conditions.

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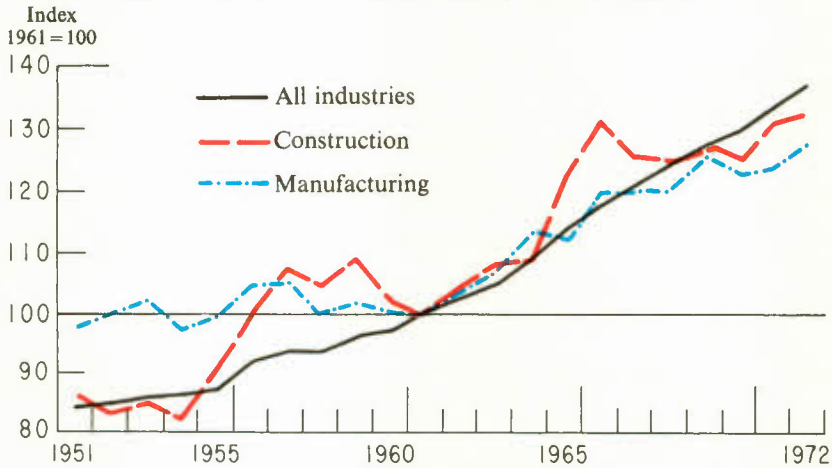
[5]These forces are not, of course, mutually exclusive, since they represent different points of emphasis among a whole range of consumer wants, prices, and producer and worker motivations. Very generally, demand/pull forces are at work when an increase in demand for construction output prompts contractors and subcontractors to increase wages in order to bid workers away from other industries. If the labour market is growing rapidly, or if economic conditions are relatively slack and pools of idle labour exist, only modest increases in wages are needed to provide the required increase in manpower. But, if demand is buoyant in other sectors of the economy and labour markets are tight, more generous wage increases may be necessary. Cost/push forces are at work, on the other hand, when the entry of labour or capital is restricted in the face of heightened demand and when the relative lack of substitute products easily enables firms to pass on cost increases to consumers. In the short run, both these influences—demand/pull or cost/push—may result in wage increases outstripping parallel improvements in output per man-hour. But, in the long run, increases in relative wages must be matched by corresponding increases in labour productivity if workers are to avoid displacement by labour-saving methods of production.

Employment in construction peaked along with the construction cycle in the latter half of the 1950s and again in the mid-1960s (Chart 3-3).

Chart 3-3
Employment in Construction, Manufacturing, and All Industries, 1951-72

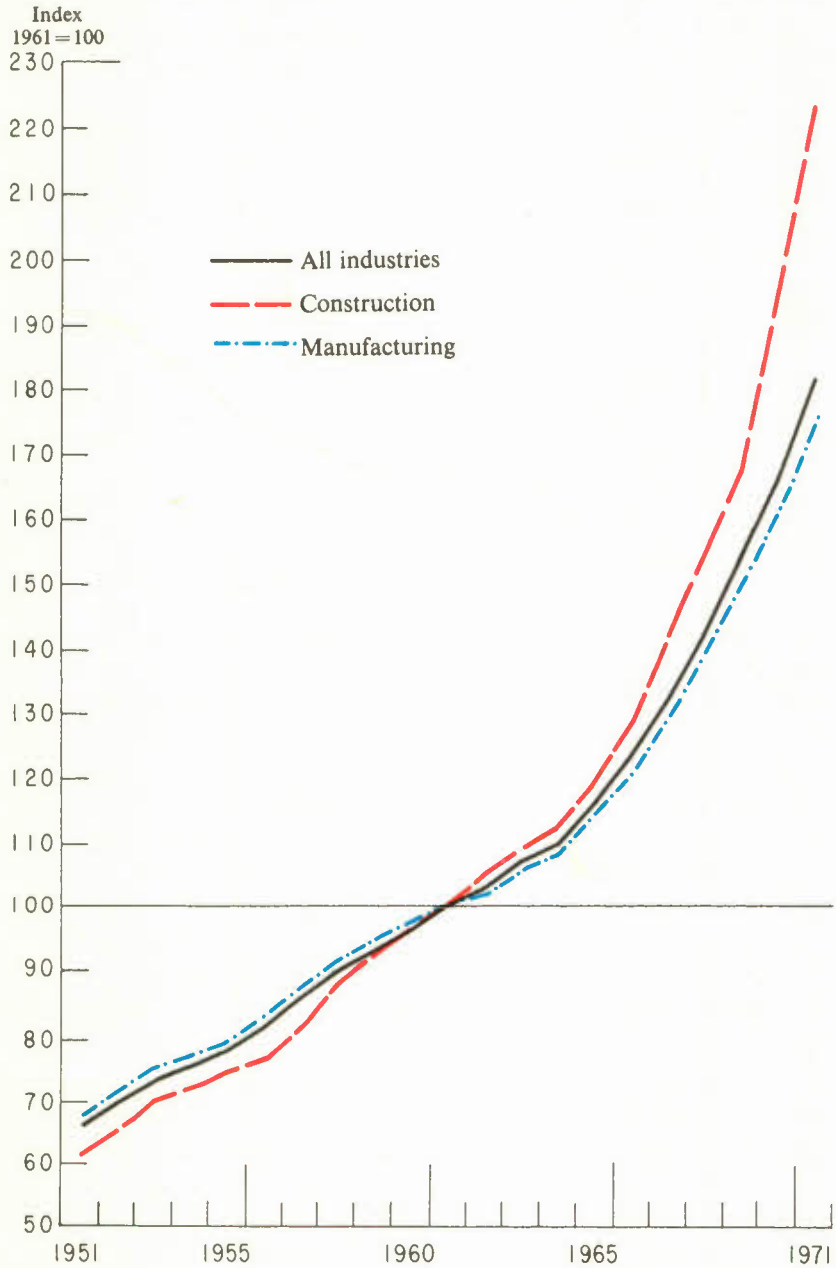


SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

During the early period, between 1954 and 1959, the response to the quickening pulse of activity came in the form of a 37 per cent increase in the construction labour force, composed of large numbers of immigrant tradesmen and of unskilled workers who had moved out of agriculture and the rural areas. Subsequently, as the construction boom tapered off in the late 1950s and early 1960s, unemployment in construction rose to record postwar levels; workers left the industry; and, even though employment picked up after 1961, it was not until after 1964 that the construction labour force recovered to its 1958 level. Not surprisingly, therefore, throughout this period wage rates advanced slowly, roughly in line with output per man-hour (Charts 3-4 and 3-5). Construction prices rose by not much more than 1 per cent per year, in line with prices of building materials.

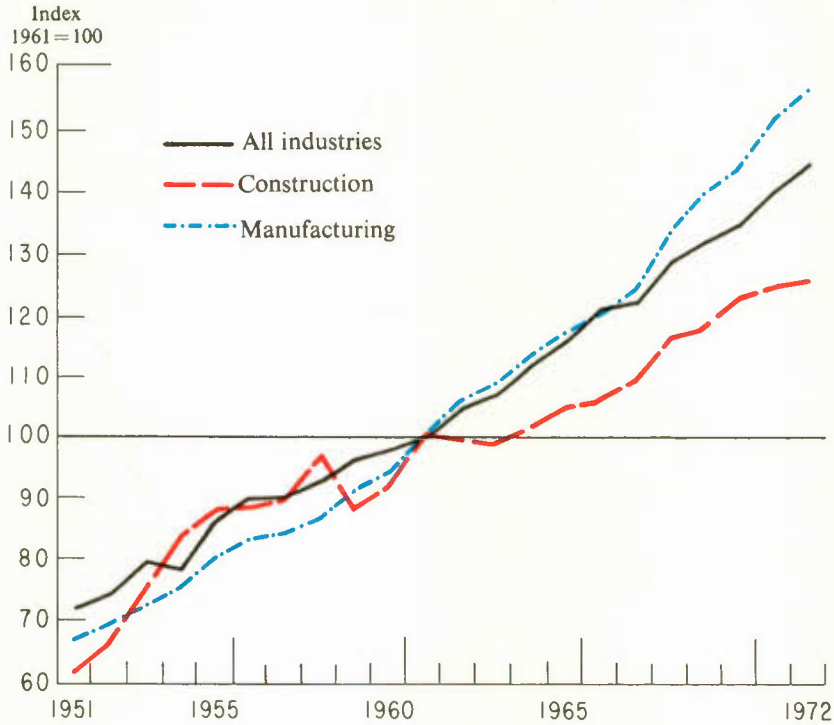
Construction employment peaked again in 1966, spurred by pre-Centennial activities. It subsequently declined as construction advanced more slowly than other sectors of the economy, but picked up sharply once more in 1971 and 1972. What stood out after 1966 was the remarkable increase in annual wage rates. In part, these gains were associated with rising consumer expenditures and business activity and with more aggressive wage demands in all sectors of the economy, not just construction.

Chart 3-4
Average Wage Rates in Construction, Manufacturing, and All Industries, 1951-71



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Chart 3-5
Output per Man-Hour in Construction, Manufacturing, and All Industries, 1951-72



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Partly, too, they may have been associated with an increase in the number of unionized firms, a widening of the bargaining areas in some provinces, and somewhat indifferent bargaining by employers not inclined to incur prolonged confrontations when they could pass wage increases on to the ultimate buyer.[6] In some cases, of course, the knowledge that buyers will not be deterred by higher prices and that higher prices mean more income for the construction industry has led to a weakening of employer resistance to union demands and even to tacit understanding rather than genuine bargaining in wage negotiations.

[6]Unlike manufacturing, construction firms do not have a stockpile or inventory to fall back on during work stoppages. Every day lost adds to their interest on borrowed capital and may involve penalty payments as well. The rapid rise in interest rates during the late 1960s weakened the bargaining posture of construction employers.

An equally compelling reason why construction firms, contractors, and subcontractors in both Canada and the United States have been able to absorb higher-than-average wage demands has been their ability, observed earlier, to modernize building techniques, adopt modular installations, substitute more productive equipment, and generally achieve considerable savings on labour. In the years since 1966, it might have been supposed that organized labour's heightened wage gains would have sharply increased labour's relative share of total construction earnings. But, in fact, there was only a modest increase in labour's share, as employers partly offset rising per-unit labour costs by substituting more capital-intensive techniques (Charts 2-1, 2-3, and 2-4).

Some trends in the structure of construction wages for the organized tradesmen can be observed through the 1951-71 period (Table 3-3).

Table 3-3

Comparison of Wage Rates[1] by Selected Occupations and Cities, 1951, 1961, and 1971

	1951	1961	1971
Halifax			
Electricians	100.0=$1.38	100.0=$2.30	100.0=$4.92
Plumbers	97.8	97.0	98.0
Carpenters	92.8	88.7	82.1
Labourers	62.3	63.9	67.5
Montreal			
Electricians	100.0=$1.57	100.0=$2.50	100.0=$5.41
Plumbers	107.0	105.2	100.0
Carpenters	93.6	94.4	91.9
Labourers	61.1	70.4	75.0
Toronto			
Electricians	100.0=$1.88	100.0=$3.56	100.0=$6.73
Plumbers	102.7	95.5	97.9
Carpenters	101.1	83.7	92.7
Labourers	57.4	56.7	65.2
Winnipeg			
Electricians	100.0=$1.57	100.0=$2.80	100.0=$5.11
Plumbers	104.5	100.0	106.5
Carpenters	100.6	89.3	92.0
Labourers	55.4	58.9	67.5
Vancouver			
Electricians	100.0=$1.92	100.0=$3.26	100.0=$6.56
Plumbers	92.7	96.3	97.9
Carpenters	95.8	82.8	90.0
Labourers	68.8	67.2	69.4

[1] Journeyman wage rates per hour relative to electrician wage rates.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Interregionally, there has not been much change. Average negotiated rates in Ontario and British Columbia still run 15 to 35 per cent higher than in the other regions of Canada. Quebec and the Prairies follow, and the Maritime Provinces lag behind. Perhaps the main change has been the relative decline in construction wages in the Prairies, particularly in Manitoba, and the considerable resurgence of wage gains in Quebec, despite a relatively soft construction market there during the late 1960s. Interfirm disparities are widest in British Columbia and narrowest in Quebec under the decree system.

Occupationally, the most striking structural change has been the relative and absolute decline in the demand for carpenters, once the largest single occupational group in construction.[7] This decline also shows up in negotiated wage trends over the 1951-71 period as a whole. In every major city in Canada, carpentry wages have advanced less rapidly than those of other trades, including organized unskilled labour. In 1951, carpenters in the major metropolitan centres averaged within 10 cents per hour of the rate for electricians and plumbers. In 1971, however, carpenters were earning about 40 cents per hour less than electricians and plumbers in Montreal, 85 cents less in Halifax, and a little less in other cities.

The trends in earnings of unskilled labourers and the trades are more ambiguous. On the whole, labourers' earnings have improved from about 60 per cent of the electrician/plumber average in 1951 to closer to 70 per cent in 1971. But absolute differences in gross take-home pay have widened by about $30 to $60 per week.[8] The most determined effort to narrow occupational wage differences has taken place in Quebec and has probably affected the numbers employed (see Chart 3-1 and the last section of this chapter).

Construction wage gains have been leading almost all other industries. In the process, the gap in hourly wages between the same trades in and outside construction has widened although, when one focuses on individual trades and provinces, the results are less clear-cut. In the West, for instance, between 1966 and 1970, the wage gap between the main trades inside and outside the industry narrowed, whereas in Ontario and Quebec it widened for each major trade except painters and paper-hangers. Since skilled

[7]The 1951 Census shows carpenters forming 25 per cent of the construction work force. At the time of writing, 1971 occupational data were not available from Statistics Canada. However, in 1970, according to UIC data, carpenters accounted for about 14 per cent of the workers registered in construction industry occupations.

[8]These observations, drawn from data covering only the organized sectors, should be interpreted with caution. Only a minority of unskilled workers have union affiliation. Some confirmation is found, however, in UIC data for 1970, covering all workers, which put labourers' average weekly wages at 71 per cent of the average of electricians and plumbers.

construction tradesmen and maintenance tradesmen outside construction frequently belong to the same craft local, some interrelationship is to be expected in the pattern of wage gains, as successive rounds of bargaining occur and each local looks over its shoulder at gains achieved by the other locals.

In this connection, it has frequently been alleged that large wage settlements achieved in construction spill over into the nonconstruction sectors. The suggestion is made, for instance, that tradesmen in manufacturing try to secure the same scale of increases as their fellow tradesmen in construction and that, in the process, they set in train a series of inflationary wage demands that run through their own and other industries. Our findings confirmed that wage gains by tradesmen in construction did influence those of the same trades in some other industries, but the effects were limited. Comparing industries as a whole, hourly earnings in construction rose faster when the gains in hourly earnings in manufacturing were greatest and rose less rapidly when the increases in manufacturing eased.

Because of the high frequency of layoffs, with no permanent employers, construction workers and their locals have a special interest in negotiating and subsequently administering the kinds of fringe benefits normally enjoyed by permanent wage and salary workers. These include seniority provisions, sickness and disability insurance, pensions, vacation pay, etc. Over the past 20 years, there have been marked advances on these fronts. Fringe benefits now account for some 10 to 15 per cent of the total negotiated wage package—two to four times the proportion of a generation ago. Indeed, if recent negotiations are representative, workers are showing even greater interest in pensions and welfare schemes, show-up pay, commuting costs, and enforced safety regulations—items that are not included as part of the basic wage rate.

By 1971, virtually all pace-setting collective agreements called for at least two, and usually three, weeks' paid holidays. Some, but by no means all, contracts provided for welfare, disability, and pension benefits beyond those now available through provincial and hospital medical schemes, Workmen's Compensation, and the Canada Pension Plan. Most recent collective agreements also included several hours' show-up pay, in the event that work is cancelled without prior notification, and double time for work on Saturdays or statutory holidays. Fringe benefits, of course, like wage increases, add to employers' payroll costs. However, their special importance is that they reduce the personal costs and risks confronting individual workers engaged in discontinuous jobs. Moreover, in the case of those benefits designed to compensate workers for unscheduled work

stoppages or overtime, they encourage employers to phase their activity better and make more efficient use of their employed manpower. All this, however, concerns only about half of the construction labour force. The nonunion worker usually earns considerably less per hour than his union counterpart, is faced with an even greater probability of impermanent employment, and enjoys few, if any, fringe benefits. Apart from the various labour standards and fair-wage acts, his protection rests solely upon his own resources and the attitude of his employer.

In 1970, construction tradesmen averaged only 38 working weeks annually, compared with 44 weeks for workmen in similar trades in other industries.[9] On the other hand, they have, through recent wage increases, dramatically improved their income situation relative to other workers. In the 10-year span from 1961 to 1971, the annual earnings of construction tradesmen moved from 80 per cent to 103 per cent of national average earnings for tax-paying males, despite lower average levels of formal education, and a much higher incidence of unemployment.[10] The annual average income of a construction tradesman in 1971, the last year for which personal earnings data are available, was about $8,600, compared with $8,400 for corresponding tradesmen outside construction, who worked longer during the year, and with $8,380 for the average male taxpayer.

Recent changes in the Unemployment Insurance Act have measurably improved the position of construction workers. Over half of all construction workers registered with the Unemployment Insurance Commission draw benefits each year, with the average number of weeks of benefit running between ten and twelve. In 1968, this meant about $327 in benefits per beneficiary, compared with a level of benefits in 1973 of about $880. Indeed, at current levels of UIC benefits and contributions, unemployment in the construction industry probably costs Canadians, including those in construction, about $300 million annually. Construction workers and their employers probably contribute close to $130 million to the scheme, leaving a net annual transfer to the industry from other Canadians of about $170 million. Much of this subsidy, of course, is associated with seasonal unemployment.

All in all, the problems of insecurity and inadequate family earnings among regular construction workers are not what they were even 10 years

[9]Based on a sample survey of all UIC contributors.

[10]The annual income of unskilled labourers in construction averaged 54 per cent of the male average in 1961, and 72 per cent in 1971. Because of a somewhat higher tendency to unemployment, the ratio of their average annual income to that of tradesmen is slightly lower than the ratio of their respective hourly wages. The 1961 data are from Jenny R. Podoluk, *Incomes of Canadians*, 1961 Census Monograph. The 1971 data are from UIC sources and Department of National Revenue, *Taxation Statistics*.

ago. There is a smoother cyclical pattern of construction overall, more efficient year-round building techniques, and somewhat less seasonal instability of employment. There are also the very substantial wage gains, which have helped offset temporary losses of income, and improved fringe benefits including pension funds. There are expanded and enriched UIC benefits during periods of involuntary idleness; opportunities are open through Canada Manpower training courses, which are attended mostly during the winter months; and there is the security afforded by public hospital and medical schemes and the Canada Pension Plan. Finally, there are the selective federal and provincial employment-creating programs, including the Local Initiatives Program and On-the-Job Training, that have been part of the recent counterseasonal employment strategies of both federal and provincial levels of government.

This is not to say that difficulties no longer exist. The income security programs cited here are, by and large, available to all Canadians. The realities of construction activity, the constant shift in job sites, and the discontinuities in employment remain. There are still many unskilled low-paid construction workers with virtually no job security of any sort and none of the protection afforded by collective agreements. In outlying slow-growth areas, employment is highly seasonal and sporadic. In the faster-growing metropolitan areas, more jobs are available, but there are also more instances of questionable practices and intimidation, particularly where recently arrived immigrants are employed. As workers grow old, the heavy physical demands of construction become increasingly onerous. Also, there is the continuing issue of enforcement of safety regulations and practices. These problems will not be easily resolved.

INDUSTRIAL RELATIONS

The Trades Union Structure

Inconstancy of employer-employee relations and the lack of permanent work sites mean that organized construction workers look to their trade union local for employment security, rather than to their employers. The traditions of organized self-help and self-regulation in the building trades are rooted in the centuries-old system of master-craftsmen, journeymen, and apprentices—traditions that favour a cohesiveness among like craftsmen and encourage self-regulation of the flow and competence of new tradesmen in the industry. Today, building trades locals serve their mem-

bers not only as focal points for collective bargaining, but also, through closed-shop contracts and hiring halls, as suppliers of job orders. They are also administrators of health and private pension plans.

In Canada, the dominant trade unions representing construction workers are the 17 "international" AFL-CIO building trades unions affiliated with the Canadian Labour Congress.[11] Each of these is composed of locals directly chartered by their parent bodies in the United States but exercising very substantial autonomy under their own locally elected officials. All in all, nearly 800 such locals exist in Canada (Table 3-4). Only five unions have more than 20,000 members—a size usually, although not officially, regarded by the Canadian Labour Congress as the minimum for viable self-financing. But not all of these 293,000 organized tradesmen necessarily work in construction jobs. Some trades locals have bargaining rights in industries other than construction and, even in industries where they are not represented, there frequently are construction tradesmen working who still maintain their union membership. Almost half the membership of the International Brotherhood of Electrical Workers work for manufacturing or other nonconstruction agencies, in some of which IBEW locals have bargaining rights.

Apart from these AFL-CIO trades unions affiliated with the Canadian Labour Congress, there are a number of smaller independent bodies that actively represent construction workers. The Christian Labour Association of Canada, for example, claims close to 2,800 members, distributed over 71 locals, mostly in Ontario and British Columbia. In addition, depending on the location, many unskilled and semiskilled construction workers and some tradesmen are represented by industrial unions—in particular, the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers; the United Steelworkers of America; the International Woodworkers of America; the Oil, Chemical and Atomic Workers International Union; and the Canadian Union of Public Employees. In Quebec, where union membership in construction activity is compulsory, in addition to the 91 locals affiliated with the Quebec Federation of Labour (QFL), there is the Fédération nationale des syndicats du bâtiment et du bois—

[11]Each of the 17 unions has "international representatives" appointed by the parent body affiliated with the AFL-CIO, although, in the case of the major unions, the consent of the Canadian delegates to the conventions is deemed necessary. These representatives are all Canadians. Their role is normally limited to advising, monitoring, or assisting locals in order to provide consistency and leverage in collective bargaining and in the administration of union funds. Recently, the unions formed a "roof" organization, "The Advisory Board for the Building and Construction Trades Unions of Canada", composed of these representatives, which parallels a similar agency of the parent unions in the United States.

Table 3-4

Canadian Membership and Number of Locals of Construction Trade Unions Affiliated with CLC/AFL-CIO, 1971

	Total Member-ship	Number of Locals											
		Nfld.	P.E.I.	N.S.	N.B.	Ont.	Que.	Man.	Sask.	Alta.	B.C.	N.W.T. & Yukon	Total
United Brotherhood of Carpenters and Joiners	74,645	5	1	13	20	69	34	6	7	15	43	1	214
International Brotherhood of Electrical Workers	55,000	5	1	19	12	53	12	5	5	4	9	0	125
Labourers' International Union of North America	38,539	2	0	3	3	14	7	2	2	2	6	0	41
United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry	32,144	2	1	4	8	27	10	3	4	7	5	1	72
International Union of Operating Engineers	24,894	1	0	2	3	8	2	3	1	3	8	0	31
International Association of Bridge, Structural and Ornamental Iron Workers	14,385	1	0	1	1	9	3	1	1	4	3	0	24
Sheet Metal Workers' International Association	14,374	2	0	2	3	21	3	2	3	4	3	0	43
International Brotherhood of Painters and Allied Trades	11,981	1	0	3	2	25	6	5	4	6	9	1	62
Bricklayers, Masons and Plasterers' International Union	10,577	1	1	3	5	28	4	1	2	3	2	0	50

International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers	7,400	2	0	1	1	9	4	5	2	4	3	0	31
Operative Plasterers' and Cement Masons' International Association	2,627	1	0	1	1	17	2	2	2	4	3	0	33
International Association of Heat and Frost Insulators and Asbestos Workers	2,436	0	0	1	1	1	1	1	1	2	1	0	9
International Union of Elevator Constructors	2,184	0	0	1	0	3	2	1	0	2	1	0	10
Wood, Wire and Metal Lathers' International Union	1,532	0	0	1	0	11	1	1	2	2	3	0	21
International Association of Marble, Slate and Stone Polishers	302	0	0	0	0	2	0	0	0	0	2	0	4
Granite Cutters' International Association	*	*	*	*	*	*	*	*	*	*	*	*	*
United Slate, Tile and Composition Roofers	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	293,020	23	4	55	60	297	91	38	36	62	101	3	770

*Not available.

SOURCE: Data from the Canada Department of Labour and the Advisory Board for the Building and Construction Trades Unions of Canada.

an industrial-type organization affiliated with the Confédération des syndicats nationaux (CSN-CNTU)—which claimed 30,000 building workers as members in 1971, and the recently created Centrale des syndicats démocratiques (CSD), which split from the CNTU.

Quebec apart, union membership is highly concentrated in certain construction sectors, particularly the nonresidential sector. Most estimates suggest that, with some variations among provinces, commercial, institutional, and industrial construction is 70 to 90 per cent unionized; road and bridge construction, 40 to 50 per cent; and residential construction, 5 to 10 per cent. The latter percentage may well increase if the shift toward multiple-unit and high-rise building continues. In general, therefore, collective bargaining and institutionalized industrial relations affect only 55 to 60 per cent of construction.

Employer Associations and Accreditation

Continual changes in the location of construction activity, in the contractual linkages between firms, and in the work force involved have also contributed to the formation of strong employer associations, organized for the specific purpose of collective bargaining and industrial relations. Construction is one of several industries in Canada to develop associations to which individual firms delegate their collective bargaining powers. They have been encouraged in this process by recent changes in provincial labour relations statutes designed to widen the areas of bargaining and to reduce the number of industrial and jurisdictional disputes.

Two main types of construction contractor associations exist: industrywide or multitrade associations, which have their historical roots in the local builders' exchanges; and specialized trade associations, which reflect the differentiated and specialized contractor trades. Both types of employer associations can be found at national, provincial, and local levels.

The most important multitrade or industrywide employer organization is the Canadian Construction Association (CCA), which at the national level claims a membership of about 20,000 firms, mostly in commercial, institutional, industrial, road, and engineering construction. The CCA has been strongly preoccupied with industrial relations matters and acts as a central research and information agency for collective agreements signed by individual firms or associations. It has affiliate provincial and regional construction associations that encourage multitrade employer organiza-

tion. In the residential sector, the Housing and Urban Development Association of Canada (HUDAC), with a membership of about 4,800 firms, plays a similar role.

Specialized trade associations also operate at national, provincial, and local levels. There are, for example, the Pipe Line Contractors Association of Canada, the Mechanical Contractors Association of Canada, and the Canadian Electrical Contractors' Association, each with its own loosely linked affiliate associations at provincial levels and in the major urban centres.

Provincial Initiatives and Collective Bargaining

The special nature of the construction industry has put pressure on the traditional systems of industrial relations legislation, which generally were more closely geared to the requirements of manufacturing and other industries than to construction. The procedure, for instance, of "certifying" a union as the sole bargaining agent for a designated group of workers—first developed during the 1930s to encourage industrial unionism—has frequently been used by craft locals in the building trades to preserve or increase their interests and jurisdictions. Recent changes in provincial law now provide for statutory "accreditation" of employer associations giving employers' bargaining agents the same legal protection for their jurisdiction.

Several motives encouraged the introduction of employer accreditation legislation. One was to restore balance in collective-bargaining situations where a large number of small contractors faced a consolidated front of one or more building trades unions. A second purpose was to widen the area of collective bargaining and to encourage multiparty and multitrade negotiations in order to overcome the fragmentation of bargaining and the frequency of strikes and lockouts on individual projects. A further purpose was to counteract "whipsaw" tactics of unions playing one contractor against another and, by the same token, to compel individual employers, who might otherwise undercut the bids of other firms, to submit to the bargaining discipline of the association. In most of the provinces that have accepted accreditation procedures (Ontario, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland, Alberta, and British Columbia), once a provincial Labour Relations Board has accredited an employer organization and identified its area of bargaining jurisdiction, that organization becomes the sole collective bargaining agent for all unionized employers in the area. The various Labour Relations

Boards were also given wider powers to settle certain jurisdictional and other disputes.

Neither Manitoba nor Saskatchewan have found it necessary to make special provision in their Labour Relations Statutes for the construction industry, nor have they adopted the accreditation system. But in both provinces viable employer associations have emerged, and the results of collective bargaining for individual trades are frequently extended over a major part of the province. Quebec has gone much farther and has made industrywide bargaining in construction compulsory through labour and management organizations recognized by law as "representative", and the resulting agreements for each trade are legally binding on labour and management throughout the province.

Somewhat paradoxically, these developments run parallel to a continuing fragmentation and proliferation of specialized contractor groups because of the division of labour, where individual contractors contribute to the finished product through their workmen's highly specialized skills. Hence, despite the efforts of intertrade organizations, increasing specialization—which may indeed be beneficial from a productivity point of view—creates an incentive to the formation of new organizational subgroups and strengthens already existing ones. Such mutual reinforcement of organizational patterns on both the employer and the union side, combined with the contractual arrangements whereby one firm "employs" others in a chain that reaches from owner to general contractor, subcontractor, and sub-subcontractor, often results in a close community of interest between specialized contractors and "their" union in the protection of their trade. This community of interest may be closer than with other contractors or, on the union side, with other unions. This quasi employer/employee relationship among contractors on a project and the fact that substantial numbers of tradesmen sometimes appear as "employees" and sometimes as "proprietors", while still holding union cards, are peculiar to the construction industry. The effect is to blur the usually sharp distinction between employer interests and those of organized labour.

Thus, despite accreditation legislation and the emergence of a few new intertrade employer associations, there is not much evidence outside Quebec that multitrade bargaining has caught on (although multitrade site bargaining has occurred on some major hydro-electric, harbour, and other installations). The trend in Ontario, and to a lesser degree elsewhere, points in the direction of wider-area (sometimes provincewide) single-trade agreements as more acceptable to both the specialized contractor groups and corresponding unions.

What do these trends imply in terms of dispute settlements? The evidence so far is mixed. Unions have, generally speaking, accepted the concept of accreditation of employer associations and wider bargaining areas with little open opposition. Partly, this reflects the fact that these developments offer more orderly processes of bargaining. Moreover, in terms of wage gains, there is no evidence that organized craftsmen have been adversely affected by the emergence of employer associations. Indeed, as we have seen, the trend has been to higher wage gains, attesting perhaps to the joint interests of specialized contractors and tradesmen in times of relative buoyancy. For employers, one of the benefits of consolidated wider-area bargaining is somewhat greater security in the bidding process. With wage scales uniform for all contractors affected by accreditation, it removes wages as one element of uncertainty in the bidding process. The other side of the coin is that if all employers in an area are equally affected, there is not the same self-interest in resisting union demands.

The evidence for industrial disputes is also mixed. Wider-area or more centralized bargaining can generate more favourable labour relations by subordinating the narrower self-interest of union locals or individual employers to the broader considerations of all groups in the affected area. But broadening the area of bargaining also means a broadening of the area of possible conflict, with consequent effects over the region or province. Examples are the two prolonged provincewide strike-lockout disputes in British Columbia in 1970 and 1972 and, under somewhat different circumstances, the almost countrywide strike in elevator construction, which alone was responsible for about a third of all man-days lost because of industrial disputes in the construction industry during the first eight months of 1973. The statistics on man-days lost through strikes and lockouts in construction might suggest more union militancy in recent years. On the other hand, the 1973 negotiation rounds in Quebec and Ontario were relatively trouble-free, with moderate settlements and relatively few man-days lost in comparison with the preceding three years.

There are nonetheless some indications that both union and management would prefer a more rational bargaining environment, consistent with more stability in the industry and greater employment security for union members. One indication is a tendency towards adopting a common expiry date for separately bargained contracts. In Ontario, for instance, where a majority of contracts already expire at the same time, there are "negotiation rounds" in which the separate terms of settlements tend to be rendered more uniform. More recently, the Ontario government,

at the request of both management and union officials, appointed a Construction Industry Review Panel, under a neutral chairman, to encourage voluntary co-ordination for the 1973 bargaining round and to deal with longer-term issues such as the external and internal destabilizing factors in the industry in Ontario. The 1973 negotiation round was relatively trouble-free and at the same time produced more moderate results than previously. Whether the Panel will remain an effective instrument in creating a better labour relations climate in the Ontario construction industry, only the future will show.

Union-Management Relations

Employment insecurity among their members constitutes perhaps the most important single concern of union officials. Since "job security" provisions common to other industries are not applicable in construction, it is not surprising that construction unions seek to negotiate substitute clauses to protect specific jobs for their members. Some of the briefs presented to the Council expressed concern that such clauses too frequently restricted efficiency and the use of modern tools and materials. In this connection, it is worth distinguishing between "restrictive practices", which impede or prolong the production process, and clauses intended solely to induce greater employment security.

To probe this area, we undertook an analysis of 485 pattern-setting collective agreements in Canada.[12] Less than 15 per cent of the agreements contained provisions that could be construed as "featherbedding" (i.e., prescribing the number of men to be used on specified jobs) and here they were related to safety requirements. Restrictions on the use of specific tools were found in less than 2 per cent of the contracts, and in virtually none of the agreements were there provisions that could be interpreted as opposition to technological change. Indeed, half of the agreements specifically treat the introduction of new technology as a management right. In these matters, few differences exist in contract agreements between the separate trades. In interviews with both labour and management, we found general agreement that where restrictive work practices occur they are not normally the result of deliberate union contract policies but, more frequently, are due to either bad management

[12]Excluding Quebec, because the decree system there means that the nonwage terms of agreements covering each trade apply throughout the province. This situation makes numerical comparison with individual agreements difficult. In general, however, the findings apply equally in Quebec.

or to local frictions involving union personnel. Technological change, however, is a major factor in jurisdictional disputes among construction trade unions, and between them and industrial unions.

The survey clearly established that in the construction industry, "job security" and "union security" have, for all practical purposes, become synonymous. With few exceptions, the pattern-setting agreements stipulated the "closed shop" and the use of the "hiring hall" as the basis for hirings, and included jurisdictional clauses by which the individual locals were assured exclusive rights to certain types of work to be performed by their members. The "closed shop" is the exclusive formula for union security in Newfoundland, New Brunswick, Manitoba, Alberta, British Columbia, and with only minor exceptions in Nova Scotia and Ontario.[13] In Saskatchewan, the "modified union shop" is the prevailing formula. Integrally related to the closed-shop union security issue is the "hiring hall". Close to 90 per cent of the contracts contain provision for the hiring-hall system, by which all or most workers must be hired through the union local as long as the union can supply them. Again, close to 90 per cent of all contracts surveyed contained jurisdictional clauses, which defined, either in general terms or in specifically enumerated lists, the work activities to which their trades had claim.

For all practical purposes, therefore, construction union locals control the supply of skilled labour to unionized employers. Not surprisingly, this gives rise to some misgivings among employer groups, who consider that the closed shop and hiring hall tip the balance of bargaining advantage to labour. The hiring hall, in particular, has come under some attack. It has been termed an abdication of the functions of management, criticized for creating artificial shortages of skilled labour, and accused of being open to abuse through discriminatory practices against employers and union members. On the other hand, the hiring-hall system

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[13]Under the "closed-shop" formula, the employer obligates himself to hire and retain in his employ only members of the union with which the agreement is being reached. However, it has become customary to state that if the union is unable to provide workers from its own ranks, the employer is free to hire employees of his own choice, on condition that these employees become union members within a stipulated period or on condition that they will be replaced by union members when such become available.

The "union-shop" formula means that an employee may not have to be a union member at the time of hiring but must become a member within a specified period (7 to 30 days) and remain a member in good standing throughout the term of employment or the term of the agreement, and the employer must discharge any who fail to do so.

The "modified-union-shop" formula exempts from compulsory membership all employees who are not union members at the time the agreement comes into force, but requires all those taken on subsequently to join the union.

has sufficient positive features that neither labour nor individual employers show any strong inclination to do away with the system.

In the absence of continuous job security, seniority, and other protections usually conceded by employers, the hiring-hall system generally serves the interests of union craftsmen quite well. As for employers, hiring halls have proved helpful in that they represent an easy and inexpensive means of recruiting labour, with some assurance that the occupational skills of the tradesmen they receive will match the particular requirements of the jobs at hand.

From the point of view of the public interest, does the closed-shop and hiring-hall system warrant concern? As long as the industry is marked by instability and tradesmen endure periodic bouts of unemployment, there will always be criticism from one quarter or another about how workers are selected to fill individual job orders. And, as long as local jobs are uncertain and their members' incomes are threatened, craft locals inevitably will resist entry by new workers or competition from unorganized firms. And, regardless of who administers the selection and hiring—the unions, management, a manpower intermediary, or some tripartite combination of the three—some men will be favoured because of their skill, seniority, family, or other situations, just as some employers get more contracts than others. Indeed, in the United States, despite federal legislation that forbids the closed shop and requires hiring halls to allocate jobs openly to any qualified candidate, regardless of union affiliation, most contractors in practice go along with union control over hirings. In short, if improvements in the hiring-hall system in Canada are to be effected, they will require the full consent of both the unions and employers. Recent abuses, such as have come to light among some Toronto lathing firms and union locals, suggest that third-party participation in the hiring process might help to protect the public interest.

Apprenticeship and Training

Both labour and management, of course, share an interest in the competence of tradesmen, and both have found it advantageous to have provincial governments participate in setting the conditions and qualifications for entry into some of the trades. In most provinces, tight provincial regulation and compulsory certification are limited to those trades that involve public health and safety—in construction, the electrical, plumbing, and heating installation occupations. Quite a few other trades are

subject to voluntary certification. In Ontario, for example, bricklayers, stone and cement masons, carpenters, lathers, painters, and plasterers can all receive provincial certification upon successful completion of apprenticeship courses, but noncertified workers are also free to practise these trades. In the main, noncertified workers are hired by nonunion contractors. Some craft locals require a worker to be certified or registered as an apprentice before they consider him for membership. Wage disparities between unionized and nonunionized tradesmen are thus not necessarily a matter of restricted entry or of collective bargaining, as they may also reflect genuine differences in skills and productivity.[14]

Apprenticeship represents a traditional source of training for the building trades. It reinforces a craft union's jurisdictional claim to a family of related jobs[15] and assures organized journeymen that those entering the trade will be reasonably qualified. Since, however, apprentices represent a relatively cheap source of labour for employers, to prevent exploitation most provinces have training standards, durations of apprenticeship and, in some cases, maximum apprentice/journeyman ratios for each of the trades. In Ontario and Quebec, for instance, these ratios are fairly well detailed. In some other provinces—New Brunswick, Manitoba, and British Columbia—they are left to the separate collective agreements negotiated by the individual unions and employer associations.

The apprenticeship system in Canada has traditionally failed to graduate enough journeymen to meet ongoing demand. In most areas it is not because of the lack of adequate training facilities. Rather, apprenticeship usually involves three to five years' training—a period long enough for a turnaround in construction activity. Organized locals are naturally reluctant to accept increases in the number of apprentices per journeyman even in the good years, since this could jeopardize the job security of older members if conditions got slack. Employers, too, are often unwilling to take on training obligations when their own future contracts are uncertain.

Instability in the construction industry thus aggravates the orderly phasing of apprenticeship. There are roughly 30,000 apprentices in construction trades in Canada. Each year about 6,000 complete their

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[14]A recent study of construction workers in Metropolitan Toronto showed that the average hourly wages offered electricians, carpenters, pipefitters and plumbers, and sheet-metal workers registered at Canada Manpower Centres—the majority of whom had neither trade licences and certificates nor union affiliation—ranged from 10 to 40 per cent below the prevailing rates negotiated by union locals.

[15]This, of course, can be a mixed blessing. In times of rapid innovation, tradesmen who are too narrowly specialized naturally resist changes that threaten their livelihood.

apprenticeship, but about 4,000 quit. Only in trades subject to compulsory certification are there anywhere near the estimated minimum numbers of new graduates needed to meet the occupational demand.

Apprenticeship, of course, is not the only source of skilled construction workers. Canada traditionally obtains many tradesmen through immigration. Throughout the 1950s and 1960s, more skilled tradesmen entered Canada annually than graduated from apprenticeship courses. In general, immigrant workers tend to go to the metropolitan areas where construction activity is brisk, taking jobs particularly in the relatively unorganized residential sector. In Toronto, for instance, southern European workers occupy a considerable part of the residential construction field.

Besides apprentices and immigrants as sources of skilled labour, other workers, particularly those in the "floating pool" described earlier, obtain less specialized skills on the job or through Canada Manpower training courses. Each year, between 3,000 to 12,000 trainees take institutional courses to acquire or enrich their construction skills. But between 30,000 and 55,000 construction workers take adult training courses designed to equip them for nonconstruction jobs. Some outward movement from the industry is inevitable and desirable, especially since many workers use construction as a temporary staging ground between, or before, moving on to other more secure jobs. Nonetheless, with more stability, safety, and job security in the industry, some of the training and experience lost as a result of the high turnover of men in and out of the industry might be reduced.

Another element is the number of construction workers who take the adult training courses, not so much to leave the industry as to secure the trainee allowance in winter as an alternative to UIC benefits or possibly social assistance. Figures supplied by the Department of Manpower and Immigration indicate that, of the construction workers who completed nonconstruction skill courses and subsequently found jobs three months after their training, half are back in construction. Any learning experience, of course, is better than idleness, and Canada Manpower counsellors have no magic formula to discover whether the occupational goals of prospective trainees are genuine or not. However, in view of the numbers going into training from construction work—over one-quarter of the males taking regular courses—and the proportion who, at least initially, make no direct use of their training, further study of these programs would seem warranted.

There are interrelationships between instability in the industry and the flows of construction workers, including the now declining inflow of unskilled labour and skilled immigrant tradesmen. The interrela-

tionships also encompass the selection and training of new apprentices, the upgrading of journeymen, the retraining offered under the Canada Manpower Training Program, provincial certification of trades qualifications, and the job placement of organized, as well as unorganized, workers. In all these areas, there appears room for more co-ordination, taking account of forecasts of manpower needs by the unions themselves, by employer associations, or by provincial labour departments and the federal Departments of Labour and of Manpower and Immigration. For example, in impending northern energy-related developments an equitable balance could be struck between the job security concerns of organized tradesmen, the efficiency concerns of contractors, and the acknowledged needs of the native peoples for continuing employment opportunities.

Some Continuing Issues

Conflicting claims of unions over jurisdictional matters have long been recognized as one of the most aggravating characteristics of construction labour relations. Two basic types of jurisdictional conflicts can be distinguished—where two or more unions compete with each other for representation of the same category of workers (recognition disputes), and where unions come into conflict because each claims that its members alone are entitled to perform certain types of work (work assignment disputes).

In provinces other than Quebec, recognition disputes are relatively rare in the construction industry. Statistical data on the causes of individual disputes are notoriously weak. Those that are available, however, suggest that work assignment disputes, while attracting considerable public attention, are among the lesser causes of major work stoppages in the construction industry and are far surpassed by conflicts over wages and working conditions. Over the past decade, major work stoppages reported as having been caused by work assignment disputes may have numbered no more than four or five per year, except in 1966 and 1967 when there were about 20 each year.[16]

Many jurisdictional disputes are resolved either through provincial Labour Relations Boards or, in some cases where international affiliates are in dispute, through voluntary settlement by the parent agencies in the United States. Recently, the Canadian Labour Congress has instituted machinery for settling jurisdictional disputes between the construction trades unions and the industrial unions affiliated with the CLC. However, given the continuous process of technological adaptation,

[16]These figures do not include "nuisance" disputes or token walkouts lasting a few hours or so.

change, and specialization, it is doubtful that jurisdictional disputes can be eliminated entirely. To the extent that construction employment is exposed to uncertainty and irregular fluctuations and that union members attempt to protect and prolong jobs out of fear of unemployment, both recognition and work assignment disputes will be likely to occur.

A large body of federal, provincial, and municipal laws and regulations, referred to as Labour Standards legislation, is concerned with minimum wages for various categories of workers, hours of work and overtime, equal pay, weekly rest days, statutory holidays, vacation with pay, fair employment practices, safety regulations, and Workmen's Compensation in case of accidents or ill health. In construction, health and safety regulations are particularly important because of the exceptionally great hazards, on the one hand, and the relative lack of long-term interest of the employer in his workers, on the other hand. Traditionally, unions have had to play a very prominent role in matters of safety and adequate working conditions, and much of the legislation has followed rather than preceded developments in collective bargaining. However, the unions have only indirect influence over the *enforcement* of the legislation. Recent tragedies demonstrate clearly that in the construction industry very real problems still exist. Moreover, while many of the trades locals have been putting special emphasis on safety, their effectiveness is limited to those organized projects where their members are working. Protective legislation and enforcement are thus of particular importance to the nonunion construction labour force.

There is also the problem of nonpayment of wages and other violations of fair-wage legislation by "fly-by-night" operators and firms that tend to enter the industry on the upswing of the building cycle and leave it when business declines. The issue is complicated by the web of contractor, subcontractor, and sub-subcontractor relations, which can make it difficult to assign and assess financial and legal responsibility. In essence, the issue has to do with the conditions of entry and exit among construction employers. While a number of experiments have been carried out in assigning responsibility, in bonding or licensing, or in making the prime contractor responsible for the payment of wages of subcontractors, ensuring employer responsibility and/or recovery through legal action, without at the same time building up a dreadful administrative apparatus, will not be easy.

We referred earlier to the gains made by construction workers in matters of income and fringe security, including pension and health schemes. Lack of continuity in employment with one employer, however, creates problems for workers in relating the separate plans offered by

individual enterprises to a more universal security system. Different employers that negotiate with different locals of the same union may have different plans. In most cases, the unions have been left by management to administer pension and health programs, but this does not necessarily ensure continuity of coverage or portability in the event that workers move between sectors. Moreover, there are also major discrepancies between the pension plans negotiated between individual locals of the same union. The unpredictable and irregular unemployment of their members adds to the difficulties.

No systematic industrywide survey has ever been undertaken on the frequency, coverage, contributions, benefit structure, funding policies, administrative costs, etc., of negotiated pension plans in the construction industry. Only in Quebec does the construction worker have an assured, portable, multitrade pension scheme. Yet there is a growing interest in the pension issue, and it is hoped other provinces will enter this field. For, in an industry where union membership in some sectors accounts for less than half the work force, schemes such as the Quebec one are needed for that part of the relatively permanent construction labour force that is now unprotected.

Industrial Relations in Quebec: A Special Case

Industrial relations in the Quebec construction industry present features unique in North America, generally in keeping with the European concept of extension of contract. Since 1968, union membership in the construction industry has been compulsory. Collective bargaining is carried out in a multiparty, multitrade setting by central officials of "representative" unions—i.e., those having as members at least 20 per cent of the total numbers of tradesmen in the industry—and five employer associations organized according to the main kinds of construction (industrial and commercial, residential, roadbuilding and engineering, electrical, and mechanical). Once agreements are reached freely between the negotiating parties, they are enforced by government Order-in-Council or decree over all workers and employers in the defined sector.

Vested in the Quebec government, also, is the responsibility for defining the sectors and types of enterprises that belong to the construction industry and, therefore, come under the contractual arrangements extended by decree. The continuing application and administration of the decrees were originally the responsibility of joint labour-management committees established at regional levels. But, in 1971, this system was

replaced by a Construction Industry Commission (CIC), with regional offices rather than committees. The Commission, which acts as an advisory body to the Lieutenant Governor in Council, is composed of six labour representatives, three each from the Quebec Federation of Labour and the Confederation of National Trade Unions; six management representatives; and a president who must reflect the unanimous choice of both parties. In the absence of such unanimity, the Minister of Labour, or his representative, chairs the Commission.

The series of legislative reforms introduced during the last decade to centralize administrative responsibility from the regional joint committees to the CIC and the Department of Labour and Manpower were aimed at measurably improving and stabilizing working conditions in the Quebec construction industry. In 1963, the government introduced a portable pension plan for all organized construction workers, a plan subsequently put under the administration of the Quebec Pension Plan. The plan is still the only scheme of its kind in North America. Extended through the decree system, as well, were significant health benefits, overtime, vacation leave, statutory holidays, and other related clauses. To rationalize and improve the qualifications of tradesmen, including apprentices, the responsibility for vocational training and for commissioning apprentices was transferred from the joint committees to the Department of Labour's Directorate of Manpower. A third objective was to improve the relative earnings of construction workers and bring them more into line with earnings in other provinces. Associated with this objective was that of narrowing the wage differences between unskilled workers and skilled tradesmen, and between outlying rural regions and the two major centres of Montreal and Toronto.

To a very substantial degree, these objectives were achieved. In the process, however, there were some countervailing effects. Relatively high wage gains and the narrowing of interregional and interoccupational differences undoubtedly benefited many workers. But they resulted, as well, in some loss in the competitive advantage that lower wage costs had previously given to rural contractors. And they encouraged the introduction of more capital-intensive techniques and the displacement of many thousands of workers after the year of peak activity in 1966.

Quebec has been less successful in achieving greater employment stability through direct controls over entry into construction jobs. In late 1970, the Quebec government introduced an ambitious program of identity cards and work permits for all construction workers, skilled or unskilled, based on past working experience in construction. Employment security was to be assured to the "professionals" of the industry

as follows: first to be hired were the permanents of the regions where work was available, then the permanents from other regions; should more work be available, first claim was that of the regional reserves, then those of other regions, according to the number of hours each had worked in construction during the preceding period. To facilitate control, Quebec employers were encouraged by the CIC to hire permit-holders only through union hiring halls or Quebec Manpower Centres. This discouraged the use by both construction firms and workers of manpower and employment programs offered by Canada Manpower offices.

The system was never effective and has undergone continuous modification. The identity cards initially were issued almost on demand; for example, in 1971-72, there were roughly 163,000 cards issued and an estimated 60,000 to 85,000 continuing jobs in construction. Hence there was no close control over entry (apart from non–Red Seal tradesmen seeking to enter from outside the province). The highly seasonal nature of construction made effective administration and enforcement difficult. In June 1972, the program was taken over by the CIC, which replaced the old identity cards with new work permits issued to all persons who had worked in the industry during the previous 18 months. This included about 115,000 workers. But again, with such a fluid labour force, the system was difficult to control. Many workers with identity cards moved on to other industries but retained their cards. Others were employed without permits. In attempting to determine how many permits should be issued for each region periodically, the Commission relied on advice from the regional joint committees, the provincial Labour department and the federal Departments of Labour and of Manpower and Immigration but, by the time all this information had been gathered, analysed, and checked with employers, the system proved too vexing and awkward.

In October 1972, the obligation to carry work permits was limited to tradesmen only. Hence, by 1973, the CIC had abandoned the idea of controlling or stabilizing the total construction labour force in Quebec. What now remains is simply a system of permits that serve as qualification certificates for skilled tradesmen. No control is exercised over unskilled labour. Indeed, of the roughly 140,000 men constituting the Quebec construction industry labour force in 1972, it was estimated that about 63,000 skilled workers still have work permits left over from the earlier period, another 37,000 qualified workers have no such permits, while about 40,000 nonqualified workers still carry the old cards.

The flow of workers in and out of construction in Quebec, confronting the CIC in its efforts to control the supply of construction manpower, is not easy to portray. Nonetheless, some flavour of the movement is

Table 3-5

Distribution of Wage-Earners in the Quebec Construction Industry According to Earnings Received from Construction and Other Industries, 1971

Construction Wage Categories	Wage-Earners		Average Construction Wages		Average Earnings from Other Sources		Total Earnings	
	Number[1]	Per cent	Dollars	Per cent	Dollars	Per cent	Dollars	Per cent
0— 499	19,897	15	221	10	2,061	90	2,282	100
500— 999	11,720	9	737	31	1,672	69	2,409	100
1,000—1,499	8,950	7	1,237	47	1,415	53	2,652	100
1,500—1,999	7,489	6	1,744	58	1,268	42	3,011	100
2,000—2,499	6,755	5	2,245	68	1,064	32	3,309	100
2,500—2,999	6,142	5	2,750	75	908	25	3,658	100
3,000—3,999	11,171	9	3,498	83	717	17	4,215	100
4,000—5,999	20,526	16	4,976	91	485	9	5,461	100
6,000—7,999	18,227	14	6,985	94	403	6	7,388	100
8,000—9,999	12,096	9	8,866	96	358	4	9,224	100
10,000 plus	6,941	5	11,747	99	92	1	11,838	100
All Categories	129,914	100	4,053	81	968	19	5,021	100

[1]These numbers include most, but not all, of the construction wage-earners in Quebec in 1971.

SOURCE: Data from the Quebec Department of Labour.

found in Table 3-5, which shows the source of earnings and the number of workers who at some time were employed in construction during 1971. Twenty-four per cent of the men working in the industry averaged less than $1,000 in wages from construction work and more than twice that amount from other lines of work. Many in this group were students. Another 23 per cent averaged less than $3,000 from work in the construction industry, supplemented by $900 to $1,400 from other sources. In all, less than one-third of the men identified in the CIC survey worked long enough in construction during 1971 to earn more than $6,000.

One of the continuing problems in Quebec has been the rivalry between internationally affiliated trade unions within the QFL, concentrated mostly in the two major metropolitan areas, and multitrade CNTU organizations. The issue is joined in the matter of recognition—i.e., establishing the required 20 per cent membership "representativeness" in order to be party to centralized collective bargaining. It is not helped by the current legislation, which allows a six-week open period starting six months prior to the expiry date of each decree, during which workers may change their union allegiance. During this period, there have been many instances of intimidation and coercion of workers.

Interunion rivalries came to a head at the most recent collective bargaining negotiations of 1972-73. The original Quebec legislation presupposed that all "representative" bodies would join in the bargaining. Nonparticipation by any one organization could render all negotiations "illegal". In 1973, the CNTU and one employer group refused to join in the negotiations. The QFL unions, nevertheless, succeeded in concluding agreements with four of the five employer associations. Faced with the choice of declaring these agreements illegal, the Quebec government introduced new legislation (Law 9), which replaced the right of veto of a "representative" organization by a double-majority rule which, with some modifications, said that agreements reached between organizations representing 50 per cent or more of the membership would become the basis for the decree, binding on the whole industry. This, of course, has given a marked advantage to the QFL unions, which account for substantially more than 50 per cent of construction workers in almost all trades. Whether, in the longer run, this will jeopardize the whole process of centralized multitrade bargaining in Quebec, or set in train other institutional changes and legislative amendments, remains to be seen.

PART 2

ANALYSIS OF CYCLICAL INSTABILITY

4

Measuring Instability

The main purpose of this chapter is to introduce the analysis of cyclical instability in construction by discussing concepts and techniques of measurement. It begins, however, with some comments on how instability appears to, or is perceived by, some of the groups involved in the construction process. Then the growth path of construction, as it appeared in Canada since 1950, is outlined both by chart and text. Various concepts, or aspects, of instability are then introduced, and possible ways of measuring them are discussed. Next, the techniques of measurement actually employed in our investigation and underlying the analysis contained in subsequent chapters are outlined. Finally, the application of some of these techniques of measurement is illustrated by a few comparisons through time and among countries.

INSTABILITY AS PERCEIVED BY PARTICIPANTS

Some insights into how instability is viewed by key groups involved in construction activities were gained from the 53 briefs received from interested parties and from over 300 interviews conducted across the country by Reference researchers. For the industry as a whole, including related services and suppliers, instability is experienced as alternating periods of good and bad business in an otherwise expanding industry. More particularly, "cyclical" instability is perceived as irregularly recurring upswings and downswings (surges and slumps, or booms and busts) in the level of activity of the industry, or of that part of the industry in which the contractor, subcontractor, related professional, or supplier

operates. These people regard the swings as originating mainly from outside the industry in the form of shifts from year to year in customers' demands for construction and in changes in the availability and cost of investment funds. When they speak disapprovingly of the use of construction by government as a "valve" for stabilizing the economy, they are more often referring to the indirect influence of government on construction activity through general economic policies than to direct public spending on construction. They recognize, however, the fragmented nature of the construction industry and sometimes complain of excessive ease of entry into it. They tend to see the industry and its affiliated professionals and suppliers as bearing the main brunt of the instability in the form of industrial insecurity and labour unrest, difficulty in retaining skilled workers, lower productivity and higher costs of production, hindrance to long-range corporate and management planning, discouragement of research, and increased bankruptcies. These effects of instability in construction are seen as spreading their harmful influence throughout the economy.

More specifically, consider how instability appears to construction companies, construction labourers, and lenders of construction credit. In construction booms, firms face a good stream of contracts on which to bid, and there is plenty of work to do at relatively attractive prices. Under such conditions of expansion, it is unnecessary to squeeze overheads in bidding or to run serious risks of financial loss, because increases in the prices of materials or labour can be passed on. During construction slumps, however, opposite conditions tend to prevail—contracts are harder to find; bidding is more competitive; and profits are more precarious.

From the point of view of construction workers, little distinction seems to be made between seasonal and cyclical instability. For them, unemployment—whatever the cause—is a serious problem or threat; and the longer it lasts, the more serious it is. During construction booms, the period between projects in which workers must search for a new job can be quite short, and their choice can be more selective with respect to location, employer, and the like. In slumps, however, suitable jobs are scarce, or even nonexistent locally, particularly for unskilled workers.

Construction instability seems to be viewed by lenders in two main ways. The cycle has an influence on the credit worthiness of borrowers, causing it to vary in accordance with the firm's shifting financial situation and market prospects. The greater the instability, the more likely the firm is to encounter adverse shifts in its revenues or its costs. Construction instability also has an influence more generally on how lenders

adjust their mix of loans in relation to credit market conditions and current monetary policy.

CONSTRUCTION GROWTH PATH

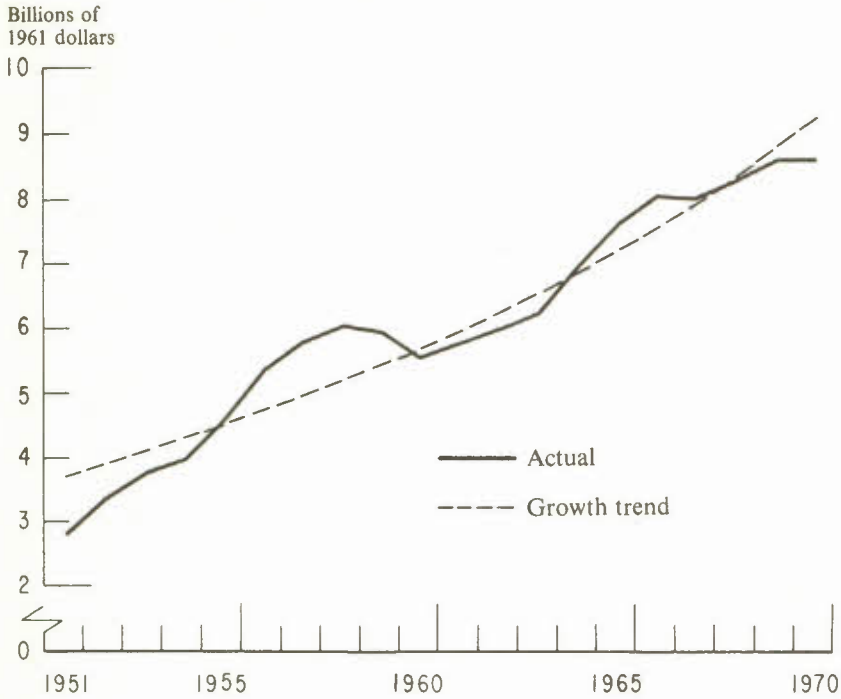
There is no single statistical measure that will adequately describe all aspects of instability in the construction industry. Local changes in demand, for example, are important to construction firms. Changes in local, regional, and national employment are of interest to labour. Changes in national economic activity, in residential and nonresidential construction, and in money markets and lending rates are of concern to financial institutions. And the impact of government policies on construction activities, on other sectors of the economy, and on labour and capital is relevant to policymakers. Obviously, to meet these information requirements, a great variety of statistical measures are needed.

Even where there is only one measure for a particular aspect of the construction industry, this measure can be presented in a number of ways. Data on construction expenditures are available on a monthly, quarterly, and annual basis, at both regional and national levels. Using annual data to exclude seasonal variations, national instability in construction expenditures can be described by an underlying growth path, by year-to-year changes in expenditures, or by departures or "deviations" from trend.

To some people outside the industry, the term "cyclical instability" may convey the notion that the ups and downs of construction activity occur at regular time intervals. In reality, they are more like irregular variations around a long-run path of growth. Over the past two decades, output of the Canadian construction industry—measured in constant-dollar construction expenditures—grew at an average annual rate of 4.8 per cent. This is illustrated in Chart 4-1, where the growth path of construction output from 1951 to 1970 is represented by a smooth dashed line. The actual values of annual construction output fall above or below this trend line. They are represented in this chart by the uneven solid line and reflect the year-to-year variations around the long-run growth path.

To other people, including some in the construction industry, the term "cyclical instability" may convey the impression that there are year-to-year changes in the rate of growth that vary more or less regularly from one period of years to the next. Measured in this way, Canada's

Chart 4-1
Growth Trend and Actual Values of Construction Output, 1951-70



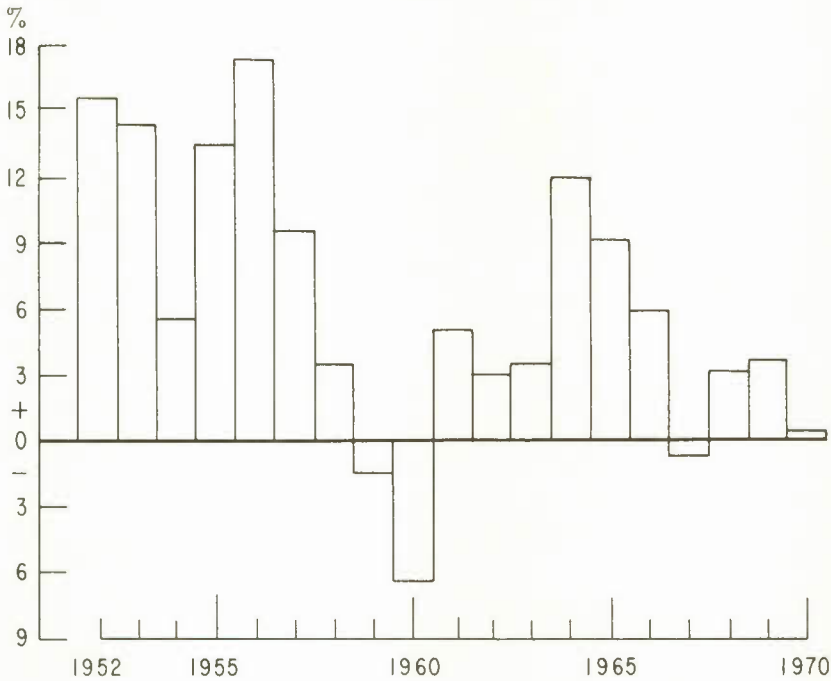
SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

construction instability is illustrated in Chart 4-2. For example, the percentage increase of 15.5 per cent from 1951 to 1952 represents an increase of $445 million over the 1951 volume of construction of $2.86 billion. The largest year-to-year increase in construction was 17 per cent from 1955 to 1956, and the largest decline was 6 per cent from 1959 to 1960. All other changes fall somewhere in this range, but most are on the positive side, showing that there was almost continuous growth in Canada's construction output and that instability frequently modified, but rarely interrupted, this growth. There is little to suggest, from this viewpoint, that the annual changes in construction output followed a regular cyclical pattern.

Although annual percentage changes in construction expenditures are widely used indicators of construction activity, they have a shortcoming for measuring instability. There is no measurement problem if there is no growth and if construction output varies around some constant output level. But when there is growth and construction output reaches higher

levels in later years, a given percentage change will represent a larger change in construction output in the later years than the same percentage change will represent in the earlier years. Furthermore, an average of annual percentage changes—as a measure of growth—will vary with the timing of construction expenditures. If the same construction output is added in the early years, the average annual percentage change will be greater than if it is added in later years. This problem can be avoided by measuring instability in terms of departures or deviations from the growth trend.

Chart 4-2
Annual Percentage Change in Construction Output, in 1961 Dollars, 1951-70

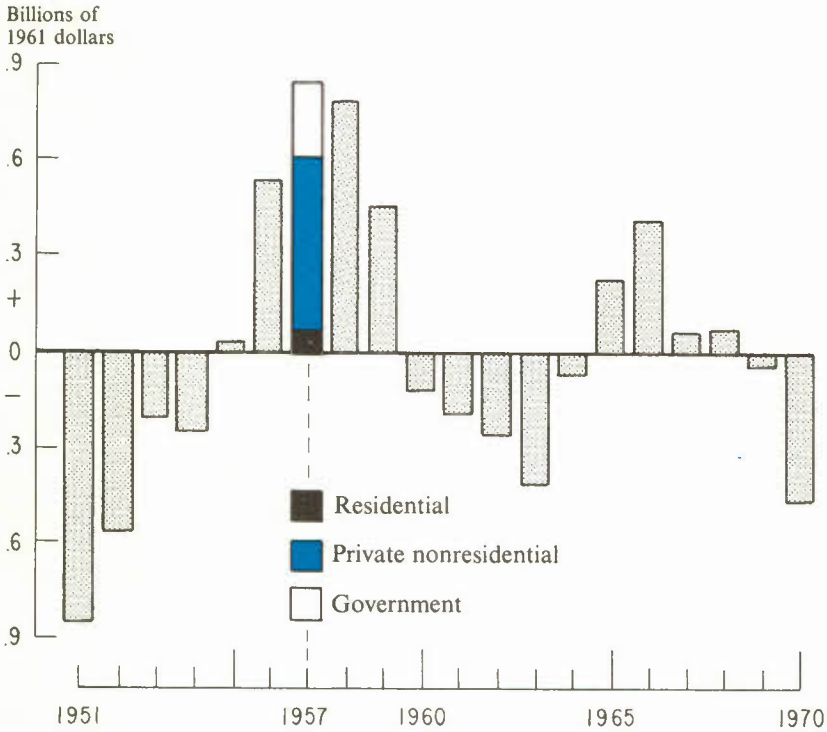


SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

In Chart 4-3, the instability of construction output is shown as variations around a horizontal line representing the growth trend of 4.8 per cent. Deviations are marked off above the horizontal line when actual construction output exceeded the growth trend value, and they are marked off below the horizontal line when actual construction output fell short of the trend value. For example, in 1951 the estimated trend value

was $3.74 billion and the actual value was $2.86 billion (Chart 4-1). Therefore, the 1951 departure from trend amounted to $880 million (Chart 4-3). The annual estimates of these variations are all in constant dollars and represent deviations from trend in the output of the construction industry.

Chart 4-3
Annual Deviations of Construction Output from Growth Trend, 1951-70[1]



[1] An explanation of components of instability in 1957 is given in the text.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

There were variations in both directions, but the positive deviations were not the mirror image of the negative deviations. Also, the deviations changed, not only from year to year but gradually over time. They were smaller in more recent years. Distributing all of these deviations in construction output over the years 1951-70 would result in the trend line portrayed in Chart 4-1. The total construction output represented by this trend would exactly equal the actual construction over the period.

MEASUREMENT CONCEPTS AND METHODS

Usually we have chosen to measure the rate of growth by fitting a trend line to the data, calculating the corresponding year-to-year percentage changes in the trend values, and referring to that as *the* rate of growth of the series. These estimated trend lines were used to analyse instability of the main components of construction in the past. They are not meant to imply projections or appropriate trends for the future. Prospective developments, desirable performance of the components, and related stabilization policies are discussed in subsequent chapters.

From the point of view of this study, the most important characteristic of a series is the degree to which it varies around its trend. If one considers only annual or seasonally adjusted quarterly data, the volume of construction will consist of the trend amount, plus or minus a deviation from the trend. If the deviation is positive, it will generally be because construction activity is cyclically high, although small positive deviations may sometimes be due to chance factors. If the deviation is negative and not small, it will generally be because construction activity is cyclically low. A full construction cycle consists of a period of high activity plus a period of low activity, together with the time intervening between these two. Although construction cycles are recurrent, their length in years is variable. Cycles vary not only in their length, but also in the degree to which construction goes above trend in the cyclical high and the degree to which it goes below in the cyclical low. Despite this variation, it is useful to have some measure of the typical size of the upswings and downswings. Several possible measures exist, and whichever one seemed most appropriate for the job at hand has been used.

When annual observations provided the only reliable data, as in the case of all nonresidential construction, we usually calculated the average value of the deviations, regardless of their signs, from the estimated trend and used this average—that is, the average absolute deviation—as our measure of cyclical instability. The deviations themselves are sometimes measured as percentages of the trend value, sometimes as dollar values.

Since good quarterly observations were available for housing starts, use was made in Chapter 6 of the techniques of the U.S. National Bureau of Economic Research that measure instability in terms of "cycle relatives". Upper and lower turning points in cycles of housing starts were visually identified. Then the duration and extent or amplitude of these cycles were computed. In order to assess "countercyclicality" in housing starts, the relative frequency of quarterly swings in the opposite direction from general business cycles was calculated.

Generally, however, the extent of instability was measured by "component analysis". This procedure was found to be useful in many ways. It was used to estimate the contributions of the various types of construction to total construction instability, the contributions of the various regions to national construction instability, and the contribution of total construction instability to instability of the Gross National Product. For example, in the year 1957 (Chart 4-3), when construction was at a peak and exceeded the long-run trend by roughly $850 million, residential construction contributed approximately $90 million to this instability; industrial construction contributed $520 million; and government construction, $240 million. The extent of total construction instability, and the contribution of each component, varied from year to year. To arrive at an estimate of the contribution of each component over a period of years, the annual contributions of each were added and expressed as a share of the total instability over the years.

Three characteristics of a component determine what its share of total instability will be. First, the bigger the component, the larger—all else equal—will be its contribution to total instability. There is, for example, over twice as much nonresidential construction as residential and, on that ground alone, nonresidential could be expected to contribute much more to the instability of total construction. Second, the more unstable a component—that is, the larger its average percentage deviation from its *own* trend—the larger will be its contribution to instability relative to what might be expected on the basis of its size alone. Residential construction has been about twice as unstable as nonresidential, and therefore it would contribute to the instability of total construction much more than its relative size would imply. The third characteristic of a component that helps to determine its contribution to overall instability is the degree to which it swings in harmony with the total to which it is compared. If the component is almost always above its own trend when the total is above its own trend, and below when the total is below, it will contribute much more to total instability than if it often fails to move in the same way as the total does. Conceivably, a component may be so regularly above trend when the total is below, and *vice versa*, that it is "countercyclical" and actually lessens the instability in the total of which it forms a part. This phenomenon will show up as a negative contribution by the component. If, for example, residential construction was in boom when total construction was in recession or conversely, one would find that the contribution of residential construction to instability in total construction was negative or countercyclical. As will be shown later, this happened to a small extent during the 1960s (see Chapter 5, Table 5-2).

Applications of component analysis to instability of GNP in both Canada and the United States are given in the last section of this chapter (Tables 4-2 and 4-3, and Chart 4-5).

The analysis and measurement of the extent to which different series lead, lag, or are coincident with other series, as well as questions as to whether construction is cyclical or countercyclical with respect to the business cycle, whether monetary policy acts upon construction with a long or short lag, and what impact construction has on the output of other industries were mostly handled by the use of an econometric model of the Canadian economy called CANDIDE.[1] For analysis of the housing market, a special model was constructed. In addition, certain aspects of government construction were examined in a systematic framework of quantitative analysis.

The construction industry is further characterized by two kinds of instability that cannot be measured by the techniques described, but which are important for a full understanding of the industry. We have in mind the impermanence of employer/employee and interfirm relationships, and seasonal swings. We also considered these types of instability, paying particular attention to the possibility that they might be intensified by the construction cycle.

COMPARISONS THROUGH TIME

Swings in the economy, the investment sector, and construction activities can be readily summarized by the methods described in this chapter. Comparison of periods before and after the Second World War suggests that there was a significant reduction in the instability of the economy as well as in the instability of the investment sector. From 1926 to 1939, Canada's economy grew at less than 1 per cent per year and, from 1948 to 1970, it grew at 5 per cent (Table 4-1). At the same time, the average annual instability was reduced from 9 to 2 per cent. This reduction in the instability of the economy was due to improvement in each sector, especially the investment sector where the negative growth trend was reversed and where the average annual instability dropped from 40 to 8 per cent.

[1]The name CANDIDE is an abbreviation of the CANadian Disaggregated InterDepartmental Econometric project. For more detail, see Economic Council of Canada, *Ninth Annual Review: The Years to 1980* (Ottawa: Information Canada, 1972), pp. 3-7.

Also the three parts of investment—machinery and equipment, residential construction, and nonresidential construction—were all affected in a similar way. Their negative growth trends were reversed and their instability sharply reduced.

Table 4-1

Growth and Instability of Canada's Economy and the Investment Sector, 1926-39 and 1948-70

(1961 dollars)

	Average Annual Growth Rate		Instability[1]	
	1926–39	1948–70	1926–39	1948–70
	(Per cent)			
Economy				
Consumption	1.0	4.8	6	2
Government	1.8	5.3	8	6
Investment	−7.0	4.6	40	8
Total economy or GNP	0.6	5.0	9	2
Investment				
Machinery and equipment	−5.0	4.9	34	11
Nonresidential structures	−8.0	4.7	32	10
Residential structures	−9.0	4.1	26	11
Total investment	−7.0	4.6	40	8

[1]Estimates of absolute average percentage deviations from respective growth trends, as described in the text.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

A FEW INTERNATIONAL COMPARISONS

In general, international comparisons of highly developed countries show that a high rate of economic growth is usually associated with a high rate of growth in construction. The relationship between the stability of the economy and the stability of the construction industry is much less pronounced, however. Countries with stable economies may or may not have a high degree of stability in construction. Also, there is no consistent relationship between the rate of economic growth and the degree of stability. Some countries with a high rate of economic growth have a low degree of stability; others have achieved both a high rate of growth and a high degree of stability.

Compared with major European countries and Japan, Canada ranks medium to high in instability of construction, but low in economic growth. A comparison with growth and instability in the United States is somewhat more favourable to Canada. Over the postwar period 1948-70, Canada's economy grew at an average annual rate of 5.0 per cent, while the U.S. economy grew at a rate of 3.8 per cent. Canada's economy was also less unstable—that is, 2.2 per cent compared with 2.9 per cent for the United States. Thus Canada's economy grew faster and was more stable than the U.S. economy. This is shown in Table 4-2 and illustrated in Chart 4-4.

Table 4-2

Growth and Instability of GNP Expenditure Components, Canada and United States, 1948-70

(Canada, 1961 dollars; United States, 1958 dollars)

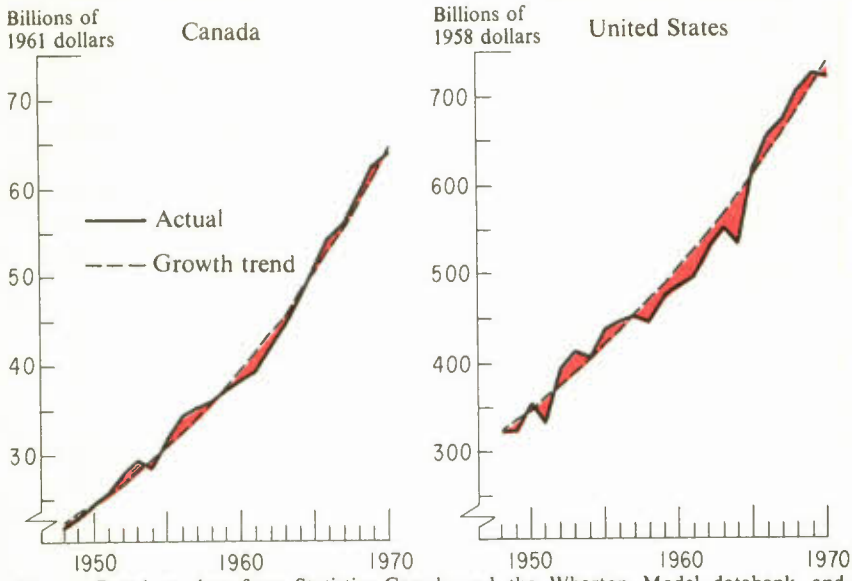
	Average Annual Growth Rate		Instability		Contribution to Instability	
	Canada	United States	Canada	United States	Canada	United States
			(Per cent)			
Consumption	4.8	4.0	1.9	2.0	37	36
Government expenditures	5.3	4.0	6.1	8.8	29	35
Investment	4.6	3.3	7.7	8.5	68	34
Net trade	—	—	—	—	−34	−5
GNP	5.0	3.8	2.2	2.9	100	100

SOURCE: Based on data from Statistics Canada and the Wharton Model databank, and estimates by the Economic Council of Canada.

According to Table 4-2, consumption expenditures in both Canada and the United States were much more stable than investment and government expenditures. It is not self-evident, however, how much each of these components contributed to the overall instability of GNP expenditures. Consumer expenditures accounted for roughly 60 per cent of the total expenditures in both countries; and government and investment expenditures combined, for about 40 per cent. If instability were distributed evenly over all sectors of the economy, each sector would contribute to the instability of the economy in proportion to its size. In fact, however, investment and government expenditures contributed over two-thirds to instability of GNP; and consumer expenditures, only one-third.

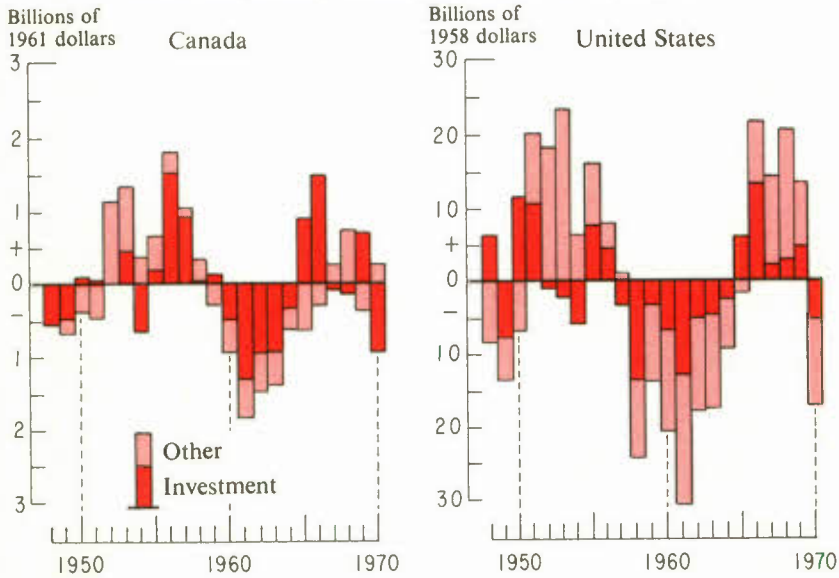
In Canada, the investment sector contributed more than any other sector to the instability of the economy. This is illustrated in Chart 4-5, where the deviations from GNP trends are broken down into investment and "other" GNP components.

Chart 4-4
Growth Trends of Gross National Expenditure, Canada and United States, 1948-70



SOURCE: Based on data from Statistics Canada and the Wharton Model databank, and estimates by the Economic Council of Canada.

Chart 4-5
Contribution to Instability of Gross National Expenditure by Investment and Other Components, Canada and United States, 1948-70



SOURCE: Based on data from Statistics Canada and the Wharton Model databank, and estimates by the Economic Council of Canada.

A more detailed breakdown of investment components over the 1948-70 period shows that there were similarities, as well as some differences, between Canada and the United States. As shown in Table 4-3, total investment as a share of Gross National Product accounted for 16 per cent in the United States and 19 per cent in Canada. The shares of GNP in both countries were identical for the three components—machinery and equipment, inventory, and residential construction—but, in Canada, the share of nonresidential construction was 7 per cent compared with 4 per cent in the United States.

Table 4-3

Investment Components and Their Contribution to Instability of GNP, Canada and United States, 1948-70

(Canada, 1961 dollars; United States, 1958 dollars)

	Average Annual GNP Share		Contribution to Instability of GNP	
	Canada	United States	Canada	United States
	(Per cent)			
Machinery and equipment	7	7	24	16
Residential construction	4	4	9	1
Nonresidential construction[1]	7	4	22	5
Inventory	1	1	13	12
Total investment	19	16	68	34

[1]Includes private and public.

SOURCE: Based on data from Statistics Canada and the Wharton Model databank, and estimates by the Economic Council of Canada.

The differences between Canada and the United States in the contribution of these four investment components to the instability of GNP were more pronounced, however. In Canada, total investment accounted for two-thirds of the instability of GNP, whereas in the United States it accounted for only one-third. Each of the four investment components contributed more to instability of GNP in Canada than in the United States. Most striking, perhaps, were the differences in the contribution of construction to instability. Whereas investment in nonresidential structures contributed only 5 per cent to instability of GNP in the United States, it contributed 22 per cent in Canada; and whereas housing in the United States contributed only 1 per cent to instability of GNP, it contributed 9 per cent in Canada.

These findings, emerging from comparisons with the United States, confirm the traditional point of view that swings in investment contribute

in a major way to the instability of the economy. They also show that there is no necessary correspondence between the instability of the economy and the rate of economic growth. Over the postwar years, Canada's economic growth has been stronger and more stable than that of the United States but, in Canada, investment in residential and nonresidential construction has contributed more to the instability of the economy than has been the case in the United States.

5

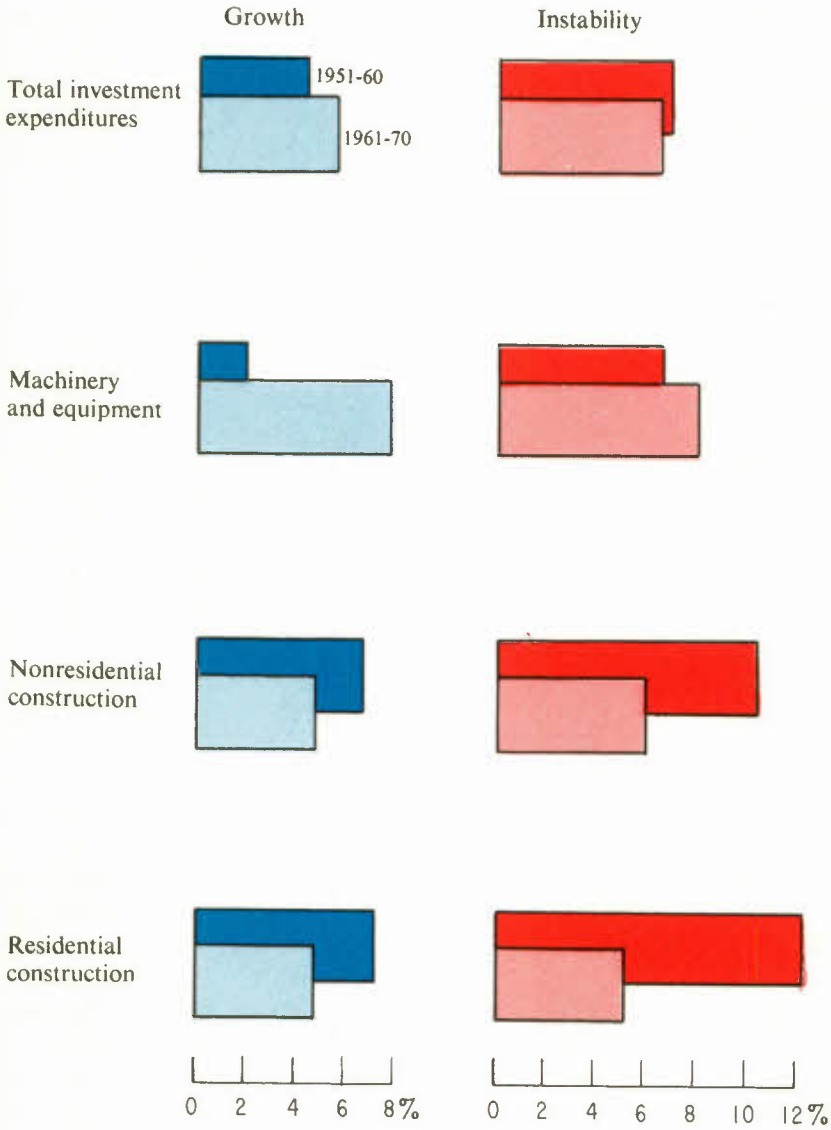
Construction, Other Industries, and the Economy

This chapter provides a profile of growth and instability of construction. It serves primarily to relate various aspects of construction activities to other industries and the national economy. Specifically, the objectives of this chapter are to describe growth and instability of construction in the economy, to identify the main sources of instability in construction, to trace the impact of instability in construction on other sectors of the economy, to describe regional differences in construction activities, and to appraise the potential effects of certain stabilization measures, past and future. The analysis is based on developments of the Canadian economy since the Second World War. In general, the measures of growth and instability outlined in Chapter 4 are used.

TRENDS IN GROWTH AND INSTABILITY

Canada's economic growth improved significantly from the prewar to the postwar period and, at the same time, a higher degree of stability was achieved. These trends continued during the postwar period, during which Canada's economic growth accelerated from an average annual rate of 4.6 per cent in the 1950s to a rate of 5.5 per cent in the 1960s. This improvement in economic growth stemmed from a higher rate of capital investment and a faster expansion of government expenditures. While the growth of the economy accelerated, its degree of instability (measured in average annual variations around trend) declined from 2.1 per cent during the 1950s to 1.2 per cent during the 1960s because of greater stability in consumer and government expenditures. The instability of total investment

Chart 5-1
Growth and Instability of Investment Expenditures[1]



[1] Average annual estimates in 1961 dollars.

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

remained virtually unchanged, however, with the instability of machinery and equipment investment increasing and that of construction expenditures diminishing (Chart 5-1).

These comparisons suggest that, from the decade of the 1950s to that of the 1960s, there was a notable improvement in the performance of the Canadian economy. There was faster growth and greater stability in general, a more rapid rate of capital investment, and a marked improvement in the stability of construction expenditures. But there were also unfavourable developments: a decline in the rate of growth in construction activities, with its unfavourable impact on other sectors of the economy; and a continuing imbalance in regional economic growth.

THE CONSTRUCTION INDUSTRY COMPARED WITH OTHER INDUSTRIES

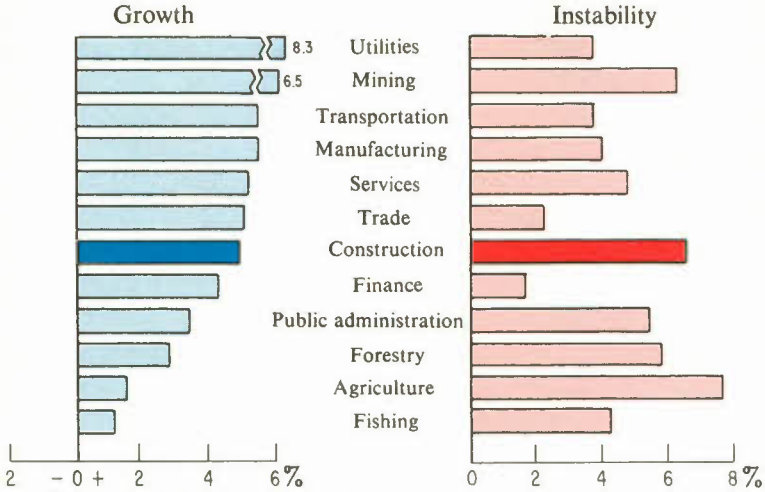
Among Canada's 12 major industries, construction ranks near average in size and growth. Over the postwar period 1948-70, its size, in terms of annual net output (i.e., value added), accounted for 5.9 per cent of Canada's Real Domestic Product. This placed construction seventh among 12 industries, between public administration with 6.5 per cent and agriculture with 5.1 per cent. Over the same period, the growth rate of construction output was 4.9 per cent, the same as the average annual rate of growth in net output of all industries. However, the instability of output of the construction industry at 6.5 per cent ranked very high—second only to agriculture at 7.7 per cent (Chart 5-2).

Measured in terms of employment, the construction industry comes closer to the average. Taking annual man-hours as a measure of labour input, the share in total employment, and the growth rate and instability of construction employment, ranked near the middle of the 12 industries. The instability of employment in the construction industry averaged 41 million man-hours or 5.1 per cent of construction employment. This instability of employment was considerably less than the instability of employment in fishing, mining, and forestry and was also less than the instability in construction output (Charts 5-2 and 5-3).

This does not lend much support to the argument that employment in the construction industry is much more unstable than in other industries. To conclude, however, that there are no serious problems is to oversimplify. Component analysis of employment data shows that, from 1948 to 1970, man-hours of employment in manufacturing and construction,

Chart 5-2

Growth and Instability of Real Domestic Product, by Industry, 1948-70[1]

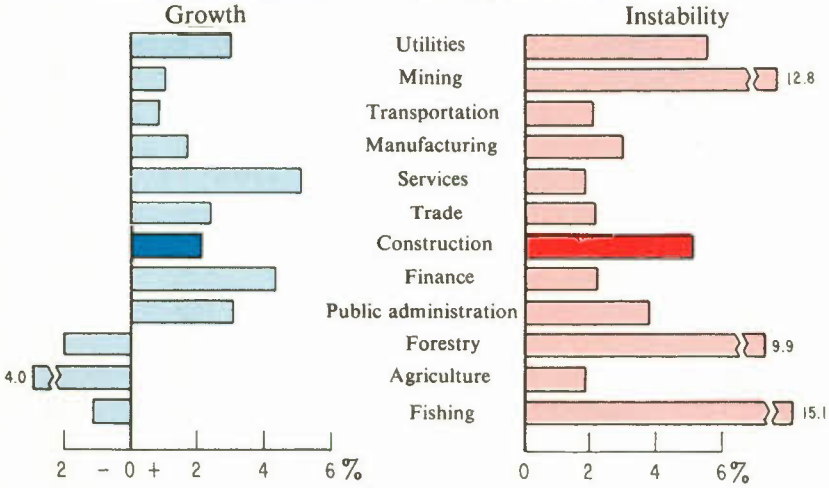


[1] Average annual estimates in 1961 dollars.

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

Chart 5-3

Growth and Instability of Employment, by Industry, 1948-70[1]



[1] Average annual estimates in man-hours.

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

combined, accounted for two-thirds of all instability in employment. The construction industry contributed more to instability of employment than most other industries because peaks and troughs in construction employment frequently coincided with those in manufacturing (Chart 5-4). This was partly because the construction industry bought most of its materials from the manufacturing sector and partly because this demand for construction materials accentuated the need for expansion of manufacturing capacity, which in turn added to the demand for construction and thereby contributed further to construction instability.

With respect to productivity, the performance of the construction industry was similar to that of other industries. Both in terms of output per worker and factor productivity—i.e., output per combined unit of labour and capital—the construction industry ranked close to average (Table 5-1). In some industries—for example, mining and agriculture—factor productivity advanced at a much slower rate than output per worker because gains in output per worker were achieved at high capital costs. In the construction industry, factor productivity improved at nearly the same rate as output per worker. This implies that the gains in output per worker were achieved without the heavy capital investments or readjustments required in mining and agriculture. Because of the high degree of instability in output, there was also an above-average degree of instability in productivity gains, but this was much less than in agriculture and mining.

Table 5-1

Growth and Instability of Output per Worker and Factor Productivity,[1] Selected Industries, 1948-70

(1961 dollars)

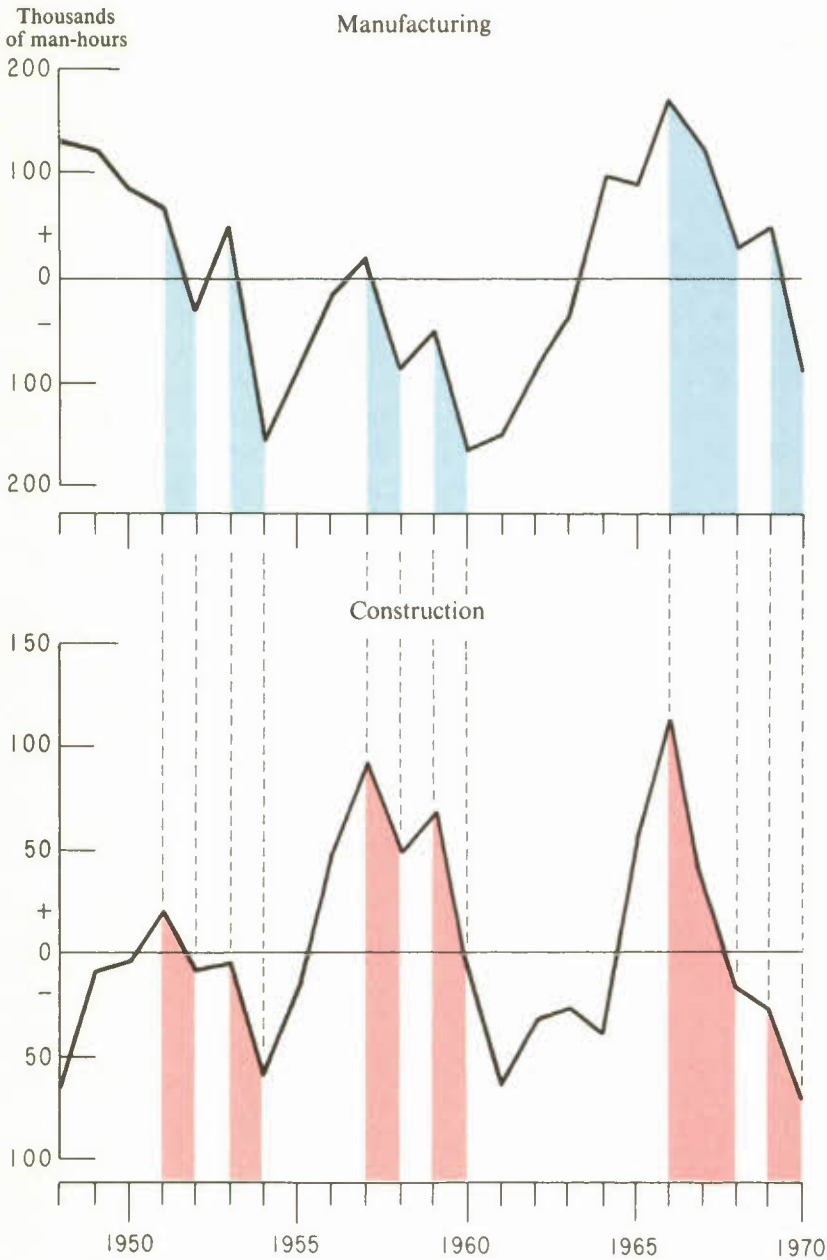
	Average Annual Growth Rate		Instability	
	Output per Worker	Factor Productivity	Output per Worker	Factor Productivity
	(Per cent)			
Mining	4.9	0.6	14.2	6.4
Agriculture	4.6	−0.2	9.1	7.5
Manufacturing	3.2	2.4	2.5	2.9
Construction	2.6	2.2	4.4	3.6
Trade	2.0	1.3	2.8	3.7
Services	−1.0	−0.7	2.7	1.6
Average of all industries	2.4	1.9	1.9	2.0

[1]Factor productivity measures growth in output relative to combined labour and capital inputs.

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

Chart 5-4

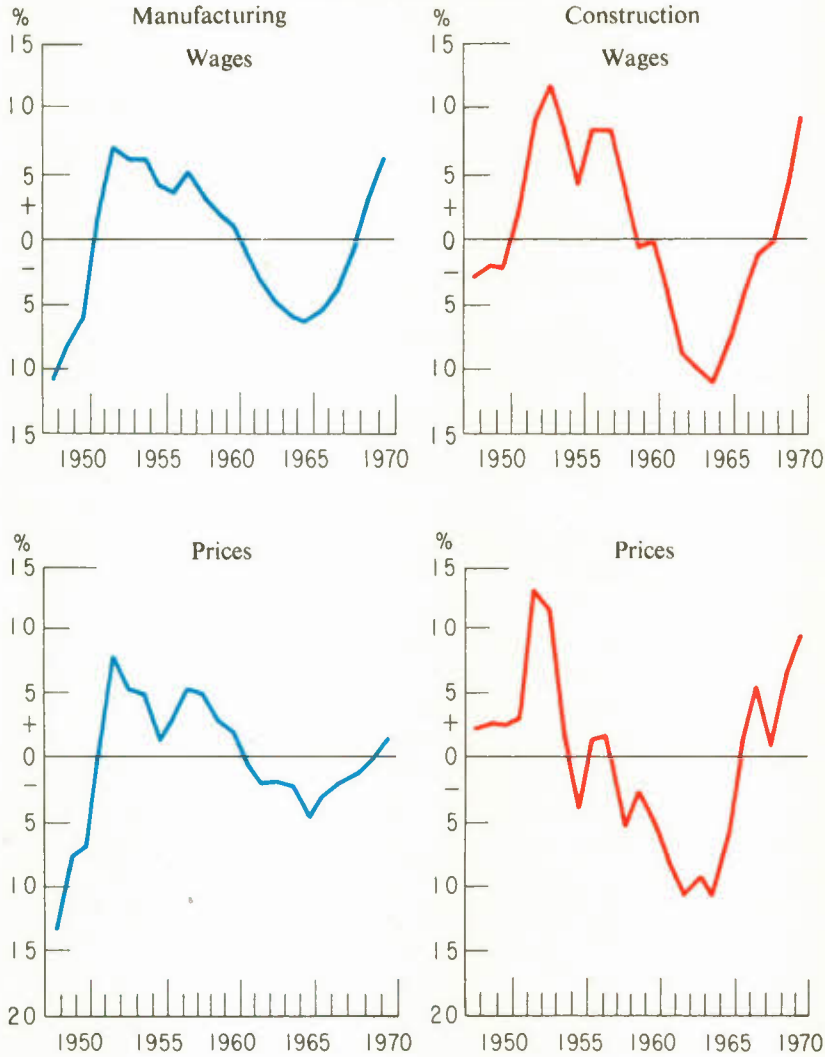
Peaks and Troughs[1] in Employment Hours, as Variations from Trends, Manufacturing and Construction, 1948-70



[1] Shaded areas show concurrent downswings.

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

Chart 5-5
Variation in Wages and Prices from Long-Run Trends, Manufacturing and Construction, 1948-70



SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

It has become widely recognized that there are links between prices and wages. During the postwar period, prices and wages rose in all sectors of the economy but, in the construction industry, they rose more rapidly than in manufacturing and were more unstable. Again, there were parallels between the two sectors. In both construction and manufacturing, wage increases exceeded their long-run trends in the early 1950s and dropped below trend in the mid-1960s (Chart 5-5). At their peaks, these wage-price pressures were followed by reductions in employment growth. Thus wage-price problems, in construction and manufacturing, ran parallel and intensified the employment problems in both sectors.

SOURCES OF INSTABILITY IN CONSTRUCTION

Business cycles have been attributed to monetary conditions, demand factors, and supply factors.[1] According to monetary theories, fluctuations in the interest rate and availability of funds cause fluctuations in investment, and stabilization of the stock and flow of money could control the business cycle. According to nonmonetary demand theories, underconsumption and overinvestment, or the opposite, cause maladjustments between consumer demand and production capacity; therefore, greater stability in demand could reduce the instability of the economy. Supply theories maintain that fluctuations in prices, costs, and profit margins have a decisive impact on investment and, with investment causing instability of the economy, it would be necessary to stabilize its flow.

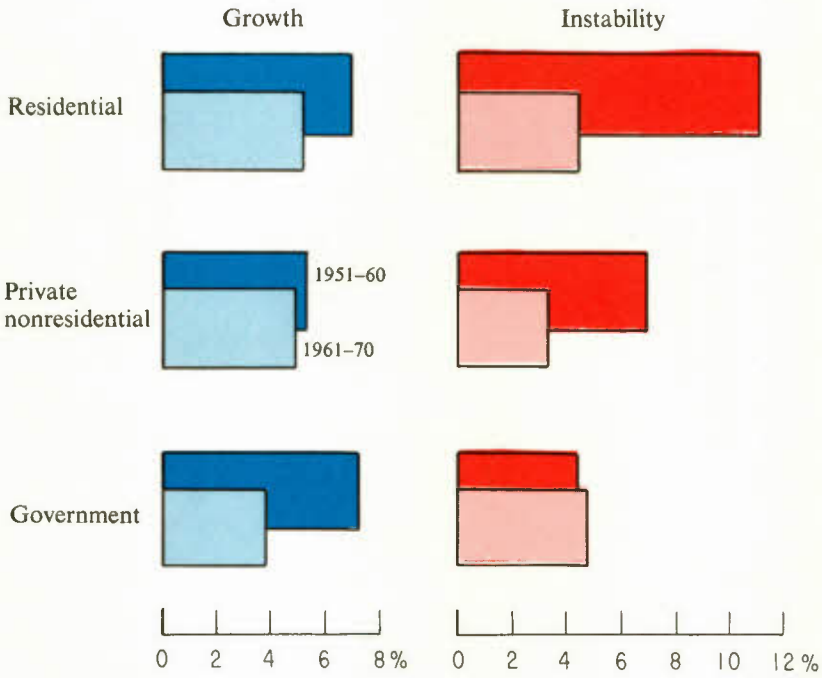
In more recent economic theories, savings and investment assume a new importance, and the various demand components (i.e., consumer demand, investment, foreign trade, government expenditures, and inventories) all become key variables. Also, it is recognized that the time lags between income, consumption, production, and investment contribute to the ups and downs of the economy. These elements of instability have been incorporated in a variety of econometric models. Here, CANDIDE—the model of the Canadian economy—was used to trace the sources of instability of construction demand and to examine the impact of construction instability on the rest of the economy.

The three principal demand sectors for construction are residential, private nonresidential, and government. During the past two decades,

[1]M. K. Evans, *Macroeconomic Activity: Theory, Forecasting, and Control* (New York: Harper and Row, 1969), Chapter 12.

each of these demand sectors accounted for roughly one-third of total construction expenditures. Growth rates of all three sectors declined, most in government and residential construction and least in private nonresidential construction. Instability dropped sharply in residential construction and remained about the same in government construction. There was no obvious relationship between growth and instability. For example, from the decade of the 1950s to the 1960s, growth in private nonresidential construction remained practically unchanged, but instability diminished. By contrast, the rate of growth of government construction declined but instability remained unchanged (Chart 5-6).

Chart 5-6
Growth and Instability of Construction Expenditures[1]



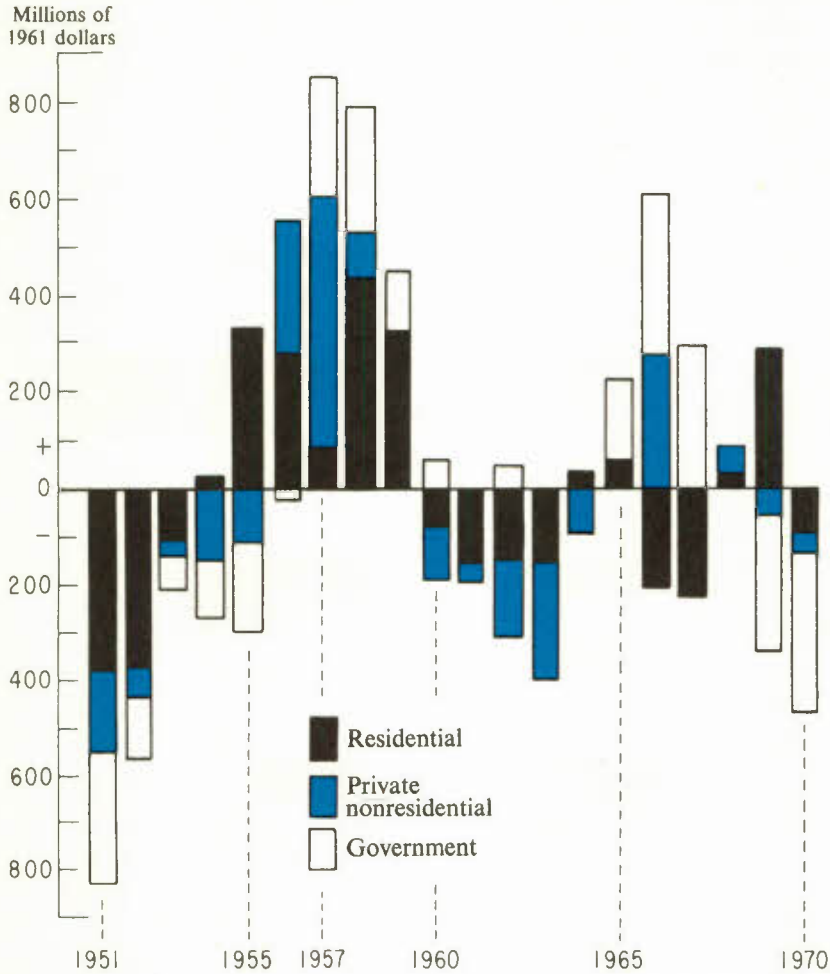
[1] Average annual estimates in 1961 dollars.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Although there were marked differences in instability within each of the three construction sectors, each contributed almost exactly one-third to the instability of total construction expenditures. These shares in instability did not remain constant over time. During the 1950s, for

Chart 5-7

Contribution to Construction Instability by Three Main Sectors, 1951-70[1]



[1] As explained in Chapter 4, contributions to instability are estimated by annual deviations from the long-run trend. In 1957, for example, the trend was exceeded by $850 million. Residential construction contributed $90 million; private nonresidential construction, $520 million; and government construction, $240 million—as shown by the colour segments of the 1957 bar.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

example, residential construction contributed nearly one-half and, during the 1960s, government construction accounted for two-thirds of all instability in construction (Table 5-2). Indeed, during the 1960s, slack periods in residential construction sometimes ran counter to peaks in nonresidential and government construction, and thereby reduced the overall instability in total construction. This happened in 1966, 1967, and again in 1969 (Chart 5-7).

Table 5-2

Contribution of Residential, Private Nonresidential, and Government Construction to Instability of Total Construction Expenditures, 1951-70

(1961 dollars)

	Contribution to Instability		
	1951–70	1951–60	1961–70
		(Per cent)	
Residential	33	45	−5
Private nonresidential	33	37	37
Government	34	18	68
Total construction	100	100	100

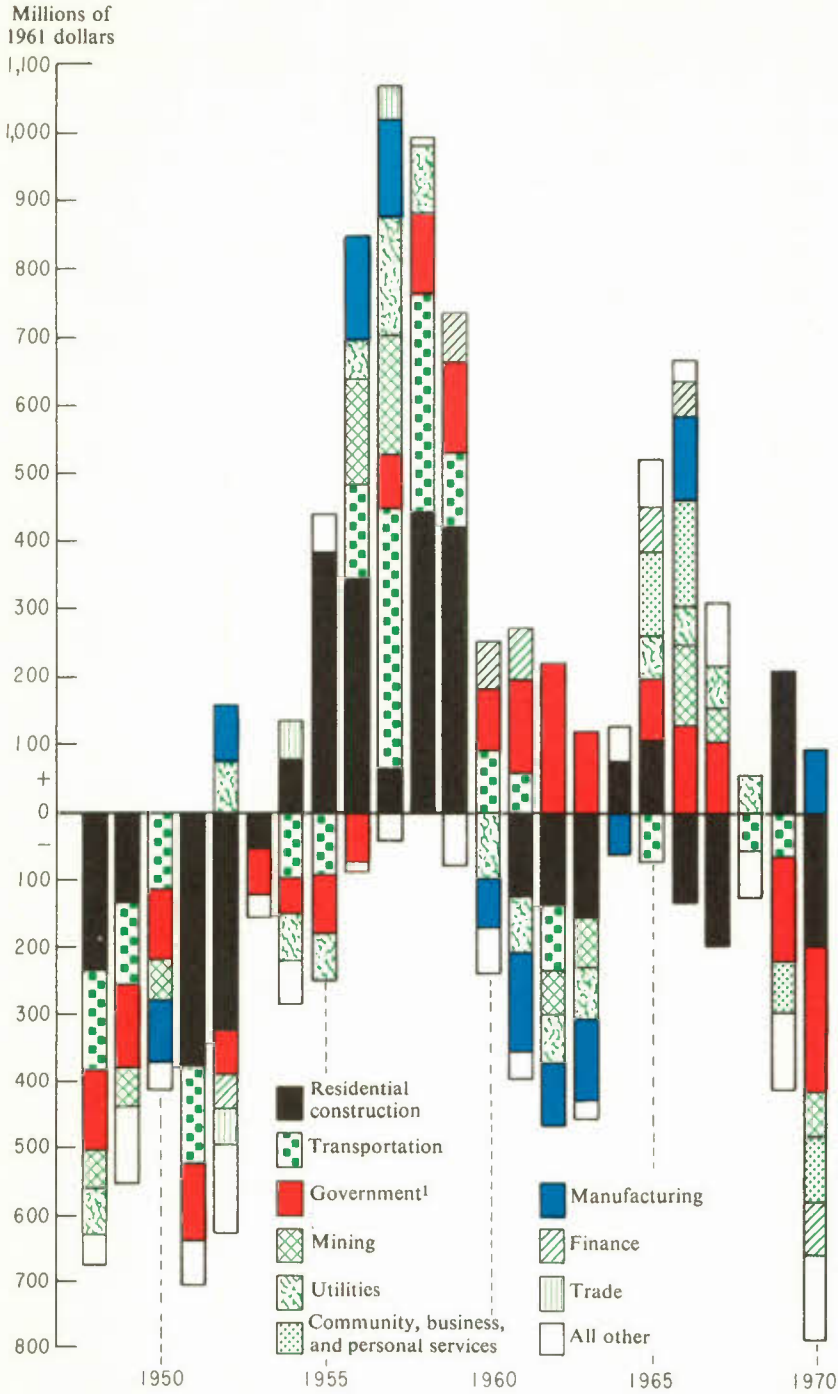
SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

The complexity of instability in construction becomes more apparent as we go into more detail. If nonresidential construction is further disaggregated, transport, government, mining, utilities, services, and manufacturing all rank above average in their contributions to overall construction instability. Together these six categories account for over 80 per cent of the instability contributed by nonresidential construction. Their contribution to instability ranks high because their output is large and rapidly growing, their investment demands are large, and they rise and fall together (Table 5-3).

The estimates in Table 5-3 are averages for the years 1948-70 and, again, do not reveal the detail of variations in instability from one time period to the next. From 1948 to 1953, for example, construction investments of nearly all the major sectors fell short of the long-run trend and, from 1956 to 1959, they exceeded it. During the early 1960s, this picture of uniformity changed. Construction in the transport sector, some government construction, and also finance ran counter to construction investment elsewhere in the economy (Chart 5-8).

Chart 5-8

Contribution to Construction Instability by Major Industry Components, 1948-70



[1] Government here excludes Crown agencies, whose construction investment is included in other nonresidential categories.

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

Table 5-3

Size, Growth, and Instability of Demand for Construction, by Major Investment Component, 1948-70

(1961 dollars)

	Construction Investment		Average Annual Growth Rate	Instability	
	Annual Averages	Share		Variations from Trend	Contribution
	($ Million)	(Per cent)		(Per cent)	
Transportation	471	8	3.9	24	18
Government[1]	1,277	23	6.5	11	12
Mining	375	7	8.5	19	9
Utilities	524	9	4.6	12	8
Manufacturing	409	7	4.9	17	8
Services	216	4	8.1	17	7
Finance, insurance and real estate	188	3	8.5	25	4
Trade	157	3	0.3	16	3
Forestry	29	1	2.4	15	1
Construction	13	*	−0.1	21	*
Agriculture	132	2	3.5	13	*
Fisheries	1	*	−3.9	46	*
Residential construction	1,841	33	4.1	11	30
Total construction expenditures	5,633	100			100

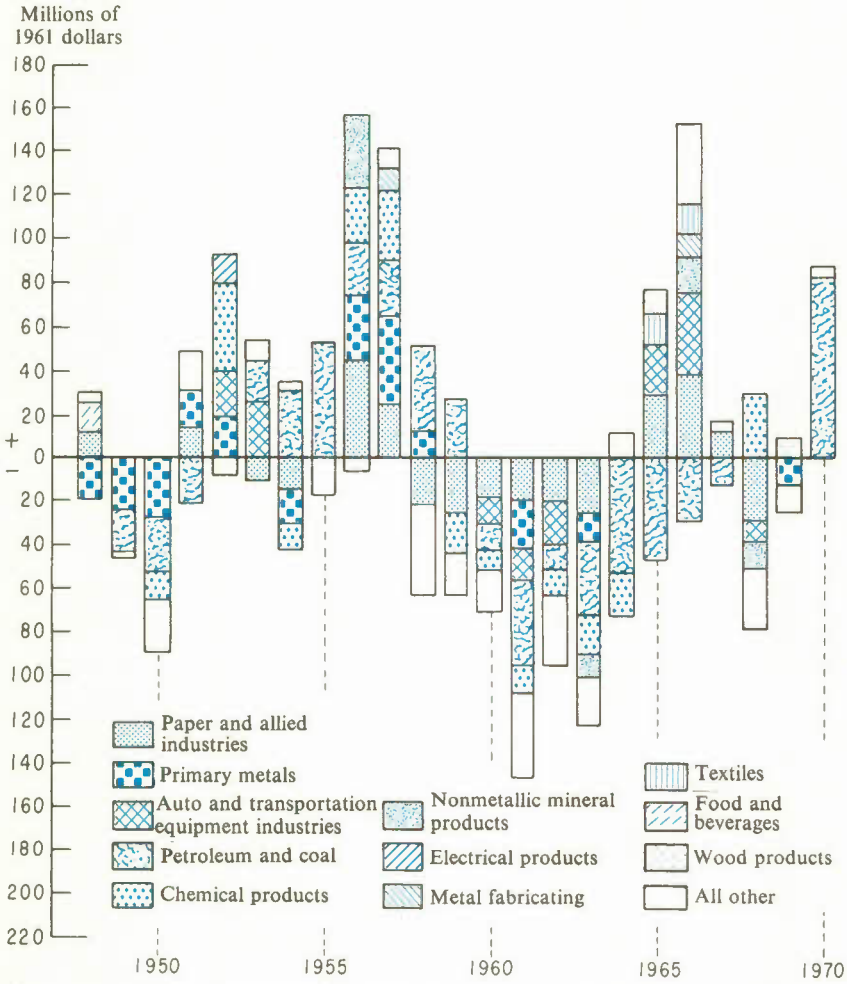
*Less than 0.5 per cent.

[1]In contrast to Table 5-2, government, here, excludes Crown agencies, whose construction investment is included in other nonresidential categories.

SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

Within major industrial sectors, the degree of instability varied, some industries being far more unstable than the industrial sector of which they form a part. The manufacturing sector, for example, consists of 20 major industry groups. Among these, the pulp and paper, primary metal, and automotive and transportation equipment industries together accounted for one-half of the cyclical instability in construction investment of the manufacturing sector. Demand for their output rose sharply at times of widespread economic expansion and then fell again at times of slowdown, not only because of the ups and downs of the Canadian economy but also because of changes in international demand, especially that of the United States. At times of peak demand, when production

Chart 5-9
Contribution to Construction Instability by Manufacturing Industries, 1948-70



SOURCE: Based on the CANDIDE project databank and estimates by the Economic Council of Canada.

pressed hard against capacity limitations, all three industries invested heavily in new plant and, in the case of the pulp and paper industry, created excess capacity for later years (Chart 5-9).

Although these three industries accounted for a large part of the instability in manufacturing construction, their construction expenditures were not the most unstable. The year-to-year fluctuations in construction expenditures of the petroleum and coal industry were much larger. At times, however, their investment ran counter to that of most other manufacturing construction. This happened, for example, in the years 1958 and 1959, and again in 1965 and 1966. The petroleum and coal industry, therefore, contributed somewhat less than the preceding three to instability in manufacturing construction, but it still ranked fourth and, together with the chemical industry, contributed another 20 per cent to the construction instability of the manufacturing sector.

So far, we have described construction instability in terms of its major components. It was shown how expenditures on residential, private nonresidential, and government construction contributed to instability of all construction. To identify the "sources" of instability, however, it is necessary to go beyond the industry components of construction instability. Many economic variables are interrelated, depend on international developments, have lagged effects and feedbacks, and at times accentuate and then again alleviate the instability in other sectors. To obtain some indication of the importance of various sources of instability, the impact of some basic economic variables is examined in the light of past events. It is important to note that, at this point, only the impact on construction instability is examined—it is not claimed that related stabilization measures could, or should, be applied.

Our search for causes of instability in construction focused on four sets of factors: monetary, fiscal, demand, and supply. Among monetary factors, a more stable money supply could have reduced the instability of residential construction from 1955 to 1968 by 17 per cent, and of industrial construction[2] by 5 per cent (Table 5-4). These results could have come about through changes in lending rates of banks and their impact on other interest rates, mortgages for residential construction, and availability of producer and consumer credit. Among fiscal factors, a more stable trend in nominal income tax rates would have helped stabilize disposable

[2]In this chapter, construction expenditures are usually broken down into the conventional categories of residential, private nonresidential, and government construction. But whenever it was not possible to separate construction expenditures by government enterprises from private nonresidential construction expenditures, they were included in their respective industries, and the term "industrial construction" is used to denote the combination of both.

incomes, and this in turn would have helped stabilize the demand for residential construction. But a combination of adjustments in money supply and tax rates counter to construction investment would have reduced instability of all construction sectors. On the government side, a more stable growth trend of expenditures on highways and schools, through stabilization of Trans-Canada Highway grants and vocational training grants, would have reduced considerably the instability in government construction. These results suggest that monetary factors during the 1955-68 period contributed primarily to instability in residential and industrial construction. Similarly, highway and school construction contributed to instability in government construction.

Table 5-4

Estimated Effects of Monetary and Fiscal Factors on Construction Instability, 1955-68

	Changes in Construction Instability		
	Residential Construction	Industrial Construction	Government Construction
		(Per cent)	
Monetary			
Stable money supply	−17	− 5	− 1
Countercyclical money supply	−19	− 6	0
Fiscal			
Stable personal income tax rate	−11	+ 2	+ 6
Countercyclical tax rates and money supply	−18	−18	− 7
Stable highway grants	0	0	− 7
Stable vocational grants	0	+ 1	−19
Stable highway and vocational grants	0	+ 1	−33

SOURCE: Based on CANDIDE estimates by the Economic Council of Canada.

On the demand side, the impact on construction activity varied greatly with the demand source. As indicated near the end of Chapter 4, consumer expenditures accounted for roughly 60 per cent of Canada's Gross National Product. Stabilization of these expenditures around their trend would have done little to stabilize construction, because there are varying time lags between changes in consumer demand and changes in industrial capacity. Also, if all exports had been stabilized along their trend, the reduction of instability in construction would not have been significant. The most striking improvement in the stability of industrial construction would have come through partial rescheduling of major construction projects. It would have reduced instability in industrial construction by almost one-third (Table 5-5). This is an important finding on which a recommendation will be based in Chapter 9.

Table 5-5

Estimated Effects of Demand Factors on Construction Instability, 1955-68

	Changes in Construction Instability		
	Residential Construction	Industrial Construction	Government Construction
		(Per cent)	
Stable consumer expenditures	0	− 2	−5
Stable exports	−2	− 4	−4
Rescheduling of major projects	−2	−30	−2

SOURCE: Based on CANDIDE estimates by the Economic Council of Canada.

To determine what factors affect the stability of industrial construction, we examined how the major industries react to changes in construction prices, industry output prices, industrial bond rates, and industrial output. Had construction prices followed a stable growth trend, the degree of instability in industrial construction would have increased because, at construction peaks, prices would not have risen enough to discourage more construction and, at times of slack, prices would not have fallen enough to encourage additional investment (Table 5-6). In other words, flexible prices lead to more stability in industrial construction. This is also an important finding to which we return in the final chapter. Flexibility in certain industrial output prices—i.e., prices of agriculture; forestry; fisheries; finance, insurance and real estate; transportation; and all manufacturing—had a similar effect. A drop in output prices at times of construction peaks discouraged more investment, and a rise in output prices at times of construction slumps gave a new stimulus to investment.

Table 5-6

Estimated Effects of Supply Factors on Instability of Industrial Construction, 1955-68

	Changes in Instability of Industrial Construction
	(Per cent)
Stable construction prices	+ 8
Stable industrial output prices	+ 6
Stable industrial bond rate	−12
Stable industrial output	−16

SOURCE: Based on CANDIDE estimates by the Economic Council of Canada.

It can therefore be concluded that industrial prices must be left free to vary up and down for stabilization purposes. By contrast, instability in either

the industrial bond rate or industrial output also contributed to instability in industrial construction. A more stable trend in either one of them, especially industrial output, would have improved stability of construction investment.

IMPACT OF CONSTRUCTION ON OTHER INDUSTRIES AND THE ECONOMY

To the extent that the various sectors of the economy are interdependent, the instability of one sector is transmitted to another and is accentuated or alleviated in the process. In the case of the construction industry, changes in the demand for structures are transmitted mainly to the manufacturing sector in the form of construction materials. There are five to ten commodity groups that account for about two-thirds of all construction material requirements (Table 5-7). Depending on the type of construction, these requirements vary. In repair construction, the impact on other sectors of the economy is fairly evenly distributed. Since repair construction accounts for only a small share of all construction, the impact on manufacturing output comes largely from new construction. New residential construction, for example, has a major impact on demand for metal fabricated products; lumber and plywood; and other wood products. Highway construction has a major impact on demand for metal fabricated products; cement and concrete products; and petroleum, coal, other minerals, and nonmetallic products. Construction of gas and oil facilities affects primarily the demand for iron and steel products. Construction of dams, railways, and engineering projects affects metal fabricated products; electrical equipment; iron and steel products; and cement and concrete products.

Given these commodity requirements, the impact of construction demand can be traced from the construction sector to other sectors of the economy. As Table 5-8 shows, an increase in demand for residential construction not only has a direct impact on output and employment of the construction sector but an even stronger impact on the rest of the economy. The impact on the manufacturing sector exceeds the impact on the construction sector, and evidently the initial increase in construction demand creates much more output and employment in manufacturing than in construction. In turn, this creates more income, increases consumer expenditures, and "multiplies" the demand for

Table 5-7

Material Input Shares, by Type of Construction, 1961

	Type of Construction							
	Residential	Other Buildings	Highways	Gas and Oil	Dams and Irrigation	Railways and Telecom-munications	Engineering	Repairs
	(Per cent)							
Metal fabricated products	21	25	18	11	28	14	11	11
Iron and steel products	4	7	1	39	1	4	20	3
Cement and concrete products	5	5	10	3	9	0	14	7
Lumber and plywood	9	4	2	0	2	7	4	9
Other wood products	11	3	0	0	1	3	2	7
Petroleum, coal, other minerals, and nonmetallic products	11	8	29	13	3	6	6	10
Electrical equipment	2	8	1	0	21	33	2	7
Wholesale services	10	8	11	7	7	9	7	10
All other	27	32	28	27	28	24	34	36
Total	100	100	100	100	100	100	100	100

SOURCE: Based on data from Statistics Canada and the CANDIDE project databank.

industrial output. This explains why the additional $100 million of expenditure adds a value of $163 million to the economy. It also explains why there was, during the postwar period, a correspondence in the peaks and troughs of employment in construction and manufacturing, and it helps explain why there were some parallels in wage and price developments in construction and manufacturing, as was shown in Charts 5-4 and 5-5.

Table 5-8

Estimated Impact on Other Industries of a $100-Million Increase in Residential Construction Expenditures, 1961

	Impact	
	Output Change	Employment Change
	($ Million)	(Thousands)
Construction	28	3.0
Manufacturing	50	3.6
Mining	5	0.2
Transport	15	1.0
Trade	25	2.4
All others	40	3.4
Total	163	13.6

SOURCE: Based on CANDIDE estimates by the Economic Council of Canada.

The impact of the construction industry on other sectors depends not only on the level of construction activity but also on the state of the economy. If the economy is operating with considerable slack, additional demands for construction materials can be readily accommodated by manufacturing industries. If the economy is operating tightly already and there is no excess capacity in manufacturing, new demands for construction materials will require expansion of manufacturing plants; this, in turn, will "accelerate" the initial construction demand.

Earlier in this chapter, it was indicated that over the past two decades the three sectors of construction—residential, private nonresidential, and government—each accounted for approximately one-third of total construction expenditures. Each also accounted for one-third of the instability of construction. When related to the instability of GNP, however, private nonresidential construction alone contributed much more than either residential or government construction (Table 5-9). This implies that private nonresidential construction was more cyclical, with respect

to the economy, and contributed more to its instability than residential or government construction. This underlines the importance of the links between private nonresidential construction and general economic activity, and it indicates the importance of timing in policy decisions affecting private nonresidential construction and overall economic activity.

Table 5-9

Expenditure Shares and Contribution to Instability of Residential, Private Nonresidential, and Government Construction, 1951-70

(1961 dollars)

	Average Annual Expenditure Shares in Construction	Contribution to Instability[1]	
		Construction	GNP
		(Per cent)	
Residential construction	29	33	7
Private nonresidential construction	35	33	12
Government construction	36	34	7
Total	100	100	26

[1]The contribution to the instability of construction and the economy was estimated by component analysis, as described in Chapter 4. The estimate for the economy of 26 per cent differs from that of 31 per cent (residential plus nonresidential construction) in Table 4-3 because of a different data base and time period, and greater disaggregation.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

REGIONAL ASPECTS

Economic imbalance among Canada's regions is a problem of continuing concern.[3] For decades now, per capita income has been below the national average in the Atlantic Region and Quebec, and above average in Ontario and British Columbia. Similar disparities exist in regional industrial output, employment, and investment. This is indicated in Table 5-10. If incomes were shared equally among all regions, the regional income shares would be exactly the same as the population shares. But compared with population shares, the 1970 income shares ranked low in the Atlantic Region, Quebec, and the Prairie Region, and high in

[3]For more background information, see Economic Council of Canada, *Second Annual Review: Towards Sustained and Balanced Economic Growth* (Ottawa: Queen's Printer, 1965), pp. 97–135.

Ontario and British Columbia. Similar comparisons of regional shares of industry output, employment, and construction investment show the same general pattern.

Table 5-10

Estimated Regional Shares of Selected Economic Characteristics, 1970

	Atlantic Region	Quebec	Ontario	Prairie Region	British Columbia	Total
			(Per cent)			
Population	10	28	35	17	10	100
Personal disposable income	7	26	41	15	11	100
Industry output[1]	5	25	43	17	10	100
Employment	8	27	38	17	10	100
Construction investment	9	23	33	22	13	100

[1]Includes agriculture, forestry, fishing, mining, manufacturing, electric power, and construction only.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Among these regional shares, there are some notable disparities. In the Atlantic Region, for example, the shares of industry output and disposable income are very low. In Quebec, the share in construction investment is lower than the other shares. The share of industrial output in Ontario is exceptionally high. In the Prairie Region, the income share is low relative to the shares of industry output, employment, and particularly investment. In British Columbia, the share of construction investment is high relative to its other regional shares. An improved regional balance would require moderation of the extreme lows and highs.

Although there have been some changes over the past two decades, the persistence of these regional disparities is remarkable. In most cases, the regional shares changed by less than 1 per cent per decade, and not all changes were in the direction of greater regional balance. Industry output is a case in point. Ontario and British Columbia increased their shares of production; Quebec and the Prairie Region reduced theirs; and the Atlantic Region did not change (Table 5-11). Regional disparities thus increased in terms of industry output. With respect to construction investment, the situation is less clear. Quebec experienced a decline in its small share, and British Columbia and the Prairie Region increased their already large share, resulting in more imbalance. However, the Atlantic Region improved its relative position, and Ontario lost.

Table 5-11

Estimated 10-Year Changes in Regional Shares of Selected Economic Characteristics, 1951-70

	Atlantic Region	Quebec	Ontario	Prairie Region	British Columbia	Total
			(Percentage points)			
Population	−1.0	−0.2	+1.2	−0.8	+0.8	0.0
Personal disposable income	−0.2	+0.5	+0.9	−1.5	+0.3	0.0
Industry output[1]	0.0	−1.2	+1.6	−1.0	+0.6	0.0
Employment	−0.7	−0.2	+0.4	−0.6	+1.1	0.0
Construction investment	+0.8	−1.6	−0.5	+0.4	+0.9	0.0

[1]Includes agriculture, forestry, fishing, mining, manufacturing, electric power, and construction only.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

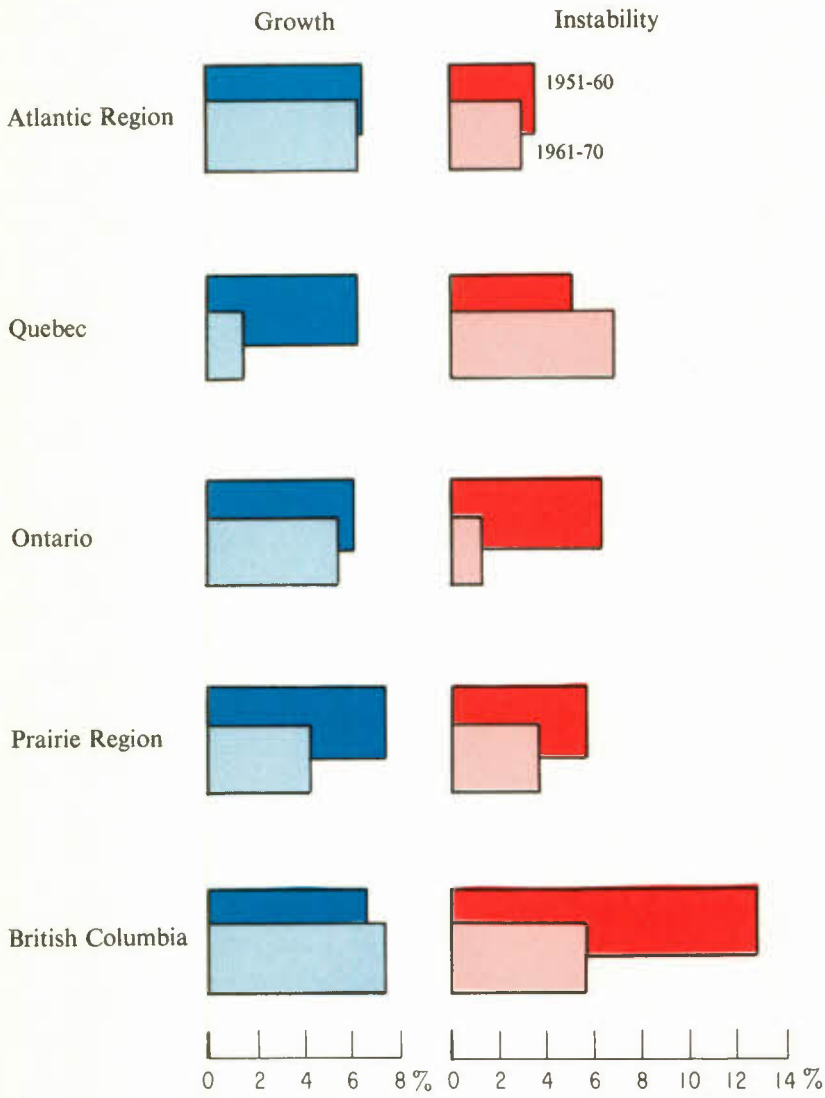
In Ontario and British Columbia, personal disposable income shares increased less rapidly than population, and the reverse occurred in Quebec. In the Atlantic Region, the income share decreased less than population. Changes in population and incomes thus made for greater regional balance overall. Employment also improved, but to a lesser degree. British Columbia reinforced its relatively strong position, but the Atlantic Region, Quebec, and the Prairie Region lost some ground—though no more than in total population—while Ontario gained less in employment than it gained in population. In summary, from 1951 to 1970, industry output accentuated the regional disparities in Canada, but population and income have changed in such a way that income per capita is more equal across the country than was the case before.

The growth in construction expenditures over the past two decades contributed little to greater regional balance. To improve the regional balance, it would be necessary to invest relatively more in construction in the low-income than in the high-income regions. As mentioned at the outset of this chapter, the national rate of growth in construction investment declined from the 1950s to the 1960s. There was a corresponding decline in most regions, the exceptions being British Columbia, where the growth rate actually accelerated, and Quebec, where the growth rate sharply declined (Chart 5-10).

There was a tendency for greater regional than national instability in construction expenditures. Construction instability was considerably above the national average in British Columbia and Quebec, near the

Chart 5-10

Growth and Instability of Construction Expenditures, by Region[1]



[1] Average annual estimates in 1961 dollars.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

average in the Prairie Region, and below average in the Atlantic Region. Nationally, the instability was less than in most regions because the ups and downs in construction activities did not occur at the same time all across Canada and, to some extent, cancelled each other interregionally. While there was a decline in the growth rates of construction in most regions, it would be wrong to conclude that a reduction in the rate of growth in construction expenditures improved stability, or that an acceleration in the rate of growth meant greater instability. In Quebec, instability in construction expenditures increased, while the rate of growth declined. In British Columbia, stability improved, while the rate of growth accelerated. In Ontario, stability improved, with a rate of growth just slightly lower.

In examining the impact of the national economy on the construction industry, some key factors were identified as the main sources of instability. For a similar analysis at the regional level, all construction activities were divided into residential and nonresidential construction, and their relationship to income and industrial output was examined. On this basis it was estimated that instability in income explained about one-half of the instability in residential construction by region and that instability in industrial output explained about two-thirds of the instability in nonresidential construction. In the Prairies and Quebec, factors other than income accounted for a larger part of the instability in residential construction. In British Columbia and Ontario, factors other than industrial output accounted for a larger part of instability in nonresidential construction.

Not all construction materials were manufactured in the region of the construction activity. Estimates for the five major regions of Canada suggest that the degree of regional dependence varied considerably.

Table 5-12

Regional Requirements of Construction Materials, by Region of Supply, 1967

	Region of Supply					
	Atlantic Region	Quebec	Ontario	Prairie Region	British Columbia	Total
	(Per cent)					
Atlantic Region	30	22	47	*	1	100
Quebec	*	76	23	*	1	100
Ontario	*	19	79	1	1	100
Prairie Region	0	7	41	46	6	100
British Columbia	0	4	35	2	59	100

*Less than 0.5 per cent.

Source: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Arranged in ascending order, starting with the most "independent" region, the ranking was: Ontario, Quebec, British Columbia, Prairie Region, and Atlantic Region. According to our estimates, Ontario supplied 79 per cent of its own construction material requirements and "imported" most of the remainder (19 per cent) from Quebec (Table 5-12). The Atlantic Region, by contrast, supplied only 30 per cent of its construction material requirements and imported the remaining 70 per cent from other regions, primarily Ontario and Quebec.

Our estimates suggest that Ontario and Quebec not only relied very much on their own material supplies but, in addition, supplied a large share of the demand for construction materials of other regions, east and west. Of its total production of construction materials, Ontario retained 63 per cent and "exported" 37 per cent, most of it to the Prairie Region and Quebec (Table 5–13). Quebec retained an estimated 64 per cent of its production and exported most of the remainder (26 per cent) to Ontario. Among the five regions, the Prairie Region and Atlantic Region retained over 90 per cent of their own production of construction materials and also imported the most (over 50 per cent) from other regions.

Table 5-13

Regional Production of Construction Materials, by Destination, 1967

	Region of Destination				
	Atlantic Region	Quebec	Ontario	Prairie Region	British Columbia
			(Per cent)		
Atlantic Region	95	4	5	*	1
Quebec	3	64	12	1	2
Ontario	2	26	63	3	7
Prairie Region	*	4	13	93	12
British Columbia	0	2	7	3	78
Total	100	100	100	100	100

*Less than 0.5 per cent.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

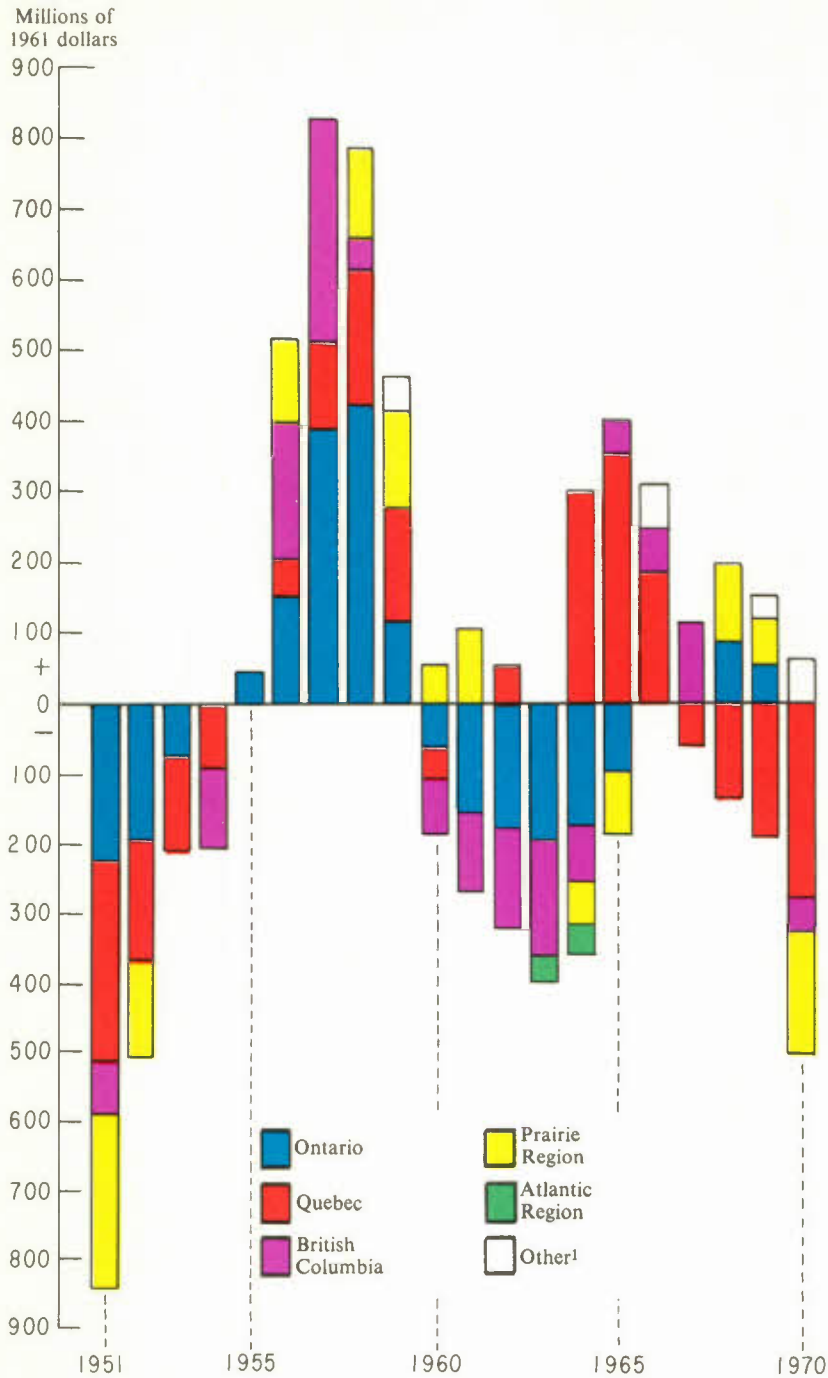
There are advantages and disadvantages to this interregional dependence. With disparities in economic growth among regions, interregional demand for construction materials of some regions may strengthen growth in others. If growth in some regions is more stable than in others

or is countercyclical to others, interregional demand may, at times, improve stability in the other region. Although data on interregional flows of construction materials are scanty, exploratory analysis suggests that interregional demands grew faster than internal demands in three out of five regions, notably in Quebec. The data also suggest that interregional demand for construction materials accentuated rather than reduced the instability of the manufacturing sector. In three of the five regions, interregional demand accounted for less than one-quarter of the total demand for construction materials but, in Quebec and Ontario, it exceeded one-third of the total.

Instability in construction activities was not always parallel among regions. From 1951 to 1954, construction activities in most regions were below trend and, from 1955 to 1959, they were above trend (Chart 5-11). During the 1960s, this pattern of regional uniformity changed. For example, at the beginning and again towards the end of the 1960s, construction activities in the Prairie Region ran counter to some of the other regions. From 1964 to 1970, construction activities in Quebec ran counter to those of Ontario. Also, in contrast to the 1950s, the variations from the national trend in the early 1960s were mainly because of instability in Ontario and in the later 1960s in Quebec. Construction of the St. Lawrence Seaway and the Trans-Canada Pipeline contributed much to the instability in Ontario in the late 1950s, and construction in preparation for Expo 67 contributed to the instability in Quebec in the mid-1960s. In view of these changing patterns of regional instability, it is clear that national policies aimed at stabilization of construction activities would need to allow, at times, for different regional needs.

Instability in construction activities varied regionally and nationally by type of structure. Over the past two decades, Quebec and British Columbia contributed over 50 per cent to the instability of highway and road construction in Canada, but highway and road construction contributed very little to construction instability within each of these two provinces. In the construction of dams and irrigation systems, the same two provinces contributed nearly 90 per cent to national instability, but this caused little instability regionally. This was because these construction activities were countercyclical to other construction within the same provinces but cyclical with regard to national construction. There were also construction activities that contributed to regional as well as national instability. For example, over the same two decades, Ontario contributed 45 per cent to the national instability in residential construction, and residential construction contributed nearly 60 per cent

Chart 5-11
Contribution to Construction Instability by Region, 1951-70

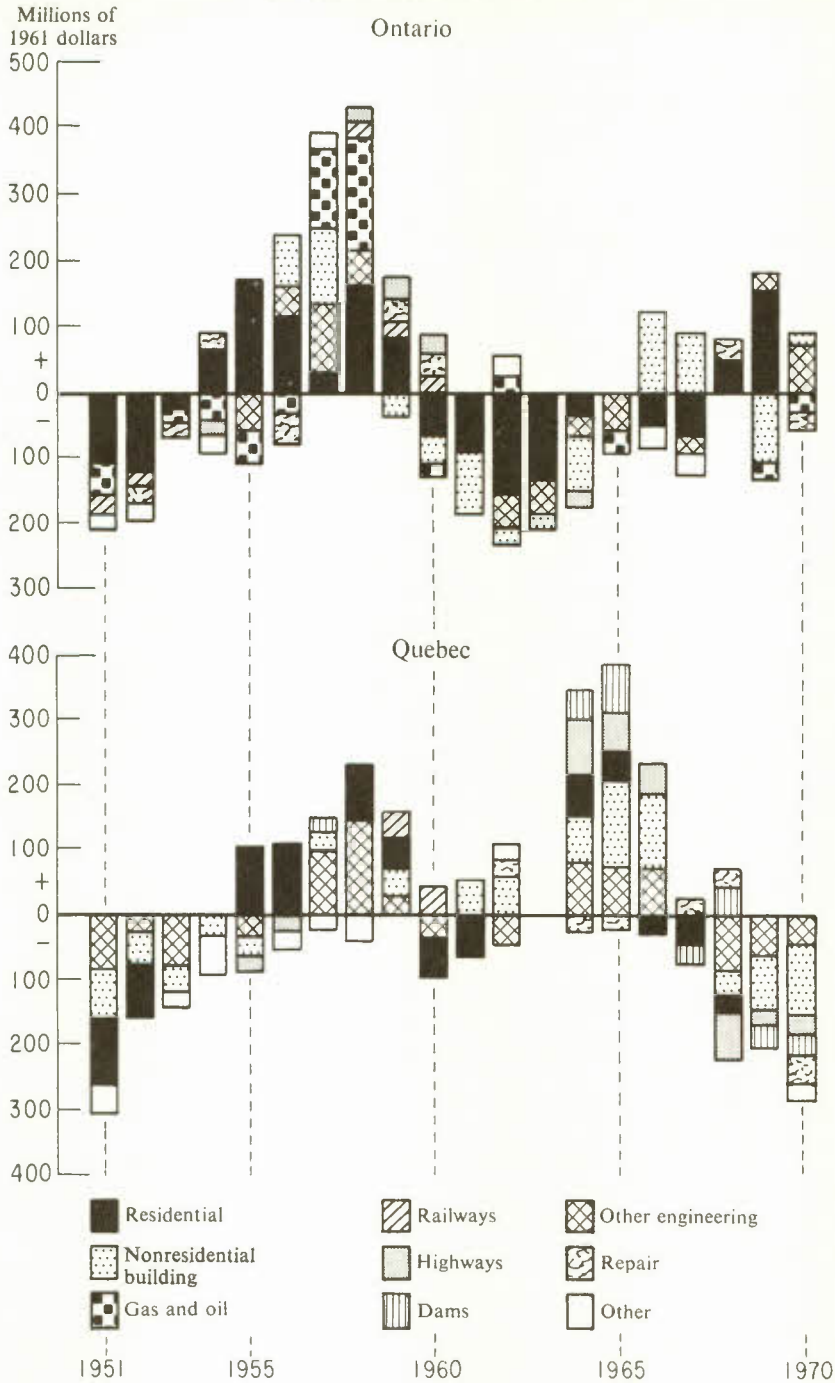


[1] Several regions combined, when instability therein was too small to show individually.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Chart 5-12

Contribution to Instability of Construction Expenditures in Ontario and Quebec, by Type of Structure, 1951-70



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

to Ontario's instability in total construction. Other engineering construction in Quebec contributed approximately 30 per cent to the national instability of this type of construction and also 30 per cent to Quebec's instability in all construction. Provincial instability, by type of structure, is illustrated in Chart 5-12. To improve stability in construction, it would be important to identify such areas of common interest, where stability for provinces go hand in hand with stability at the national level. Indeed, if bottlenecks in the economy are to be avoided in future, it will be important to anticipate and assess the potential impact of construction demand, regionally and nationally, for a number of years in advance.

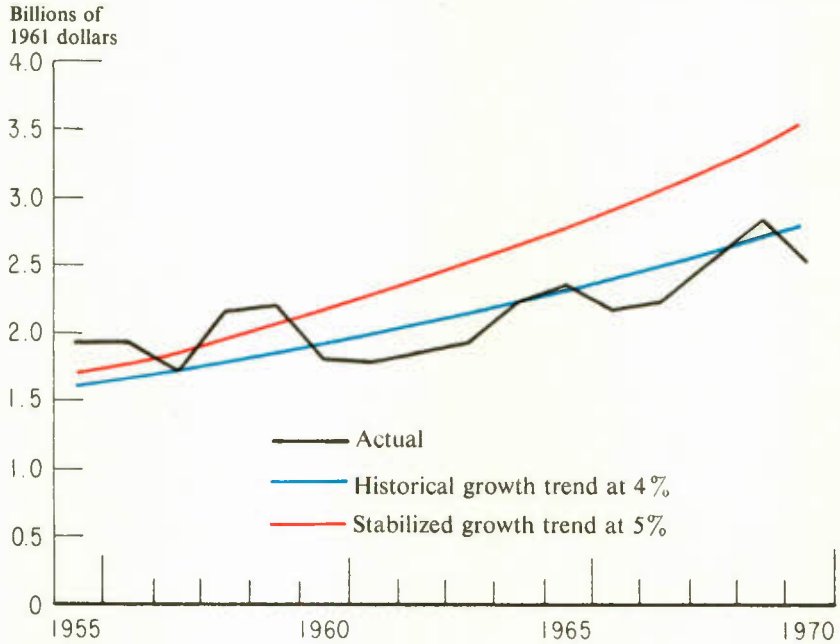
STABILIZATION—PAST AND FUTURE

Earlier in the chapter, it was shown what factors contribute to construction instability, what some of the underlying sources of this instability are, and how their stabilization might reduce the degree of instability. Some of the destabilizing factors could probably be brought under control by appropriate policy measures, others not. Before looking at the potential merit of some of these measures, it is of interest to explore what benefits could be derived from stabilization of construction.

If it had been possible to stabilize construction, once and for all, along the long-run path of growth, not all of the *immediate* effects might have been desirable. According to our analysis, perfectly stable growth in residential construction over the past 15 years would have improved the productivity of both capital and labour. It also could have had the effect of raising the rate of unemployment, of lowering growth in per capita incomes, and of sharply reducing wages and profits in the construction industry. Additional unemployment and lower income per capita could have meant more stability at a lower rate of economic growth.

Some real benefits could have been derived from stabilization, however, if one could have made productive use of the extra capacity. The rate of growth in residential construction—if perfectly stable throughout the period—could have been raised from 4 to 5 per cent without accelerating consumer price inflation (Chart 5-13). That is to say, the number of housing units built per year in Canada could have been increased from 200,000 to 250,000 without intensifying inflation. This would have raised the rate of growth in Real Domestic Product, the rate of growth in real income, and the rate of growth of the Canadian economy.

Chart 5-13
Actual, Trend, and Stabilized Growth of Residential Construction, 1955-70[1]

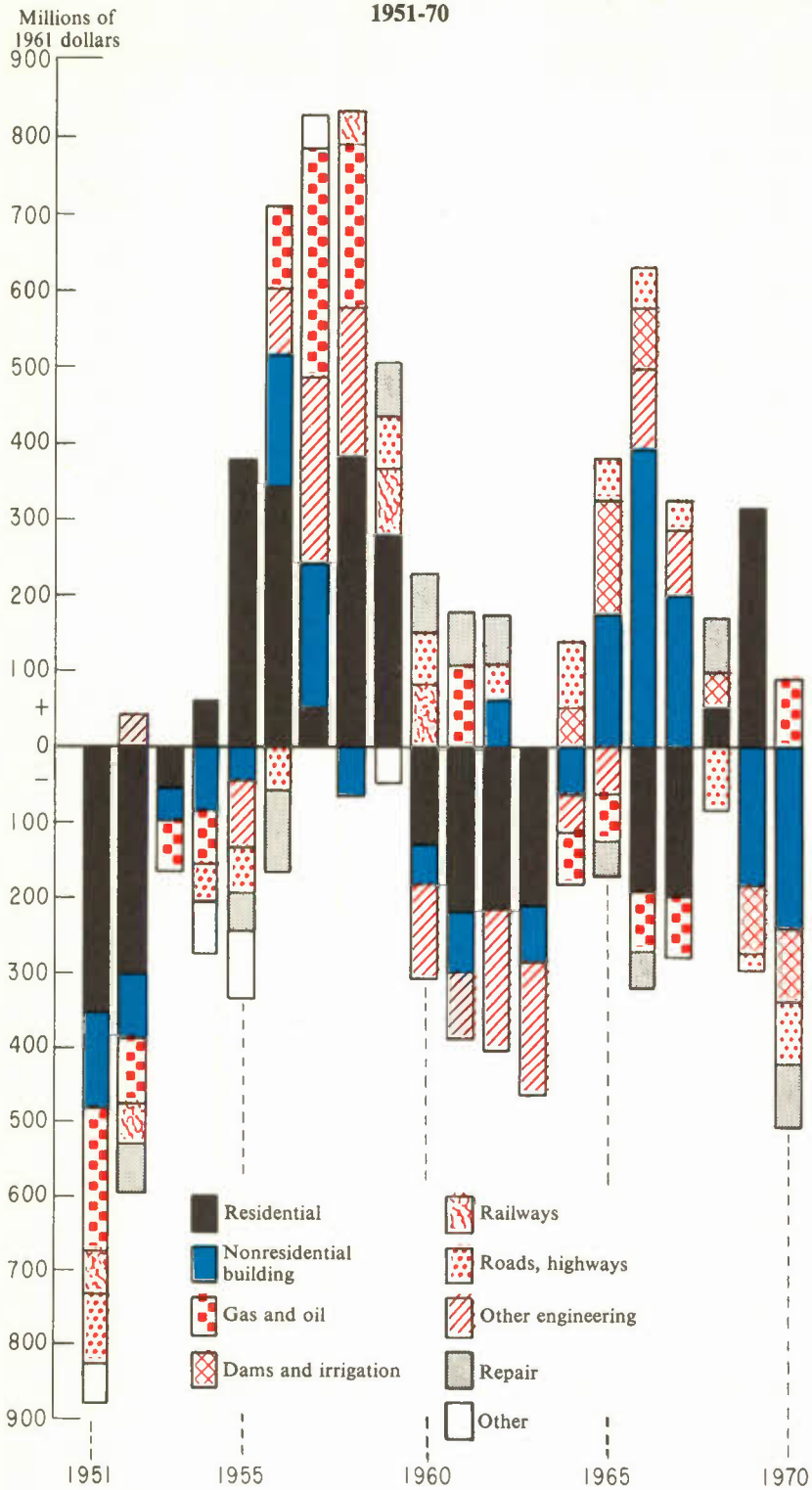


[1] An explanation of the growth trends is given in the text.
SOURCE: Based on CANDIDE model estimates by the Economic Council of Canada.

As an alternative to stabilization along the long-run trend, it might be suggested that "countercyclical" stabilization of construction sectors would be more effective. Under such a scheme, it would be necessary to adjust residential construction—for example, on a year-to-year basis—to counteract, as much as possible, the instability of nonresidential construction. Again, this would have the effect of increasing production capacity and, if utilized, would allow more construction with less inflation. Whether this increased construction could really be achieved is questionable. It might well depend on the incentives, which could be weaker than under cyclical or stable growth because of lower construction wages and prices. Also, it would be difficult, if not impossible, to counteract instability in one sector of construction by countervailing swings in another sector, as the effectiveness would not only depend critically on the accuracy of timing, but also on the availability of labour, building materials, and construction equipment. Slack in residential

Chart 5-14

Contribution to Instability of Construction Expenditures, by Type of Structure, 1951-70



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

construction, for example, would not automatically be balanced by more engineering construction, as unemployed labour, construction materials, and equipment cannot readily be shifted from one type of construction to another.

Stabilization of construction investment cannot be achieved without costs. There may be social costs when structures are not built in time. Shortages may arise when energy developments do not proceed on schedule. There are social costs when construction of new schools and hospitals does not match the needs of the growing community. These are costs that should be weighed against the benefits of stabilization. However, the costs may not be quite as high as expected. For example, new family formation creates a need for new residential housing. Over the past two decades, this need has not been met any better with instability in residential construction than it would have been with stability along the growth trend, because the swings in residential construction were imperfectly matched with swings in new family formation. For reasons such as this, the costs of stabilization need to be compared with the costs encountered under conditions of instability. Stabilization of construction would not only stabilize the construction sector but would also have a stabilizing influence on the rest of the economy. This, in turn, would tend to stabilize social needs and therefore reduce the social costs of delaying construction for stabilization purposes.

Complete stabilization of construction activities may not be feasible, but a substantial part of the potential benefits could be realized from partial stabilization. For example, complete stabilization of major projects at the time of the Trans-Canada Pipeline and the St. Lawrence Seaway would have posed serious technical problems. The severity of this instability is reflected by the large variations from the long-run trends in gas and oil, and other engineering construction during the 1950s (Chart 5-14). In the peak construction years of 1957 and 1958, complete stabilization of these types of construction would have required reductions in expenditures of about $500 million per year. The benefits of adjustments of such magnitude could well have been less than the costs arising from delays. Yet a considerable degree of stability could have been achieved by *partial* stabilization. Reductions of less than $100 million in each of the peak years 1957 and 1958, and some compensating adjustments in other years, would have reduced the instability of industrial construction over the period 1955-68 by about 30 per cent.

It was shown earlier that money supply, major projects, and government expenditures were key sources of construction instability. A more stable money supply would have reduced the instability of residential

Table 5-14

Estimated Effects of Three Stabilization Policies on Residential, Industrial, and Government Construction, 1955-68

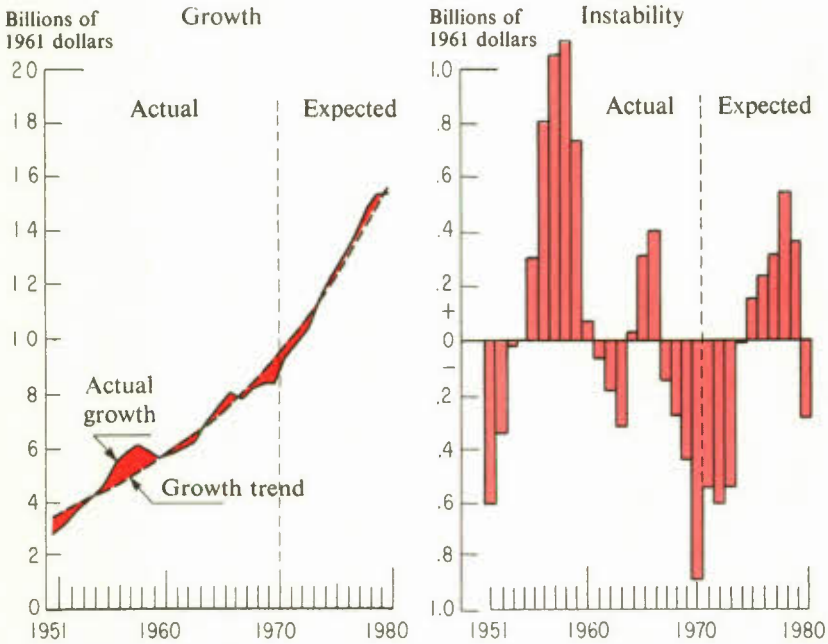
	Changes in Construction Instability		
	Residential Construction	Industrial Construction	Government Construction[1]
		(Per cent)	
Stable money supply	−17	− 5	− 1
Partial rescheduling of major projects	− 2	−30	− 2
Stable government grants	0	+ 1	−33
Three policies combined	−18	−33	−36

[1]Government construction here excludes government enterprises, whose construction is included under industrial construction.

SOURCE: Based on CANDIDE model estimates by the Economic Council of Canada.

Chart 5-15

Growth and Instability of Construction, 1951-80



SOURCE: Based on CANDIDE model estimates by the Economic Council of Canada.

construction by 17 per cent (Table 5-14). Had policies been designed to integrate better the resource boom of the 1950s, the construction of the Pipeline, and the St. Lawrence Seaway, the instability of industrial construction could have been reduced by 30 per cent. More stable disbursement of government grants for highway and school construction would have reduced the instability of such government construction by one-third. In each case, the policy measure would have been effective in stabilizing primarily one type of construction. A policy package, combining the three, would have reduced—more than any single policy measure—total construction instability by about 30 per cent.

Although, over the years, the stability of the construction industry has improved, there is little assurance that this trend towards greater stability will continue into the future. If the James Bay power development, the Mackenzie pipeline, the development of the Tar Sands, and nuclear power plants proceed according to current plans and expectations, there will be a sharp acceleration in construction investment from its relatively low levels in recent years. Along with the construction of airport and public transit facilities, this could create the setting for a boom/bust economy towards the end of this decade (Chart 5-15). It is urgent, therefore, to explore the potential for improved scheduling of these major projects.

6

Residential Construction

The main purpose of this chapter is to probe the nature and sources of instability in residential construction and to appraise the effects of the instability on shelter costs. The chapter begins, however, with a description of the growth of residential construction. Included later in the chapter are brief examinations of trends in the costs of new homes and, within the context of housing needs, trends in household incomes and expenditures on shelter and other essentials.

GROWTH IN RESIDENTIAL CONSTRUCTION

Since the Second World War, the stock of dwellings in Canada has increased in both absolute and relative terms. In the 22 years from 1950 to 1972, housing starts increased by 4.4 per cent per year, whereas the population grew by 2.1 per cent. And while starts or completions data do not measure changes in the total dwelling stock with complete accuracy because of demolitions and conversions, there can be no doubt that more dwellings are now available to Canadians across the country than ever before. Indeed, the per capita stock of dwellings increased from 0.24 in 1951 to 0.28 in 1971.

In the process, there have been basic improvements in the quality of dwellings. According to census data, between 1951 and 1971 the proportion of dwellings in Canada without running water dropped from 26.0 per cent to 4.0 per cent, and the proportion without bath and shower facilities fell from 39.2 per cent to 7.5 per cent. The number of persons per room decreased from 0.77 in 1951 to 0.66 in 1971, giving Canada one of the lowest densities of occupancy of any country in the world.

Since the immediate postwar period of heavy immigration and high birth rates, population growth in Canada has fallen off dramatically. Housing, on the other hand, has shown strong continuous growth. For Canada as a whole, completions per additional person rose from 0.2 units in the 1951-55 period to 0.6 units during the 1966-71 period.

The shares of each of the five main regions in total housing starts and in population growth over the 1950-72 period are shown in Table 6-1. In the absence of data on the stock of dwellings, by province, new residential construction and population growth for each province are compared over five-year periods from 1951 in Table 6-2. The results reveal the increasing importance attached to adequate housing in all regions. The thrust of new housing was relatively greatest in the Atlantic and Prairie Provinces, even though the populations of Ontario and British Columbia grew fastest. This probably reflected the pronounced rural-to-urban movement of the population in the Atlantic and the Prairie Regions, along with economic expansion and catching-up efforts to eliminate rundown housing left over from before the war.

Table 6-1

Regional Shares in Housing Starts and Population Growth, 1950-72

	Starts	Population Growth
	(Per cent)	
Atlantic Region	6.0	6.0
Quebec	26.1	26.1
Ontario	39.0	41.3
Prairie Region	16.7	13.0
British Columbia	12.2	13.6
Canada	100.0	100.0

SOURCE: Based on data from Central Mortgage and Housing Corporation and Statistics Canada, and estimates by the Economic Council of Canada.

The growth in housing has been accompanied by shifts in the type of dwellings. Chart 6-1 and Table 6-3 show the contribution of various components to total starts. In the 1950s, two-thirds of the dwelling starts were single-family dwellings but, in the 1960s, multifamily dwellings accounted for 54 per cent of total starts. This shift from single-family to multifamily dwellings was mainly due to well-known changes in life styles and consumer preferences, associated with urbanization, fewer children per family, more older people moving from their homes into apartments, and, in the 1960s particularly, young people leaving home to set up their

Table 6-2

New Residential Construction per Additional Person, by Province, 1951-71

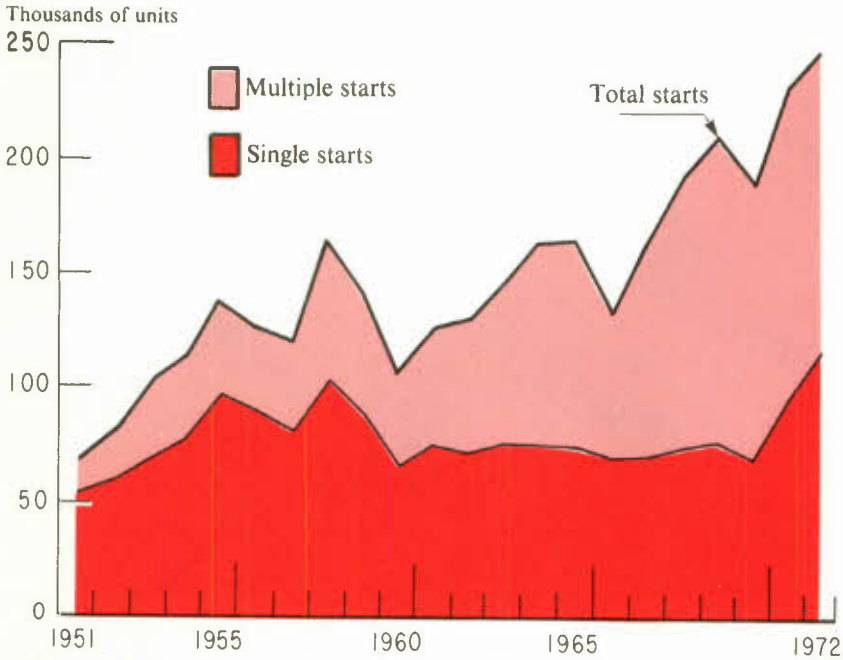
	Population Increase				New Residential Units				New Residential Units per Additional Person			
	1951–56	1956–61	1961–66	1966–71	1951–56	1956–61	1961–66	1966–71	1951–56	1956–61	1961–66	1966–71
	(Thousands)											
Newfoundland	54	43	35	29	6.0	7.8	9.1	13.7	.11	.18	.26	.47
Prince Edward Island	1	6	4	3	0.9	1.6	2.6	3.3	.90	.27	.65	1.10
Nova Scotia	52	42	19	33	11.0	17.0	17.2	24.9	.21	.40	.91	.75
New Brunswick	39	43	19	19	7.8	11.6	12.2	16.4	.20	.27	.64	.86
Quebec	572	631	522	246	139.9	180.8	206.2	218.6	.24	.29	.40	.89
Ontario	807	831	725	742	187.1	256.3	282.9	377.8	.23	.31	.39	.51
Manitoba	74	72	41	25	22.7	27.5	29.2	41.0	.31	.38	.71	1.64
Saskatchewan	49	44	30	−29	17.9	24.9	31.6	25.9	.37	.57	1.05	*
Alberta	184	209	131	165	43.0	60.9	61.3	88.7	.23	.29	.47	.54
British Columbia	234	230	245	311	44.8	75.2	88.7	135.7	.19	.33	.36	.44
Canada	2,066	2,151	1,771	1,544	481.1	663.6	741.0	946.0	.23	.31	.42	.61

*In Saskatchewan, 25,900 new units were built between 1966 and 1971, despite a net population exodus of 29,000 persons.

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

own households. In addition to these changing preferences, rising urban land costs encouraged higher-density housing. During the past three years, however, with people of the postwar baby boom marrying and beginning families of their own, there has been some shift in demand back toward single-family units.

Chart 6-1
Housing Starts, by Type of Dwelling, 1951-72



SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

Along with these factors, which, together with changes in family incomes, shape the demand for new housing, the availability of mortgage financing primarily determines the pace of housing starts. Not all mortgages are residential, of course, nor is all long-term financing of construction handled by mortgages. Commercial firms typically finance the construction of office buildings, hotels, and shopping centres by mortgages and, to the

extent that they do, they directly compete with residential demands for available funds. Industrial construction may be financed from internal company funds, by term loans, or by corporate bonds or debentures that also compete for investors' funds.

Table 6-3

Housing Starts, by Type of Dwelling and by Decade, 1951-70

	Type of Dwelling		
	Single-Family	Multifamily	Total
		(Per cent)	
1951-60	68	32	100
1961-70	46	54	100

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

In 1972, approved mortgages reached an all-time high of $6.0 billion, of which $4.9 billion were loans on new and existing residential property and $1.1 billion were on nonresidential property. On new housing, trust companies currently provide the largest number of mortgages, followed closely by chartered banks and then loan companies and life insurance companies, which used to be the major lenders (Table 6-4). On existing housing, trust companies are the largest lenders. Life insurance and trust companies are the largest suppliers of mortgages for nonresidential building.

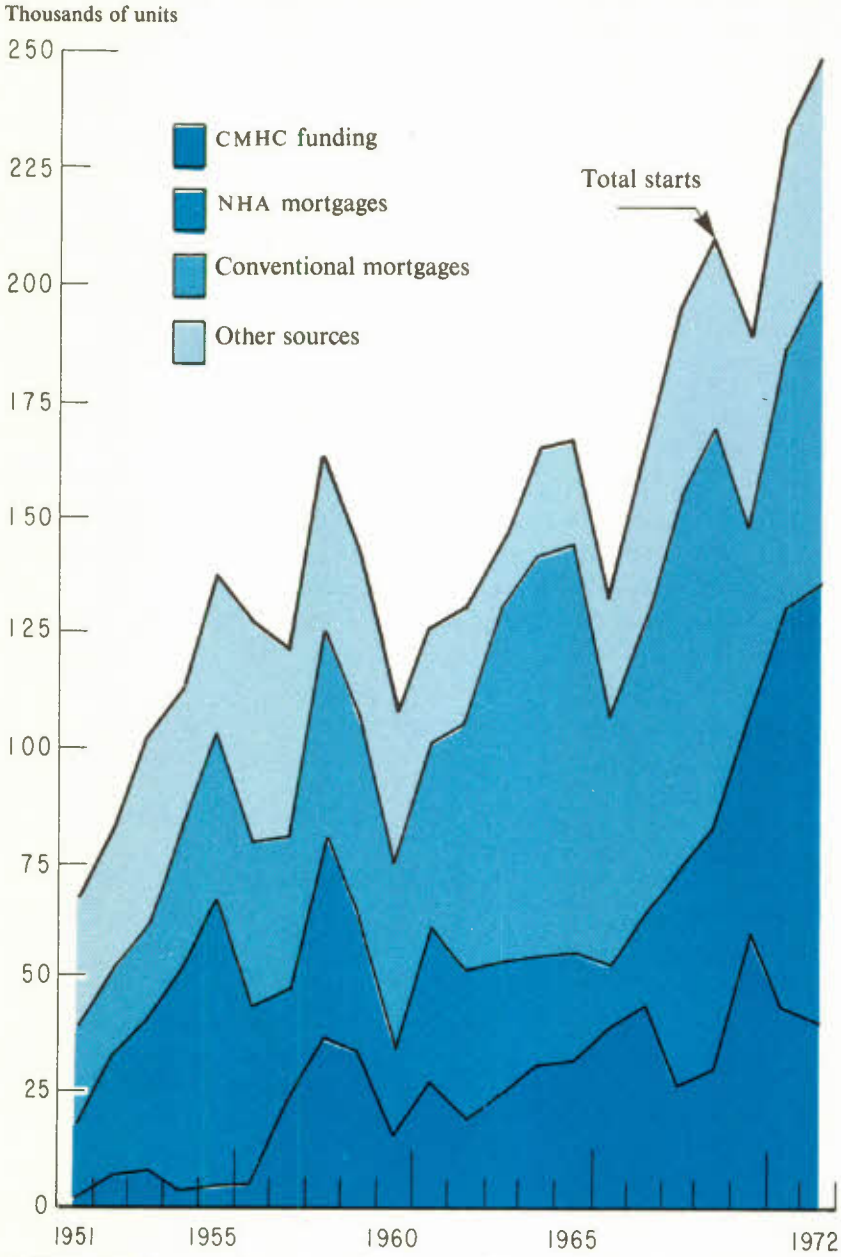
Table 6-4

Mortgages for New Residential Construction, by Main Source and Type of Funding, 1972

	NHA Mortgages		Conventional Mortgages		Total	
	(Thousands)	(Per cent)	(Thousands)	(Per cent)	(Thousands)	(Per cent)
Chartered banks	41.6	40.2	10.8	15.8	52.4	30.5
Life insurance	11.8	11.4	15.3	22.4	27.1	15.8
Trust companies	30.6	29.6	22.3	32.7	52.9	30.8
Loan companies	12.7	12.3	16.8	24.6	29.5	17.2
Other institutions	6.7	6.5	3.1	4.5	9.8	5.7
Total	103.4	100.0	68.3	100.0	171.8	100.0

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

Chart 6-2
Housing Starts, by Type of Funding, 1951-72



SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

Credit market conditions and the pace of activity in sectors of the economy other than housing strongly affect the availability of mortgage funds from the various financial institutions. Indeed, the growth in residential construction is marked by continuous shifts in the type of funding available. Traditionally, there are four main types of financing—conventional mortgages; mortgages underwritten by National Housing Act (NHA) provisions; Central Mortgage and Housing Corporation (CMHC) direct funding; and "other", which includes own financing and borrowing from Quebec savings banks and co-operative credit organizations.

As Chart 6-2 reveals, the numbers of new dwellings funded by conventional and NHA sources and by CMHC lending varied substantially over the 1951-72 period, partly in response to changes in underlying demand and supply and partly in response to federal initiatives that restrained or expanded the flow of private and public funds available under the National Housing Act. The share of new housing funded by NHA private loans swung from 17 per cent during the 1960-67 period—years in which Bank Act ceilings on interest rates prompted the chartered banks to withdraw almost entirely from the mortgage market—to 38 per cent in 1971-72. Conventional mortgage loans—available under slightly more demanding repayment conditions than those of NHA loans, but also in places or on types of houses not covered by NHA regulations—have accounted for roughly one-third of all housing starts since 1951, more during the 1960-67 period and relatively less after that. CMHC funding has also varied from period to period depending on the thrust of federal policy and the availability of other funds, Since 1957, CMHC spending has generally accounted for over one-fifth of total starts.

Table 6-5 documents these shifts over the four housing cycles, measured from trough to trough, during the 1951-70 period. In thus identifying the relative shares of each type of financing in total housing starts, it is important to recognize that they do not operate in isolation, sometimes adding to, and sometimes substituting for, one another. Borrowers naturally seek out the most favourable terms for a secured long-term loan, based on their construction plans and repayment preferences. If they do not qualify for a CMHC direct loan, they may apply for an NHA mortgage or for a conventional mortgage from one of various financial institutions.[1] Builders have tended to finance multidwelling units by conventional

[1] For example, in his analysis of housing in Canada, based on the 1951-67 period, Smith reported that "housing starts are very sensitive to the volume of government direct lending, but approximately 20 per cent to 25 per cent of this lending is offset by reductions in the conventional sector". L. B. Smith, "Housing in Canada", *Urban Canada: Problems and Prospects*, CMHC Research Monograph No. 2 (Ottawa, 1971), p. 62.

mortgages, whereas the tilt of NHA mortgages has been to single-dwelling units. In recent years, however, more CMHC expenditures and private NHA mortgages have been directed to multiple units.

Table 6-5

Housing Starts, by Source of Funds, 1951-70

	Source of Funds				
	CMHC	NHA, Private	Conventional	Other	Total
			(Per cent)		
1951-57	10	35	25	30	100
1957-60	23	22	31	24	100
1960-67	21	18	45	16	100
1967-70	21	23	36	20	100
1951-70	19	24	34	23	100

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

FACTORS INFLUENCING RESIDENTIAL CONSTRUCTION

The briefs submitted to us and the people contacted by our researchers were in agreement on the close relation between the availability and cost of funds and the levels of construction, especially housing. Such considerations apply mainly to the supply side. But, first, a few important influences on the demand side merit mention. Over the longer term, a major element in explaining the demand for residential mortgage funds is, of course, the pattern of household formation. More immediate influences are income levels and housing prices. Conditions in credit markets affect both the demand and supply of mortgage funds, as does government involvement in the housing market. An additional consideration that affects building in any area is the projected state of the balance between supply and demand in the local housing market.

Rising incomes permit an upgrading in consumers' standards of housing accommodation. Those sharing accommodation can move out to establish separate households, and older people will be better able to maintain themselves in their own houses or apartments. In addition, an expanding economy will encourage the flow of migrants both from abroad

and from rural areas to urban areas. In the process, if housing prices and ownership costs rise more rapidly than rental costs, there will likely be some shift from home ownership to rental accommodation.

Credit market conditions and monetary policy affect house-building in several ways. Any increase in interest rates raises the monthly cost of owning a new home[2] and hence discourages the market for new housing. Analysts have calculated that, during the 1951-67 period, an increase in mortgage rates by one percentage point would have reduced the short-run supply and demand for housing by about 12 per cent.[3] These findings, of course, say nothing about the longer-run effects, nor are they necessarily valid for the 1970s. We have, in recent years, seen considerable upward movement, worldwide, in prices and interest rates. Household patterns of earnings and expenditures are changing, and it appears from recent levels of residential construction that developers and households have learned to live with mortgage interest rates in the range of 10 per cent annually. Apart from the short-run impact of interest-rate adjustments, or changes in down-payment requirements, what seems to be of principal significance for householders is their longer-run income expectations relative to continuing shelter costs. The recent tilt in demand back towards single-family dwellings, despite high mortgage charges, suggests that, on this score, the expectations of many young home-owners are positive.

A change in credit conditions also affects investors' choices between mortgages and other investment alternatives. The principal instrument of monetary policy—open market operations (i.e., the central bank buying or selling government bonds in the open market)—will increase or decrease the volume of funds available for mortgages and other loans and investments. With a tightening of monetary policy, the volume of funds flowing through the economy and into financial institutions decreases. A decrease in the rate of inflow into institutions means a smaller volume of funds available for investments of all kinds, including mortgages. Moreover, if, as has been the case in the past, mortgage rates respond less quickly than other long-term rates, this will cause them to be relatively less attractive during periods of rising interest rates and more attractive during periods of falling interest rates.

Along with the factors acting through monetary policy and the credit market, there is also the impact of government programs. By far the most important of these during the period of our study have been the programs

[2] For example, on a 25-year mortgage for $20,000, an increase in interest rates from 8½ per cent to 9½ per cent adds $13 to the monthly cost of owning a new home.

[3] Smith, *op. cit.*, p. 61.

of the Central Mortgage and Housing Corporation, which have been of two major types. Since 1954, CMHC has made loans out of public funds available to individuals who, for income or other reasons, could not obtain private NHA or conventional mortgages.[4] The second type of program has been for the public funding of social housing for low-income groups, including multiple-unit projects built under federal-provincial auspices.[5]

The mortgages issued directly by CMHC have been made for two purposes: to provide public funds for persons not eligible for private mortgages, and in localities where private lenders are not active, and to channel public funds into the housing market at times when private funds become more difficult to obtain. The second of these purposes is related to the question of stability in residential construction. It may be noted, however, that the policy has been made more difficult by past issues related to the stabilization of the overall economy; that is, there have been times when housing expenditures were above trend while the level of output of the economy as a whole was below trend, or the reverse. The pattern of CMHC direct lending seems to indicate that there have been times when overall stabilization objectives were considered more important than housing stabilization, and other times when the reverse was true.

As one means of meeting the needs of the poor, CMHC finances housing for low-income groups. Until 1968, the volume of such housing was not sufficiently significant in relation to total housing construction to permit variations in the production of social housing to have any impact on the stability of construction or the overall economy. Since 1968, however, and the publication of the Report of the Federal Task Force on Housing and Urban Development, social housing has become by far the largest component of CMHC spending and is now of such importance relative to other housing production that the interrelationship between housing for low-income groups and stabilization cannot be overlooked.

INSTABILITY IN RESIDENTIAL CONSTRUCTION

As indicated earlier, rates of expansion in residential construction, region by region, have exceeded the rates of increase in population, and

[4] Currently authorized under Sections 58 and 59 of the National Housing Act, which deal with home ownership and rental. Many of these are obtained through provincial housing authorities.

[5] Including the following activities under the National Housing Act: loans to entrepreneurs and nonprofit corporations (Section 15), public housing (Section 43), federal-provincial rental and sales housing (Section 40), and student housing (Section 47).

Table 6-6

Turning-Point Dates of Cycles in Business and Cycles in Housing Starts, Canada and United States, 1949-70

	Turning-Point Dates[1]	
	Canada	United States
Business		
1st cycle—Trough	1949(3)	1949(4)
—Peak	1953(2)	1953(3)
—Trough	1954(2)	1954(3)
2nd cycle—Trough	1954(2)	1954(3)
—Peak	1957(2)	1957(3)
—Trough	1958(2)	1958(2)
3rd cycle—Trough	1958(2)	1958(2)
—Peak	1960(1)	1960(2)
—Trough	1961(1)	1961(1)
4th cycle—Trough	1961(1)	1961(1)
—Peak	1966(1)	1966(3)
—Trough	1967(4)	1967(2)
5th cycle—Trough	1967(4)	1967(2)
—Peak	1969(1)	1969(4)
—Trough	1970(4)	1970(4)
Housing Starts		
1st cycle—Trough	1951(4)	1951(3)
—Peak	1955(3)	1955(2)
—Trough	1957(1)	1957(1)
2nd cycle—Trough	1957(1)	1957(1)
—Peak	1958(2)	1959(1)
—Trough	1960(1)	1960(4)
3rd cycle—Trough	1960(1)	1960(4)
—Peak	1964(4)	1965(4)
—Trough	1967(1)	1966(4)
4th cycle—Trough	1967(1)	1966(4)
—Peak	1969(1)	1969(1)
—Trough	1970(2)	1970(1)

[1] The number in parentheses after each year indicates the quarter.

SOURCE: Based on E. J. Chambers, "Canadian Business Cycles Since 1919", *Canadian Journal of Economics and Political Science*, 1958; and Claude Simard, unpublished work, École des Hautes Études Commerciales, Montreal. Simard's work recognizes a small cycle intervening between 1961(1) and 1966(1). U.S. Department of Commerce Bureau of the Census, *Business Conditions Digest* (Washington, D.C.: U.S. Government Printing Office, August 1971). Lyle E. Gramley, "Short-term Cycles in Housing Production: An Overview of the Problem and Possible Solutions" in *Ways to Moderate Fluctuations in Housing Construction*, Federal Reserve Staff Study, Washington, D.C., 1972. The U.S. Department of Commerce does not designate the period of weakness in late 1966 and early 1967 as a recession and hence shows only four cycles during the period. Robert Moore Fisher and Charles J. Siegman, "Housing and Financial Restraint: Observations on Foreign Experience" in *Ways to Moderate Fluctuations in Housing Construction*, Federal Reserve Staff Study, Washington, D.C., 1972.

there have also been improvements in the basic quality of dwellings available to Canadians. The expansion in housing, however, has been marked by a series of cyclical ups and downs. The principal features of these cyclical fluctuations in residential construction include their severity as well as their timing in relation to the general business cycle.

Since 1949, both the United States and Canada have experienced five complete cycles in business and four complete cycles in housing starts. The expansion phase of the Canadian housing cycles, at times, was lengthy—45 months in the early 1950s and 57 months between 1960 and 1964. On average, however, the upswing in housing starts lasted 35 months as against 20 months for the downswing. Year-to-year changes in starts during cyclical swings averaged about 22,000 units (or roughly 10 to 15 per cent of housing starts).

The lower points (troughs) and the upper turning points (peaks) of both the cycles in business and cycles in housing starts in Canada and the United States are shown in Table 6-6. The contraction phase of business cycles refers to true recessions or to periods of slower growth of the economy. It is interesting to note that the turning points of the cycles in business and in housing starts correspond closely in the two countries.

Two general observations can be made about the cyclical swings in housing starts. First, cyclical instability has tended to decrease over the years. The extent of the swings, in terms of units built, decreased by 10 per cent in the 1960s compared with the 1950s. Second, instability in housing starts is essentially an urban phenomenon. This is not surprising, since around 80 per cent of all housing starts are in communities of 10,000 or more, and it is the larger cities that are growing most rapidly. The extent of cyclical swings in housing starts in major metropolitan areas was twice as pronounced as the national average. The Montreal area was an exception, however, with the extent of its cycles being similar to the national average.

Table 6-7

Contribution to Instability of Housing Starts, by Type of Dwelling, 1951-70

	Type of Dwelling		
	Single-Family	Multifamily	Total
		(Per cent)	
1951-60	84	16	100
1961-70	23	77	100

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

In the 1950s, the bulk of instability in residential construction was in single-family dwellings, which accounted for 84 per cent of instability compared with a 67 per cent share of residential starts (Tables 6-7 and 6-3). In the 1960s, however, multifamily dwellings accounted for 77 per cent of housing instability and 54 per cent of starts. On a regional basis, over the 20-year period 1951-70, Ontario accounted for over 40 per cent of overall instability or more than in proportion to its share of total starts (Table 6-8). Quebec accounted for about 19 per cent of total instability compared with 26 per cent of total starts.

Table 6-8

Contribution to Instability of Housing Starts, by Region, 1951-70

	Contribution to Instability
	(Per cent)
Atlantic Region	3
Quebec	19
Ontario	43
Prairie Region	20
British Columbia	15
Total	100

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

SOURCES OF INSTABILITY

Table 6-9 shows the respective shares in instability of the various sources of funding for residential construction. Residential construction financed by NHA private funds accounted for a substantial portion of the cyclical swings in housing over the 1951-70 period. Private conventional loans also shared significantly in the cyclical swings. During the 1960-67 period when their importance increased, conventional mortgages were not destabilizing but, in the 1967-70 period, they accounted for a great deal of the instability in residential construction. CMHC funds were an important component of instability in the 1957-60 period but exerted a substantial stabilizing influence during the 1951-57 and 1967-70 periods. For the 1951-70 period as a whole, CMHC expenditures exercised a stabilizing influence.

Table 6-9

Contribution to Instability of Housing Starts, by Source of Funds, 1951-70

	Source of Funds				
	CMHC	NHA, Private	Conventional	Other	Total
			(Per cent)		
1951-57	−46	98	24	24	100
1957-60	59	24	13	4	100
1960-67	9	53	0	38	100
1967-70	−92	64	117	11	100
1951-70	−17	58	39	20	100

SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

During the 1951-57 period, the prolonged upswing in housing starts was due to a series of measures taken by the government to increase the supply of mortgage money, including mortgage insurance, the entry of chartered banks into the mortgage business, and more generous loan-to-value ratios. These efforts culminated in the National Housing Act of 1954, which laid the basis for the present NHA mortgage system that guarantees full repayment to the private lenders. This did not prevent, however, a reduction in the supply of mortgage funds during the years 1955-57, when rapid economic expansion led to a tight money policy.

The next housing cycle was relatively brief, starting in the first quarter of 1957 and running to early 1960. The expansion in housing starts during 1957-58 was made possible by the release of funds into the mortgage market from the rest of the economy, and by a deliberate acceleration of CMHC direct lending for home ownership. However, this upswing in housing starts did not last long. The revival of the economy in the last two quarters of 1958 heightened demands for capital expansion, and the tight-money policy from the latter part of 1958 through 1959 sharply curtailed the flow of funds into mortgages. Moreover, faced with the statutory 6 per cent interest-rate ceiling on bank loans, chartered banks began withdrawing from the mortgage business, thus deepening the decline in the overall supply of mortgage money.

The economy slackened once again in the second quarter of 1960, and the number of housing starts increased. Although the pace of the economy quickened in 1961, competing expenditures on machinery and equipment did not encroach on mortgage loans. In addition, the Central Mortgage and Housing Corporation strove to encourage construction through a series of winter house-building programs in 1963 and 1964.

In June 1963, there was a further reduction in the down-payment ratio on NHA mortgages. As a result, in contrast to earlier situations, the upward swing in housing starts by and large coincided with the general expansion of the economy.

The downturn in housing in 1965-66 was due in part to tight money and the pressure for funds for capital expansion in the nonresidential sector. By then, the chartered banks had withdrawn completely from the mortgage market.

But, in 1967, the National Housing Act was amended to allow its maximum lending rate to adjust quarterly at 2¼ percentage points above the long-term Government of Canada bond yields. This, in turn, led to the return of chartered banks to the mortgage business and, together with a relatively easy-money policy, encouraged the upturn in housing starts from 1967 to 1969. As a result, the expansion in housing starts took place concurrently with the general economic upturn. The downturn in housing starts from 1969 to 1970 was mainly due to the effect of the tightening monetary policy. And subsequently, of course, it was followed by three years of very vigorous housing activity, facilitated by the freeing of the private NHA mortgage interest rate in 1969 and a deliberate expansion of CMHC expenditures on housing for low-income groups.

This brief review of the 1950-73 period indicates that general economic conditions; CMHC funding; credit-market conditions, represented by the interest rate as well as the margin between long-term bond rates and the conventional and NHA mortgage rates; and, on the demand side, income changes as well as changes in the annual rate of household formation have all played some part in generating ups and downs in housing starts. Now let us look more closely at the elements most commonly cited as contributing to instability in residential construction—that is, monetary policy and credit market conditions—through their effects on the supply of mortgage funds.

As indicated, the inflow of savings into the financial intermediaries depends very much on the margin between the term deposit rate they offer and the yields on other forms of investment open to savers. And what the financial intermediaries can pay to savers on term deposits is partly determined by what they can earn through their investment in mortgages. This is especially so in the case of trust and loan companies, which are highly specialized in mortgage loans. Their mortgage loans outstanding represent 60 to 75 per cent of their total assets.

In the years up to 1969, NHA mortgage interest rates, and to a lesser extent the conventional mortgage rates, were relatively inflexible to changes in local or overall economic and financial situations. Several factors

explain this inflexibility, such as the lender's reluctance to increase interest for fear of decreasing the quantity of funds demanded, the local nature of housing markets, the absence of a secondary market in Canada for buying and selling conventional mortgages, and, of course, the legislative limitations affecting particularly the NHA rate. That most of the earlier mortgages were at a fixed interest for the duration of the repayment period was also a contributing factor, given the variability of returns on other assets in response to general economic conditions. Inflexibility of the interest rate charged on mortgages also meant inflexibility in the interest rate paid on term deposits.

Over the 1952-70 period, more often than not, tight-money periods coincided with general business expansions—1951 to 1953, 1955 to 1957, 1958 to 1959, and 1963 to 1966. There were exceptions, however. In the period from 1967 to 1968, out of four quarters of tight-money policy, three quarters represented a contraction phase of the general business cycle. On the other hand, easy-money periods often coincided with the contraction phase of business cycles—1957 to 1958, 1966 to 1967, and late 1969 to early 1971. At times, however, an easy-money policy occurred during general business expansion—1962 to 1963, and 1968. Although these exceptions reveal the timing difficulties inherent in monetary policy, on the whole, monetary policy behaved in the expected way.

The interest rate on mortgages normally is higher than on bonds. The margin between mortgage and bond rates tended to decrease during tight-money periods and business expansions and to increase during easy-money periods and general business contractions. The implication of this finding is that insofar as interest-rate margins determine the availability of loanable funds and mortgage loans, one would expect variations in residential construction to run counter to general business conditions—that is, to be "countercyclical".

Our analysis shows that lenders' funds and mortgage loans were directly affected by interest-rate margins lagged by one year. The lagging process is intended to make allowance for the adjustment time of money markets to changes in interest-rate margins. It was found that an increase by 10 per cent in the margin between the rate on five-year Guaranteed Investment Certificates (GIC) and the medium-term bond yield tended to lead to a 1 per cent increase in funds of trust and loan companies and a one-third of 1 per cent increase in funds of banks. Similarly, a 10 per cent increase in the mortgage/bond-yield margin tended to lead to a 5.4 per cent increase in mortgage loans of banks, a 3.6 per cent increase in mortgage loans of trust and loan companies, and an 8.0 per cent rise in mortgage loans of life insurance companies.

Inflexibility in interest rates of mortgages and term deposits, combined with monetary policy, have been responsible in large measure for countercyclical instability in loanable funds and in mortgage loans. The result of this is that, since the supply of mortgage funds is one of the principal determinants, housing starts have also fluctuated widely and, at times, with a countercyclical tendency relative to the economy.

According to our analysis, complete stability in the term-deposit/bond-yield margin would have reduced significantly the instability in the growth of funds of trust and loan companies; and complete stability in the mortgage/bond-yield margin would have reduced noticeably the instability in mortgage loans of life insurance, trust, and loan companies. On the whole, the instability in all dwelling starts would have decreased by about 10 per cent (or about 1,500 dwelling units per year). Moreover, as we shall see, the decrease in the instability of housing starts, by easing cost pressures during periods of peak activity, might have affected favourably the rate of growth in residential construction over the 1956-70 period.

In short, a distinction must be made between the effects of monetary policy and interest rates on housing demand and housing starts, and the effects of changes in mortgage/bond-yield margins on the supply of funds available for residential building. The former tends to produce a pattern of starts in conformity with the general level of economic activity. However, if there are wide variations in the mortgage/bond-yield margin, this will destabilize the flow of mortgage funds and conflict with an objective of smoothing the output of new residential units around its growth trend.

Recently, there have been important structural changes within the housing-mortgage market, designed to liberalize its operations and make mortgages more flexible and transferable, and to ensure a more even flow of mortgage funds by making them less sensitive to destabilizing changes in the mortgage/bond-yield margin. These included the decision to allow the NHA mortgage interest rate to fluctuate freely in response to market conditions—a measure that has tended to smooth the mortgage/bond-yield margin somewhat and the provision of mortgages, the terms of which were renewable every five years. For the reasons indicated earlier, however, mortgage rates are still less flexible than long-term bond yields; one can expect, therefore, that, if not offset by other factors, variations in the margin will still measurably affect the flow of mortgage funds and housing starts.

Nonetheless, while monetary policy, interest-rate margins, and institutional measures undoubtedly affect the flow of mortgage funds, and more significantly the mix of the sources of funds between different types

of mortgages and different financial intermediaries, the more fundamental sources of housing instability today appear to be found on the demand side. Variations in the availability of credit are, of course, one of several factors affecting the stability or instability of housing demand. Population growth, household formation, and immigration are also important. Unfortunately, however, the precise timing and form of the housing demand associated with these influences and with the life cycle of families have proven difficult to predict.

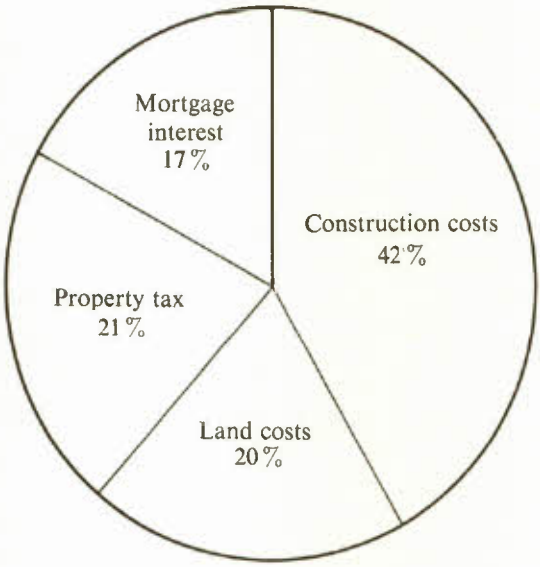
Much the same can be said about the uncertain effects of dwelling prices and rents on housing demand. For example, present purchases are not independent of future purchases. If initial purchase or rental prices are kept low, more units will be sold or rented. Assuming no change in the depreciation rates on residential dwellings, a sudden increase in housing starts above the trend rate of growth of households means that buyers are advancing future housing into the present and thus they will buy correspondingly less in subsequent years. Similarly, a decrease in starts below the trend means that buyers are postponing their purchases and thus correspondingly more will be bought in the future. Furthermore, the whole issue is clouded because of inadequate statistics on the prices of shelter, and more particularly of rents.[6]

NEW HOME OWNERSHIP COSTS

To give some indication of the relative importance of construction costs in the cost of housing, we have examined the main elements shaping the costs of new home ownership. Over the past two decades, rising construction costs accounted for a little over 40 per cent of the increase in total home ownership costs. Other items—land cost, property tax, and mortgage interest—accounted for the remaining 60 per cent (Chart 6-3).

[6] The Central Mortgage and Housing Corporation has complete data on the purchase price of new housing financed under NHA or conventional mortgages, but not on other units sold. Multiple-listing statistics are available only for the major cities and are not adequately adjusted for the quality or size of homes or apartment units. The Consumer Price Index of shelter costs appears reasonable for total home ownership (although this Index is a somewhat arbitrary composite drawn from separate surveys of the labour and materials costs in new houses, repairs, property taxes, insurance, and mortgage interest rates), but it is inadequate and misleading for tenant costs or rentals. For instance, the CPI tenant costs index in 1971 was only 23 per cent higher than 1961, whereas the 1971 Census showed that actual rents paid were 75 per cent higher than in 1961.

Chart 6-3
Main Factors Contributing to Change in Cost of New Home Ownership, NHA-Financed, 1952-71



SOURCE: Based on data from Central Mortgage and Housing Corporation and estimates by the Economic Council of Canada.

If a new NHA-financed home today requires a monthly payment for mortgage and taxes of $200, compared with $100 twenty years ago, the analysis indicates that about $42 of this increase was due to the rise in construction cost; $20 was due to the higher cost of land; $21, to increased property tax; and $17, to the higher mortgage interest rate.

Cost estimates of this sort relate to a particular time period, a particular type of house, and only to costs at time of purchase. Over the years, the importance of the various cost elements has changed. During the 1950s, land and construction costs contributed most to cost changes in home ownership, while, in the 1960s, mortgage interest and property taxes increased more rapidly (Table 6-10).

It is important to note that, in spite of rising costs of new home ownership, the owner is protected to some extent against inflation. Once a home is bought, the monthly payments do not advance as rapidly as market prices of new homes. At the same time, the market value of existing homes rises along with the market price of new homes.

Table 6-10

Shares in Cost Changes of New Houses Financed under the National Housing Act, 1952-71

	Shares in Cost Changes	
	1952-61	1962-71
	(Per cent)	
Construction cost	43	41
Land	26	17
Mortgage interest	12	19
Property tax	19	22
All other items[1]	0	1
Total cost change	100	100

[1] Includes cost changes related to size of down-payment, amortization period, and property insurance.

SOURCE: Based on data from Central Mortgage and Housing Corporation and Statistics Canada.

The continuing rise in land costs in the major metropolitan areas has come about, in large part, simply because serviced land has not been made available at a rate consistent with the rate of growth in demand. The Central Mortgage and Housing Corporation has provision, under the National Housing Act, to finance large-scale land banking by provinces and municipalities, and has under consideration various other options to make more land available. But land banking is expensive and, by itself, not sufficient. In some cases, there is a common interest between developers and municipal governments to postpone development of land, since the higher the prices for new serviced lots, the larger will be the property taxes derived from those lots. The supply of serviced land has a direct impact not only on land prices and building costs but also on year-to-year shifts between single and multiple dwellings, and it may, at times, even add to the instability of residential construction. Adequate data were not available to analyse this problem, but it is an area that clearly warrants the attention it is beginning to receive.

COST EFFECTS OF INSTABILITY

It was indicated in Chapter 5 how greater stability of residential construction could increase the capacity of the construction industry. If the extra capacity were fully utilized, it could mean more employment,

more construction output, and more residential housing without acceleration of the rate of wage and price inflation. In this section, we consider how instability increases construction costs. The explanation of this effect seems to be that, while each upturn in housing construction puts pressure on wages and the cost of building materials because of short-run excess demand, each downturn does not result in tangible cost reductions because of the fixed nature of some inputs and the downward rigidity in wages and other costs. In other words, construction costs and housing prices are subject to a "ratchet effect"; they increase rapidly in times of excess demand but do not decrease much in slack times.

Analysis was carried out for the period 1951-72, which related the percentage rate of increase in per-square-foot construction cost of single-detached dwellings financed under the National Housing Act to the percentage changes in housing starts as well as the Consumer Price Index. Although the cost data used do not reflect the construction cost of all dwellings, it is likely that they reflect the general tendency.

For the entire period, costs averaged an annual increase of 2.5 per cent. In years of very vigorous upswing when, for example, the annual housing starts increased by 30 per cent, the accompanying cost inflation ran to about 5 per cent per year. On the other hand, in years of very marked downswing when, for instance, annual housing starts decreased by 20 per cent, costs still increased by about 1.5 per cent. It is, however, worth noting that these cover actual construction costs only; when rising land prices are added, the combined inflationary effect is much greater. The rate of price increase has been rising in recent years so that the average price of a new single-detached home, NHA-financed, was 74 per cent higher in 1971 and 92 per cent higher in 1972 than in 1961.

According to our analysis, a decrease of even 20 per cent in the instability of housing starts over the past 20 years could have meant a worthwhile saving to consumers. Such considerations suggest that more stable growth in housing starts would significantly retard future increases in housing prices, land costs, and rents.

INCOMES, SHELTER COSTS, AND POVERTY

One of the more important elements of demand bearing on housing starts is the incomes of Canadians. There is no doubt, for instance, that the increase in housing starts per person owes much to the increasing

ability of families to afford better housing, which also reflects the shift to smaller families and more wives and young people at work. Single-family dwellings represent a long-term investment; and families, in their decisions to buy, and financial institutions, in their decisions to extend mortgages, are guided by longer-term income expectations. This is less the case, of course, for individuals or families considering rental accommodation.

In the context of the present section, it is important to ask to what extent incomes have increased compared with rising shelter costs and, more specifically, how changes in incomes and costs have affected the poor. Over the past decade, incomes of Canadians have increased, but only part of the increase was a real gain because price inflation reduced the purchasing power of the consumer. But, even though shelter costs increased rapidly, there is little doubt that most consumers today are better sheltered and better off than they were a decade ago.

According to census data, median incomes of families, as well as unattached individuals, rose by about 90 per cent from 1961 to 1971 (Table 6-11). Over the same years, shelter costs rose by about 75 per cent. Not all of this was a price increase; part of it was due to improvement in the quality of housing. Therefore, the real gain was larger than suggested by the differences between percentage changes in incomes and shelter costs. The data also indicate that people at various income levels shared in these gains.

Table 6-11

Changes in Household Income and Shelter Costs at Median Levels, 1961-71

	Median Levels		
	1961	1971	Changes
	(Dollars)		(Per cent)
Incomes			
Families	4,866	9,347	92
Unattached individuals	1,652	3,217	95
Shelter Costs			
Value of homes	11,000	19,011	73
Monthly rents	60	105	75

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

There are two ways of looking at how families at different income levels spend their income. One way is to take a "snapshot" at a particular point in time, showing what different families at different income levels spend. For example, in 1969, families with incomes 10 per cent higher

than average spent an extra 3 per cent on food, 5 per cent on medical care, 5 per cent on shelter, 7 per cent on clothing, and an extra 11 per cent each on transportation and other household expenditures. At higher income levels, families tended to spend a smaller share of their incomes on necessities and a larger share on luxuries. This tendency to spend more on luxuries was somewhat offset, however, by progressive income taxation.

A second way of looking at income and expenditure patterns is to examine the expenditures of groups of families as their incomes change through time. This is less easy, especially as changes in the composition and status of the families, as well as relative prices, tastes, and customs, influence the results. In measuring housing needs, however, this approach is perhaps more useful. In its *Fifth Annual Review*, the Economic Council defined poverty as "insufficient access to certain goods, services, and conditions of life which are available to everyone else and have come to be accepted as basic to a decent, minimum standard of living".[7] The extent of poverty in Canada was portrayed by a variety of statistical measures. Central among them was an estimate of the number of families who spent 70 per cent or more of their income on the purchase of three basic necessities of life: food, clothing, and shelter.

To determine whether the extent of poverty, as defined, has increased or diminished, changes in income, income distribution, and household expenditure patterns were examined together. Analysis of urban household expenditures shows that median family incomes increased from $4,400 in 1959 to $8,000 in 1969. At the same time, families spending more than 70 per cent of their income on basic necessities and, therefore, coming under the Council's definition of the poverty line, averaged an income of approximately $3,000 in 1959 and $4,000 in 1969. These income levels, being averages only, do not attempt to reflect the real needs of large families, families in remote areas, in congested urban slums, or those otherwise handicapped in their search for the basic essentials of life.

It seems fair to say, however, that with rising incomes, and in spite of the continuing erosion of purchasing power brought on by inflation, the extent of poverty in Canada has been reduced since 1959. According to our estimates, the proportion of families of average size living at, or below, the poverty line was reduced from approximately 24 per cent in 1959 to 17 per cent in 1969. Improvement was not limited to families of average size but included, to various degrees, all types of families.

In terms of percentage changes, the greatest reductions in the extent of poverty were among large families and single unattached individuals.

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[7] Economic Council of Canada, *Fifth Annual Review: The Challenge of Growth and Change* (Ottawa: Queen's Printer, 1968), pp. 104-105.

In 1959, almost every third family of five persons or more was living at, or below, the poverty line; by 1969, it was only every sixth family (Table 6-12). This reduction represents a sizable improvement. There has also been a 20 per cent reduction in the proportion of unattached individuals whose incomes fall below the minimum levels of expenditure needs. One must, of course, exercise caution when using earnings data as a measure of poverty for unattached individuals. Poverty still persists among many old-age pensioners, widows and widowers, divorced or separated mothers, and some young people, employed or unemployed, who live in areas where jobs are scarce or temporary or who lack the skills or responsiveness that employers require. There are also the down-and-out, weakened by malnutrition, alcohol, drugs, and self-neglect. But some pensioners and others own their own homes or have other accumulated wealth that does not show up in their reported incomes and expenditures and, certainly in the case of most university students and many other young people, annual income figures poorly describe their long-term prospects. Hopefully, data will soon become available that will permit a more precise determination of the varying degrees of poverty among each of these groups.

Table 6-12

Low-Income Families, by Family Size, 1959 and 1969

	Income at Poverty Line		Proportion of Families below Poverty Line	
	1959	1969	1959	1969
	(Dollars)		(Per cent)	
Two persons	2,063	2,977	27.2	21.6
Three persons	2,589	3,597	16.5	12.3
Four persons	3,038	4,131	16.1	11.0
Five persons and over	3,810	5,003	30.7	16.4
All families	2,952	3,931	23.7	17.1

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

HOUSING NEEDS

Since it is their declared wish that every household have access to decent shelter, governments at all levels are interested in future housing needs. These needs may be calculated by estimating the increase in the number of households during a given period, taking account of the

shrinking number of situations where two or more households share a dwelling and allowing for demolitions, conversions, and normal vacancy rates.

Table 6-13 estimates the amount of residential construction needed over the period 1971-81. Over this 10-year period, the number of Canadian households is expected to increase by over two million. An additional 300,000 dwellings would be needed to replace the dwellings that are likely to be torn down and to provide additional accommodation for families that formerly dwelt together. Therefore, Canada needs about 2.5 million new dwellings over the present decade, or an average of about 250,000 units per year.

Table 6-13

Estimated Housing and Construction Needs, by Region, 1971-81

	Housing Needs				
	Households		New		Construction
	1971	1981	Households	Depletions	Needs
			(Thousands)		
Atlantic Region	505	543	38	40	78
Quebec	1,606	2,138	532	102	634
Ontario	2,228	3,228	1,000	92	1,092
Prairie Region	1,021	1,202	181	74	255
British Columbia	668	1,064	396	35	431
Canada	6,028	8,175	2,147	343	2,490

SOURCE: Based on data from Statistics Canada, and from J. S. Kirkland, *Demographic Aspects of Housing Demands to 1981*, CMHC Staff Study (Ottawa, 1971).

The largest share of new dwellings is needed in Ontario (about 1.1 million units), followed by Quebec (about 634,000 units). Estimating housing needs, by metropolitan area, is somewhat more difficult, since metropolitan boundaries change, and the thrust of new industrial expansion frequently tilts from one city to another over the period of a decade. If past trends in household formation persist, we may expect that about 510,000 units will be needed in Toronto; about 450,000 units, in Montreal; and about 195,000 units, in Vancouver. The needs for residential construction in Canada's metropolitan areas together account for about 75 per cent of the country's total needs.

There is no doubt that the building industry could provide enough dwellings to meet these needs, but the important question is whether there will be enough dwellings within the financial reach of low-income households. If instability in housing starts were to decrease, the capacity

of the construction industry to produce houses would increase without adding to inflationary price-cost pressures, and more and better housing could be made financially accessible to everyone, including the poor. Furthermore, probably all participants in residential construction would benefit to some extent from a reduction in instability.

As already shown, considerable progress has been made in providing more adequate housing for all Canadians, particularly the lower-income groups. The federal budget for housing has grown rapidly and is now close to $1 billion annually. The emphasis in public funding has shifted toward a social objective of helping the financially underprivileged. By now, over 80 per cent of the Central Mortgage and Housing Corporation's budget is directed toward the provision of accommodation for low-income people. Most provinces have established housing corporations or ministries that carry much of the burden of selecting families or single individuals for public housing projects and of administering subsidies. By and large, these provincial agencies work with funds made available through CMHC's various direct expenditure programs, but most provinces also contribute substantially to alleviating the housing needs of low-income groups. The Ontario Housing Corporation has provided considerable thrust by its "Home Ownership Made Easy" program, and the Quebec Housing Corporation and the Manitoba Housing and Renewal Corporation have shown increasing vigour in meeting the needs of low-income groups.

That Canadians generally are giving greater social priority to housing needs is demonstrated by their active participation in housing programs. Co-operatives, church groups, native organizations, and other public-spirited and nonprofit groups have come forward in recent years to sponsor and assist in the construction and administration of housing for senior citizens, disadvantaged children, Indians and Métis, and other poor or disabled persons living in urban and rural areas. Recent changes in the National Housing Act would not have worked so effectively had it not been for such widespread concern and action. We trust that federal, provincial, and local planning will ensure that funds for these objectives will flow at a stable rate, in keeping with overall housing targets and needs.

CONCLUSIONS

Where does this leave us in the final analysis? We have examined the cyclical swings in the availability of mortgage money as reflected by the differences between mortgage interest rates and bond yields. And we have

found that, even if the freeing of NHA interest rates and other measures could result in complete stabilization of the difference in mortgage rates and bond yields, this action alone would have limited effectiveness in stabilizing housing starts. There would still be the instability derived from changes in economic conditions and monetary policy affecting both the demand for housing and the supply of loanable funds.

What these findings indicate is that a good part of the instability in housing construction stems from the overall instability of the Canadian economy. This confirms what has been demonstrated earlier in the report. In Chapter 1, it was shown that over the past 100 years there was a close resemblance between the major surges and slumps of the economy and the ups and downs in residential construction. In Chapter 4, it was shown that the improvement in the stability of the Canadian economy—from the prewar to the postwar period—was reflected in a corresponding improvement in the stability of residential construction. And, in Chapter 5, we found that stabilization of personal income along its growth path could have stabilized residential construction by as much as complete stabilization of the mortgage interest rate in relation to the industrial bond rate. But growth and stability of personal income depend largely on the overall performance of the Canadian economy, which in turn is influenced considerably by international developments in trade. This means that it would be difficult to stabilize the Canadian economy completely and that as long as the economy grows with ups and downs, with credit conditions tightening and relaxing accordingly, some instability is likely to remain.

It is very important, therefore, that these features of instability are not ignored in policies aimed at greater stability in residential construction. This does not mean that nothing can be done about moderating such instability but that a single approach will not suffice. Indeed, in recent years, substantial progress has been made in stabilizing the flow of housing starts. To a large part, this has been due to the enactment of various recommendations set forth early in 1969 by the Federal Task Force on Housing and Urban Development. It recommended setting annual housing targets, freeing the NHA mortgage interest rate, raising NHA loan ceilings, expanding the secondary mortgage market, accelerating land development, and improving the programs for low-income housing. All these recommendations have been acted upon by the Central Mortgage and Housing Corporation or are now before Parliament. We recognize the potential merit of these recommendations and, in formulating our policy position, have taken them into account.

7

The Role of Governments in Instability

The briefs indicated a widespread conviction that governments play a leading role in the cyclical instability of construction. This role is both direct and indirect. Directly, governments are important spenders on construction; indirectly, they influence other construction expenditures in many ways, such as through general economic policies. Both aspects are examined in this chapter, with direct government spending receiving initial and greater attention. The first section under the direct role of governments outlines the size of government expenditures on construction, looking at such questions as how much is spent by each level of government, what kinds of structures predominate, what differences exist by region, and what changes have occurred through time. Then instability in government spending, rather than its level, is examined. The impact of changes in government construction expenditures on instability in construction as a whole is outlined. The relative importance for construction instability of each level of government and of each type of structure bought by governments is also studied. Some of the reasons why government spending behaved as it did are given. In the second part of the chapter, we consider briefly the indirect influence of governments on construction instability.

THE DIRECT ROLE

The construction industry sells its output to three major groups—business firms, households (attributing all residential construction, whether for sale or rent, to household demand), and governments on behalf of the general public. In this section we analyse government construction spending.

A PROFILE OF PUBLIC CONSTRUCTION SPENDING

Government enterprises such as Hydro-Quebec, Ontario Hydro, and the CNR are included here with government, although, as will be noted later, they bear important similarities to private firms. On this basis of classification, public expenditures on construction have accounted for just over one-third of the industry's output in the last 20 years. Until recent years, government construction expenditures have been almost exclusively on nonresidential construction. Governments account for about half of the total output of nonresidential construction.

Government spending on construction can be classified by level of government and type of agency, the latter comprising departments, enterprises, and institutions. Provincial goverments as a group are the largest spenders. In 1972, for example, total government expenditures on construction were $5,822 million, with provincial governments accounting for $3,039 million, or over half of this. Municipal governments spent about 30 per cent of the total—some $1,872 million—and the federal government about 15 per cent or $911 million. The federal share has dropped sharply; 20 years ago it accounted for a third of all government spending on construction.

It is important to recognize that, because of various cost-sharing arrangements among the different levels of government, data on certain expenditures at one level may sometimes also reflect decisions and outlays made at other levels. From the standpoint of prescribing remedies for cyclical instability, decision-making rather than spending is the critical function. Matching grants and various housing, regional economic expansion, and winter works programs are examples of construction programs that are planned and/or financed at more than one level of government.

The relative importance of department and other agency spending on construction by the three levels of government in 1972 is shown in Table 7-1. Departmental spending by provincial governments—the largest single category and over a quarter of the total—is mostly on highway, road, and street construction, as is a considerable amount of municipal department spending, shown as the third item in the table. The second item is provincial enterprises, accounting for over 20 per cent of the total; in this sector, it is the various power authorities that account for most of the spending. Roads and construction related to electricity generation and distribution are together responsible for about half of all government activity in the construction field. Construction activity classified as municipal institutions—the fourth item in the table—is school and hospital building, while

much of the spending of municipal departments that is not on roads goes for sewers and waterworks. In all, about two-thirds of government expenditures on construction consist of provincial and municipal spending on six items: roads, electricity systems, schools, hospitals, sewers, and waterworks. Much of the other third is on provincial institutional buildings such as universities; office buildings, by all three levels of government; and construction by federal enterprises such as the CNR.

Table 7-1

Construction Spending by Government Departments and Agencies, 1972

	Per cent
Provincial departments	25.9
Provincial enterprises	21.3
Municipal departments	20.8
Municipal institutions	8.8
Federal departments	9.2
Federal enterprises	5.6
Other[1]	8.4
Total	100.0

[1] Including provincial institutions, municipal enterprises, and federal housing.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Precise data are lacking for the government share of total spending on construction, by province or region, but estimates can be made. In 1970, in five of the ten provinces—Prince Edward Island, Nova Scotia, Ontario, Saskatchewan, and British Columbia—construction by governments as a proportion of the total was close to the national average of just over one-third, and it was a little above the national average in New Brunswick, Quebec, and Manitoba. Newfoundland was well above average and Alberta was well below average as a consequence of the large volume of construction in the private sector related to natural resources.

Apart from the drop in the federal government's share already mentioned, there have been no trends of importance relating to government sector construction spending. The decline in the federal share was taken up partly by the provinces and partly by the municipalities in approximate proportion to the spending of each.

The government share of all construction spending showed only slight variation from time to time above and below its 20-year average. This constant share might appear unexpected, but it is consistent with the

fact that government expenditures on goods and services have risen at about the same rate as private expenditures, even though total government spending, inclusive of transfer payments, has been rising more rapidly.

PUBLIC CONSTRUCTION AND CYCLICAL INSTABILITY

Government sector expenditures on construction account for about one-third of total construction. Government construction has also played a substantial role in the instability in total construction and, in turn, in the instability in GNP.

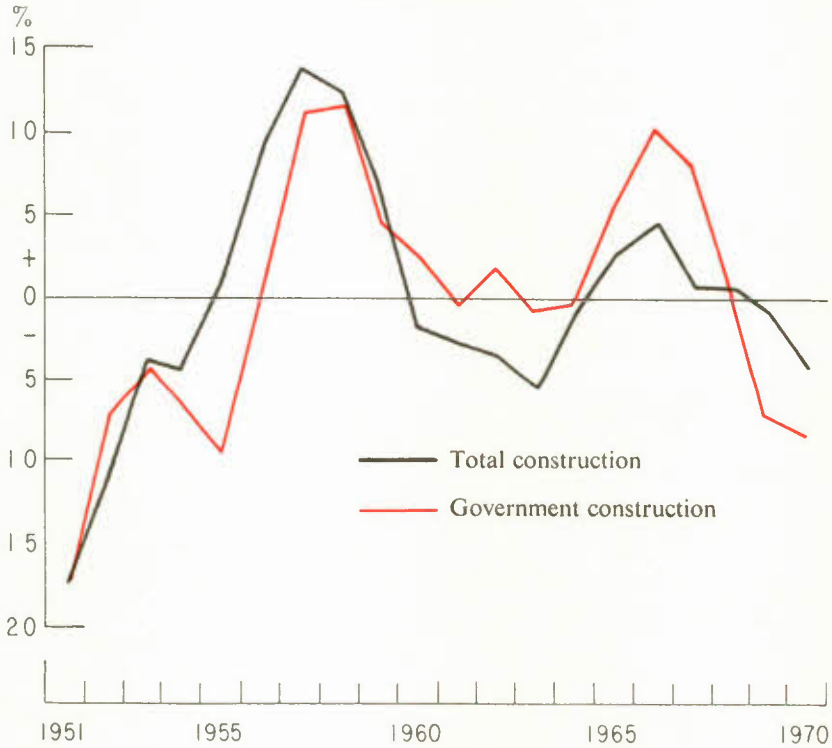
Some idea of the timing and degree of instability in government construction relative to the total may be gained from Chart 7-1, which shows the percentage departures from trend of expenditures by all sectors and by governments during the 1951-70 period. The two lines usually moved together, showing that government spending on construction has conformed to total spending on construction. Moreover, the chart shows that in the 1960s government construction strongly accentuated overall construction instability, first by increasing faster up to 1966 and then by decreasing faster between 1967 and 1969.

The conclusion that government sector expenditures have contributed to the construction cycle rather than moved counter to it may be confirmed by calculating its actual contribution to construction instability. Governments contributed positively to instability over the 1951-70 period—not negatively, as would have been the case if their spending had been timed countercyclically to other construction. Governments accounted for somewhere between a quarter and a third[1] of all construction instability—just a little below their relative importance in the total volume of construction expenditures.

Although public construction spending as a whole has moved cyclically with respect to other construction spending, this would not rule out the possibility that parts of it did not. Conceivably, for example, federal departmental spending could have moved counter to the bulk of government spending. However, it was found that none of the important components of government spending behaved this way during the 1951-70 period.

[1] The range occurs because there are several acceptable ways of measuring shares in instability, and they give slightly different results.

Chart 7-1
Variations of Government Construction and Total Construction from Long-Run Trends, 1951-70



SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

With government construction moving closely in line with total construction, and with total construction spending contributing to instability in GNP out of proportion to its size, it is evident that public spending was not systematically varied countercyclically for the purpose of general economic stabilization. Indeed, it is possible to state this conclusion positively. In Chapter 5, it was shown that, of the instability in GNP traceable to construction, just over a quarter was due to swings in construction by the public sector. Therefore, on average over the 1951-70 period, the construction spending of governments moved cyclically with the economy as a whole. This being said on the basis of the total picture, one must recognize that, in some years and in some provinces, government sector construction moved in the opposite direction to other economic activity.

It is perhaps not surprising that public spending on construction has not been countercyclical. About a third of what is thought of as government spending is done by enterprises like the CNR, Ontario Hydro, and Hydro-Quebec, which are not very different from large private firms. More than that, much of the rest, especially spending by provincial departments, is influenced by forces and trends that are broadly similar to those influencing private construction, as we shall see below. These facts would seriously hamper any attempts to vary public construction countercyclically—a difficult task, in any event, because of the long lags in public construction between the decision to spend (or not to spend) and the spending itself. The federal Department of Public Works has estimated, for example, that, for public building projects valued at over $25,000, there is an average lag of nearly two years between Treasury Board approval and volume spending on the site. With lags of this magnitude, attempts to vary construction spending countercyclically in the interests of stabilization would be very risky at best. Economic conditions could shift by the time the "solution" begins to bite, thereby creating a problem of the opposite kind.

An extremely important consequence of finding that government construction spending has moved cyclically with respect to the economy is the conclusion that stabilizing government construction as a component of total construction would not be incompatible with the goal of stabilizing the economy. Stabilizing the component would contribute to stabilizing the whole.

It is possible to allocate the instability in government construction spending to the components of that spending—for example, by level of government and by type of agency within each level (Table 7-2). Over half (53 per cent) of all government instability in construction from 1951 to 1970 flowed from variations in provincial government spending—rather more than the share of the provinces in total government construction (44 per cent). Federal spending, despite being only one-quarter of all government construction spending on average from 1951 to 1970, accounted for one-third of the instability. More surprisingly, perhaps, municipalities were responsible for only about one-seventh of government construction instability—well below their relative importance in the government construction picture.

The remaining rows of Table 7-2 tell an interesting story. Government enterprises at all levels, together, accounted for almost two-thirds of the instability in the government sector. Provincial enterprises, mainly power authorities like Hydro-Quebec and Ontario Hydro, accounted for 26 per cent of all instability in government spending from 1951 to 1970.

Federal enterprises accounted for another 27 per cent. The main source here, by far, was spending on the Northern Ontario Pipeline, although the St. Lawrence Seaway Authority also played a role. These two together were responsible for most of the instability in federal enterprise spending, much of which occurred during the 1950s. Municipal enterprises, like provincial ones, are largely concerned with providing power and this, along with Expo 67, contributed a substantial part of the 11 per cent of instability attributed to this group of spenders on construction.

Table 7-2

Share of Government Construction Expenditures and Instability, by Level of Government and Type of Agency, 1951-70

	Expenditures				Instability			
	Federal	Provincial	Municipal	Total	Federal	Provincial	Municipal	Total
				(Per cent)				
Enterprises	10	18	5	33	27	26	11	64
Departments	14	22	15	51	8	19	3	30
Institutions	*	4	11	15	*	8	0	8
Public housing[1]	1	*	*	1	−2	*	*	−2
Total	25	44	31	100	33	53	14	100

*No construction spending was classified under these groups from 1951 to 1970.

[1] "Public housing" here refers to outright expenditures on housing by governments for purposes such as accommodation for personnel of certain federal departments.

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

Most of the remaining instability in government construction—some 30 per cent—was traceable to variations in spending by government departments. About two-thirds of this came from the provincial departments, much of it being highway construction.

Provincial and federal enterprises and provincial departments, together, accounted for nearly three-quarters of all government construction instability. Not all the variability in these three main categories could be explained by their largest constituent items, but it would, nevertheless, seem a safe conclusion that at least half of all measured cyclical variation in government construction spending over the last two decades was due to three types of public spending: pipeline construction, electric power construction, and highway construction.

Of the remaining elements in Table 7-2, it is worth noting that the contribution of municipal institutions (schools and hospitals) to total

government construction instability was zero despite their share of 11 per cent in total public construction and despite the fact that municipal institutional construction was quite unstable. The reason its contribution to instability was zero is that this category of construction moved counter to total public construction about as often as it moved with it. Mention might also be made of public housing, all federal over the period, which moved counter to total public construction slightly more than with it and, to a small extent, helped to reduce construction instability in the government sector over the period as a whole.

There are important differences in both the timing and the amount of cyclical variations in total construction spending (including private as well as public spending) among the five main Canadian regions. In the Atlantic Region, the construction cycle is virtually independent of the rest of Canada, and it is fairly independent in British Columbia. While a closer relationship exists among the construction cycles in Quebec, Ontario, and the Prairie Region, it is not as strong as one might expect. If we look separately at each of the three major categories—residential, engineering, and nonresidential building construction—the picture of regional diversity persists for engineering and nonresidential construction, but housing expenditures are strongly correlated among regions. Since the overall construction cycle differs among the regions, it would seem likely that the role of governments in that cycle would also vary regionally (Table 7-3).

Table 7-3

Public and Private Shares in Construction Expenditures and in Instability, by Region, 1951-70

	In Expenditures			In Instability		
	Government	Private	Total	Government	Private	Total
	(Per cent)					
Atlantic Region	46	54	100	11	89	100
Quebec	33	67	100	22	78	100
Ontario	34	66	100	23	77	100
Prairie Region	30	70	100	17	83	100
British Columbia	34	66	100	22	78	100

SOURCE: Based on data from Statistics Canada and estimates by the Economic Council of Canada.

In interpreting the data in Table 7-3, it should be noted that precise information on public sector spending on construction is not available on a regional basis. What we have done, therefore, is arrange the available data on construction by type of structure—for example, commercial building, marine, and sewers—according to a judgment as to whether

each kind of structure is private or public spending. It is clear, for example, that highway construction belongs to government spending; and commercial building, to private spending. Categories like railway construction, which are mixtures of both government and private construction, were allocated to government and private spending according to estimates of the relative importance of each within the category.[2]

Table 7-3 shows that the public sector share in instability varies somewhat among the regions, ranging from a high of 23 per cent in Ontario to a low of 11 per cent in the Atlantic Region.[3] Except for the Atlantic Region, the differences are not large, especially in view of the approximate nature of the measurement techniques employed. What does stand out is that in none of the regions did expenditures on construction by the public sector as a whole run counter to the cycle in total construction over the 1951-70 period. As in Canada as a whole, government sector expenditures on construction added to the instability in total construction in each region.

The expenditure figures in Table 7-3 show the percentage shares of the private and public sectors in the volume of construction in each region. In the Atlantic Region, the contribution of the public sector to instability was substantially less, and of the private sector correspondingly greater, than their contributions to the volume of construction. In the

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[2] In these allocations, government spending includes institutional building and marine, highway, waterworks, and sewer construction. In Ontario, all electrical power and dam or irrigation construction was also included. In the Atlantic Provinces, Quebec, British Columbia, and the Prairies, part of these categories was assigned to government construction and part to private, based on information for the Atlantic Provinces, Quebec, and British Columbia about the changing degree of public ownership over the 1951-70 period and, in the Prairies, on the fact that Alberta power production is mainly privately controlled. The ratios of government to private construction used for these categories in the Atlantic Region, Quebec, British Columbia, and the Prairie Region were 80:20, 33:67, 40:60, and 60:40, respectively. In Ontario, gas and oil construction was partly governmental over the period because of the activity of the Northern Ontario Pipeline Corporation; the government share over the whole period in gas/oil construction was estimated at 20 per cent, but its contribution to the instability of gas/oil construction was estimated at 50 per cent. In all provinces, half of each of the two construction categories—railways and communications, and "other engineering"—was assigned to government. Finally, the whole of certain other construction categories was taken as private—viz., the building of residential, industrial, and commercial structures, as well as all gas and oil construction outside Ontario.

[3] A weighted average of the government contributions to instability by province, is 21 per cent—somewhat less than the figure of 26 per cent, which is obtained when the same method used in Table 7-3 is applied to aggregate data for Canada. This difference could be due to the approximate nature of the measurement technique employed, but it more likely reflects a greater degree of offsetting of private sector instability across regions than of government instability, thus lowering the national average for the private sector and increasing that of the government sector. In any case, comparisons from one region to another should remain valid.

other regions, the share of the public sector in the instability of construction was considerably closer to its share in the volume of construction.

Just as there was some geographic variation in how much construction instability was accounted for by government spending on construction, there has also been some variation through time. The share of governments in instability increased substantially between the 1950s and the 1960s. The explanation of this, however, turns on a change in the behaviour of residential construction rather than on any change in the behaviour of government construction itself. Residential construction has become more stable than it used to be, and this has caused the share of residential construction in total instability to drop very considerably. Correspondingly, the shares in instability of both government and private nonresidential construction have risen, despite the fact that neither type of spending has itself become more unstable than before.

FACTORS UNDERLYING THE GOVERNMENT CONTRIBUTION TO INSTABILITY

An analysis of some of the elements underlying the instability of government construction spending requires that we split government construction into two main groups—that done by government departments and that done by government enterprises—because the process of decision-making is quite different in each. That this should be so is indeed one of the main reasons for making government enterprises largely independent of governments at all levels. Government enterprises are businesses and are normally required to pay their own way or nearly so, whereas government departments are provided with a tax-financed budget. Given these differences between departments and enterprises, it is possible that the causes of swings in construction spending by each are not the same, and that appropriate remedies for instability would, therefore, be different in the two cases.

Departments

Although Statistics Canada classifies institutional spending—largely schools, hospitals, and universities — separately from other departmental spending, as we did in Table 7-1, we refer to both types below as departmental spending. With this in mind, one can say that the bulk of such departmental spending on construction at the provincial and munici-

pal levels is in one of three categories: road construction, hospital building, and building linked to education — mostly schools and universities. Federal departmental spending covers an assortment, including office buildings, marine works, some highways, and many smaller items.

In order to understand better the factors determining provincial and municipal departmental spending on construction, an econometric analysis was undertaken. Perhaps not surprisingly, the results showed that the factors explaining such spending are very complex. What was very important in one province was often less important, or even quite unimportant, in other provinces. For example, changes in the level of real income were crucial for explaining road-spending in Ontario from 1951 to 1970; important, but much less so in Quebec; and not important at all in Saskatchewan. Moreover, the number of different factors that exercised some influence on one kind of construction or another in one province or another was not small, and this greatly complicates any attempt to provide a straightforward explanation of past variations in construction spending.

One generalization that can confidently be made is that variations in personal incomes, or in their rate of growth within a province, were a very important source of variations in departmental spending on construction by the provinces and municipalities. When personal incomes rose rapidly, so generally did construction expenditures on publicly provided goods and services such as education, hospital care, and highways. By contrast, any slowdowns in the growth of personal income caused the rate of increase of these expenditures to fall and even, occasionally, resulted in decreases in expenditures.

In all provinces, the rate of growth of real personal income has varied considerably during the last 25 years. The strong growth in the early and middle 1950s and in the middle and late 1960s contrasts sharply with the sluggish growth in the late 1950s, the early 1960s, and early 1970s. These variations were the single most important source of instability in construction spending by departments at the provincial and municipal levels.

The econometric analysis from which these results were derived implies that the link between personal income in a province and expenditures by the provincial government was a matter of deliberate policy, and not simply a passive response to automatic changes in tax revenues. It is consistent with this that provincial tax revenues were often boosted by methods that involved raising the average rate of tax as well as introducing additional taxes.

An important question is whether the link between the cycles in provincial personal incomes and the cycles in provincial public expenditures

on construction is desirable. The question is important, because stabilization of provincial government construction would likely require the link to be broken. If the link is desirable, the breaking of it would be socially costly, depending on how desirable it is. One might argue that it is desirable on the grounds that the demand for public goods rises more quickly in booms than in recessions or on the grounds that the government has an obligation to expand social services in advance of requests for them and that the best time to do this is in booms. On the other hand, one might claim that there is little or no virtue in the link between incomes and provincial government spending, so that the breaking of this link would impose little or no social cost. It was impossible to amass enough evidence to resolve this issue.

Changes in personal incomes, although very important, were by no means the only influence on the demand for construction by provincial and municipal governments. Variations in the rates of increase of both the population requiring the services and of the prices that governments have had to pay to provide them have also affected the amount purchased. As expected, when the numbers needing the service rose rapidly, or when contract prices were low, construction by the departments was stimulated, and *vice versa*.

Matching grants are often made by the federal government to provincial governments and can affect construction. Irregularity in the timing of grants for construction of the Trans-Canada Highway in particular was often cited as a source of instability in highway spending during the interviews with officials of provincial governments, notably in the Atlantic Region. An effort was made to find out just how strong an influence the irregularity in matching grants did have on spending by provincial highways departments. This matter is important, not only because it might help in understanding past variations in construction, but also because adjusting the timing and level of matching grants might be one way to achieve greater stability in the future.

It was found that the impact of matching grants for highways was proportionately much stronger in some provinces than in others. The effects were greatest in Newfoundland and New Brunswick, but they were much less apparent, although still noticeable, in Nova Scotia and Quebec. In the other six provinces, any effects that did occur were too small to detect. These statistical results conformed quite reasonably in timing, but not in magnitude, with the evidence gathered in talking with government officials. The proportion of instability that could be explained by irregularity in the timing and amounts of matching grants was very small outside the two provinces of New Brunswick and Newfoundland. In New

Brunswick, road-spending was fairly stable anyway, so that, although the pattern of matching grants accounted for part of what variation in spending there was, it did not create much instability in an absolute sense. Newfoundland, therefore, was the only province where irregularity in matching grants proved to be a significant source of instability in highway spending.

As indicated at the beginning of this chapter, the federal government has made grants available not only for highways, but also for housing, hospitals, education, and other purposes. Irregularities in the timing and amount of these other grants had, with occasional exceptions in particular provinces, only minor effects on construction spending by most provincial departments. We conclude that greater attention to the planning of matching grants offers little possibility of significantly stabilizing provincial departmental construction, unless the scale of such grants is expected to be much larger, and to be linked more specifically to construction, in the future.

Mention should be made of one more factor that has been found to influence construction spending by provincial departments — the timing of provincial elections. A slight, but detectable, tendency for governments to spend more on highway construction near election time was noted in Newfoundland, Prince Edward Island, Quebec, Manitoba, Alberta, and British Columbia. Since elections sometimes coincided with construction recessions, sometimes with booms, and sometimes with neither, their effect was to stabilize construction as often as not.

Shifting attention now to federal departments, it was found that construction by these departments did not fluctuate much from 1951 to 1970, except that in 1953 and 1954, and from 1961 to 1963, it did drop sharply to levels well below normal, recovering rapidly in subsequent years. From 1953 to 1954, annual spending was reduced from $367 million to $285 million, while from 1961 to 1963 it was reduced from $388 million to $274 million. In both cases, construction of most items declined, reflecting general financial tightness at the federal level, although one or two major items dropped more sharply. Between 1961 and 1963, the building of broadcast facilities dropped from $40 million to $7 million, and federal road construction went from $43 million to $20 million. Drops of this kind, however, occur in most years in one category of federal construction or another, but they are usually compensated for by sharp increases elsewhere. This did not happen in the 1953-54 and 1961-63 periods, however, although it is not easy to understand why. Between 1961 and 1963, it was possibly because new ventures in construction

spending appeared difficult for the federal government in the light of disappointing tax revenues and a declining Canadian dollar.

Enterprises

The rest of government sector construction is undertaken by government enterprises of which there are two predominant types: the various provincial bodies responsible for providing electricity and sometimes other types of power, and federal Crown corporations such as the St. Lawrence Seaway Authority, the Canadian National Railways, and the former Northern Ontario Pipeline Corporation. Although the degree of control over these bodies by their parent governments varies, it is only on certain major issues, when the general public is clearly affected adversely (a condition that holds only occasionally), that a government will both wish and try to influence decisions made by one of its enterprises. A recent issue where governments were willing to become involved was the conflict between power needs and the preservation of the environment.

In view of the generally high level of independence of most government enterprises, it is debatable whether one should say that construction instability traceable to them should be assigned to the public or to the private sector. In any case, it would be much more difficult in practice for governments to influence the construction spending of their enterprises than of their departments without raising the fear of political interference or endangering the competitiveness and profits of the enterprises.

Be this as it may, consider the case of electric power installations, where a number of factors are involved in construction instability. Canada relies heavily on electric power and the requirements are increasing rapidly. The cost of constructing electric power installations varies with the generating source (hydro, nuclear, or thermal) and with shifting alternative supply conditions. The total amount of construction involved can be a significant proportion of total construction within a province. Moreover, a single power-generating and transmission installation is usually large, and is sometimes very large. This "lumpiness" in the expansion of electric power capacity will be a source of construction instability, especially at local and regional levels. On the other hand, it is difficult to see why the instability has to be cyclical in relation to total construction activity. One would expect large power projects sometimes to coincide with a construction boom and sometimes not. And, yet, power-related construction has moved in line with total construction and the general level of economic activity, as evidenced in part by the substantial

proportion of governmental construction instability accounted for by provincial government enterprises (Table 7-2).

Evidence from the interviews showed that the current state of the economy influences the projections of demand for electricity that are made by power authorities and hence affects construction plans and, in due course, actual construction. If the construction followed at once upon demand projections, and if it was always completed quickly, it would then tend to fluctuate in line with activity in the economy. There are, however, lags of two or more years (depending on the size of the power installation) between the plans to expand and the commencement of construction, and, then, construction once begun often lasts for several years. On both counts the tendency for power construction to swing in harmony with the economy is somewhat obscured, but if recessions and booms are long-lasting relative to the lags involved in such construction, a considerable amount of common movement can still remain. Generally speaking, recessions and booms in Canada have been lengthy enough for this to happen during the last 25 years, and we would, therefore, judge that the cyclicality in power construction might well be accounted for in this way. We have not been able to rule out the possibility, however, that there was actually a large element of chance in the observed degree to which power construction has varied cyclically.

Even if generating capacity were to rise along a perfectly smooth growth path, the type, location, and amount of construction involved depend upon the choice among alternative power-generating sources. As the relative advantages of the sources change because of variations in interest rates, in the availability and cost of hydro, coal, uranium, oil and gas, and because of changes in transmission technology, the choice of source can change and change again. Some of the past swings in construction in Ontario can be explained in this way, and this source of instability may well become more important in the future as a source of instability in the enterprise-spending of the provincial governments.

Among federal Crown corporations, the Northern Ontario Pipeline and the St. Lawrence Seaway Authority were responsible for a vast amount of construction in the 1950s. If we assume that both these projects would have been undertaken some time, then, in view of their large size, some instability of construction was inevitable and only its timing could, in principle, have been different. In retrospect, however, it does seem unfortunate and unnecessary that construction on the two projects peaked simultaneously and, to the extent that the federal government of the day had some influence on the timing of the Pipeline (as a whole, not just the

Ontario section) and of the Seaway, responsibility for more instability than might have been necessary attaches to the government.

THE INDIRECT ROLE

In this section, we consider, first, three indirect ways through which governments, mainly the federal government, might have contributed to construction instability in the past or might contribute to it in the future: through the use of monetary policy for general economic stabilization, through regional development policy, and through influences over the timing of major construction projects. The section concludes with a brief description of a few federal-provincial arrangements or proposals in recent years that, although designed for general employment stabilization purposes, also have implications for construction stability.

MONETARY POLICY

The federal government often made use of monetary policy during the 1951-70 period in its attempts to stabilize the economy. Several briefs submitted to us claim that in doing so the government destabilized the construction industry. To assess whether monetary policy made construction more unstable, it is necessary to assume something about what monetary policy might have been if the government had not used it in its attempts to stabilize the economy. Then the effects of such a "neutral" policy on construction can be compared with the effects of the policy that actually was followed.

Two definitions of a "neutral" policy were tried. One was a steady growth in the money supply, at an annual rate sufficient to generate the amount of growth in construction achieved over the period analysed. The other definition was the maintaining of a constant margin between the mortgage interest rate and the long-term bond yield. The basis for considering this to be a possible definition of a neutral monetary policy is that swings in this margin were one of the ways through which changes in monetary policy impinged on residential construction (Chapter 6). Since monetary policy has effects on types of construction other than residential, this second type of policy is only a partially neutral one. It nevertheless seemed appropriate for present purposes because, if housing construction

were destabilized, total construction and the economy as a whole would also be destabilized to some extent.

The effects of the first type of neutral policy—a stable growth in the money supply—were shown in Tables 5-4 and 5-14 of Chapter 5. They indicate that construction instability would have been less with a neutral policy than with the one actually followed. The reduction in instability, however, would have been fairly small, except for residential construction (17 per cent). For total construction, instability would have been reduced by 6 per cent. Some monetary experts believe, however, that econometric models used in this kind of analysis generally do not pick up the full impact of monetary policy. Consequently, the estimates of construction instability traceable to monetary policy may well be too low.

Tests based on the second type of neutral monetary policy—a constant interest-rate margin between mortgages and bonds—are reasonably consistent with the foregoing results for residential construction. Instability in housing expenditures would have been reduced by 20 per cent, and, in housing starts, by 10 per cent. We conclude that the impact of general monetary policy has been to destabilize construction to a certain extent, especially residential construction.

REGIONAL DEVELOPMENT

The federal government has been encouraging development in the lower-income regions of Canada for many years. The push for regional development has naturally included efforts to expand industry and to increase social capital in these areas. These efforts indirectly involve the construction industry, and it is possible that the federal government might have contributed to construction instability in promoting regional development. Examination of the data reveals, however, that the amount of instability generated has almost certainly been small and has been largely confined to the Atlantic Provinces.

MAJOR PROJECTS

Two major projects—the Northern Ontario Pipeline and the St. Lawrence Seaway—accounted for a considerable part of construction instability in the 1950s. The government contribution to this construction

instability was greater than can be accounted for by the direct spending on construction by federal Crown corporations. There was also an indirect contribution to instability because the timing of private spending on the Pipeline (outside Ontario) was partly under the control of the federal government through its power to grant permission when to go ahead with the Pipeline.

How much less instability there would have been if the timing of these major projects had been better is hard to say, for we cannot know at this late date what degree of adjustment in their timing would have been worthwhile in light of the costs and benefits involved. The crude estimates that can be made suggest that about 5 per cent of total construction instability could have been avoided by greater government care in the timing of these two major projects. It would certainly seem worthwhile, therefore, to pay attention to the possibility of adjusting the timing of future major projects in the interest of achieving more stable growth in construction.

FEDERAL-PROVINCIAL EMPLOYMENT STABILIZATION PROGRAMS

Two rather different kinds of federal-provincial programs for the purpose of regional employment stabilization have been put forward in recent years. One is a permanent employment stabilization fund based on a special arrangement between the federal and provincial governments. The second involves lump-sum commitments by the federal government to the provinces for specified periods of time.

A stabilization fund was first proposed by André Raynauld in 1969 in a speech to the Royal Society of Canada. Financial resources would be loaned to provinces needing stimulation of economic activity. In effect, such provinces would sell bonds to the fund, and the fund, in turn, would finance these bonds through issues of its own, sold on the market or to the Bank of Canada.

In June 1970, the Premier of Quebec, in a brief to the Federal-Provincial Conference of Ministers of Finance, included a proposal for a federally financed stabilization fund (caisse d'aide conjoncturelle). The proposal was based on the fact that cyclical swings in the economies of Quebec and the Atlantic Provinces cause higher rates of unemployment than in other regions, and on the contention that these results are due to structural differences in the economies of these eastern regions. The proposed fund was to make two kinds of transfers to the provinces—

unconditional payments and loans. The amount of the unconditional payments would vary with the national or regional unemployment rate, and any money not paid out in this form would be available for loans. It was recognized that unemployment statistics would play a vital role in the plan and that this presented some problems. It was pointed out, for example, that the size of the farm sector in the West may disguise the unemployment situation to some degree and that varying participation rates would result in unemployment statistics that do not reflect the real degree of underemployment in some provinces.

The proposed fund was to be financed by the federal government through the corporate income tax with a ceiling of $330 million in the early 1970s. It was suggested that a higher tax rate be applied during the early years in order to build up the fund's assets more rapidly. Loans from the fund would, of course, be repaid, with the unconditional payments representing the only net depletion. During periods of expansion, it was anticipated that the fund would build up substantial reserves to be used later during slack periods.

Although the proposed fund was not set up, in 1971 the federal government introduced a Federal-Provincial Employment Loans Program. The stated objective of this program was to bring about an early increase in capital spending and to sustain a high level of winter employment, especially in areas of higher unemployment. It made available $160.5 million of federal funds for loans to the provinces, territories, and/or municipalities to enable them to undertake, during 1971 and 1972, capital projects in addition to those planned for construction during those two years. To encourage additional activity during the winter of 1971-72, the amount of the loan equivalent to 75 per cent of direct on-site payroll costs to the end of May 1972 was forgivable.

The foregoing was followed in 1972 by the Winter Capital Projects Fund, which had basically similar objectives and operating arrangements. It took effect in December 1972 and is due to expire at the end of June 1975. It provides for loans totalling $350 million, to encourage additional spending on capital projects such as buildings, streets, sewers, and waterworks during the two-and-a-half-year period. Loans equivalent to 50 per cent of direct on-site labour costs are forgivable and, to encourage winter construction, an additional 50 per cent of direct on-site labour costs between December and May in each of the three winters within the period is forgivable. The $350-million total is allocated to the various provinces and territories based on population and unemployment.

The Quebec proposals for an ongoing federal-provincial employment-stabilization fund and the two federal employment programs that were

implemented have relevance for this construction study in three main ways. First, they illustrate the importance of intergovernmental linkages in stabilization matters, for construction activities at one level of government sometimes reflect decisions at a different level. Second, while these proposals and programs are designed to combat cyclical and seasonal unemployment on a regional basis, because capital works are involved, they indirectly affect construction stability. Finally, the second of the two federal programs provides, until 1975, some funds for provinces and municipalities that enable them to proceed with additional employment-creating construction during winter. Provided the Winter Capital Projects Fund represents incremental construction in regions where employment is needed most, the beneficial impact on seasonal construction instability could be appreciable. The Fund does not, however, provide an adequate basis for combatting ongoing cyclical instability of employment in general, or of construction in particular.

PART 3

MAIN FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

8

Instability and Stabilization

It is now time to draw our main findings together with respect to cyclical instability in construction in Canada. First, we gather up the main strands of earlier chapters that identify the sources and impact of this instability. Then the advantages and disadvantages of introducing more stability in construction are considered, and some ways and means are examined by which various destabilizing elements might be moderated. Finally, we venture a brief glimpse ahead at some developments that may greatly affect the tempo of construction activity to 1980, and we appraise the prospects of reducing instability.

MAIN FINDINGS ON THE SOURCES OF INSTABILITY

The briefs suggested that the main sources of cyclical instability, external to the construction industry, were the government sector and the economy in general. Within the government sector, the two most frequently mentioned sources were the use of construction as a "valve" in its stabilization measures; and inadequate planning and co-ordination by governments, which result in investment miscalculations. Within the economy in general, references were made to the ups and downs in demand for construction, and the ebb and flow of investment funds—both domestically and internationally. Although various other sources of instability were indicated in the briefs, these two sets were thought to be most important and, of the two, the government sector more often than general economic conditions was thought to be the principal source of instability in construction activity.

From an analytical standpoint, the underlying causes of instability in construction are difficult to isolate and measure. This is because demand

for construction stems from numerous sectors of the economy, all of which are interrelated. The immediate sources of instability could be more readily identified, however, by determining the amount of instability in each of the three construction demand sectors of the economy: government, residential, and private nonresidential. As shown in Chapter 5, each of these sectors has accounted for roughly one-third of total construction expenditures and for approximately one-third of the instability in construction activity. In other words, the public sector (federal, provincial, and municipal governments) contributed one-third while the private sector (residential and nonresidential) contributed two-thirds to the overall instability of construction. During the 1960s, the government share of instability increased—not because government spending on construction became more unstable than it was before, but because private spending, especially on residential construction, became more stable.

As noted in Chapter 7, during the period 1951-70, municipal spending amounted to almost one-third of government construction but accounted for only one-seventh of the instability. The federal government, on the other hand, contributed one-third to the instability of government construction, although it represented only one-quarter of total expenditures. Provincial governments—the largest spenders, at 44 per cent of the total—accounted for over half of the total instability.

Expenditures at each level of government are responsive to commitments and priorities and to increased demand for public services as personal incomes rise. It is not surprising, therefore, that government spending on construction activities, especially federal and provincial and, to a lesser extent, municipal, tends to rise and fall, depending on whether per capita incomes are growing more or less rapidly. In addition, when industrial expenditures are booming, the need for public spending on certain kinds of construction, such as roads and sewers, also tends to grow rapidly. Largely for these reasons, the timing of government construction activity tends to be cyclical rather than countercyclical.

Expenditures at one level of government, however, may reflect decisions at another level, such as is the case with programs involving matching grants. Provincial government officials interviewed expressed the view, for example, that a substantial part of the variability in highway construction, one of their main expenditure categories, has been due to federal government highways policy, especially with regard to the Trans-Canada Highway.

The foregoing relates only to the direct impact of government expenditures on construction. Government decisions of various kinds, mainly at the federal level, can exercise considerable indirect influence

on construction expenditures and on instability. One indirect influence of importance arises out of government decisions concerning the timing of major projects carried out largely in the private sector, such as the Trans-Canada Pipeline. Much of the destabilizing impact of projects like this is not reflected in government expenditures on construction, but the result may be to magnify a construction boom in the private sector.

Federal monetary policy and general fiscal measures also represent an important indirect determinant of construction instability, through their effect on consumer incomes and credit. Of necessity, of course, monetary and fiscal measures must be responsive to national and international matters that go far beyond the construction industry. But, since spending and investment at all levels are stimulated when incomes and employment are expanding and monetary policy is relaxed, and are discouraged when monetary policy is tight and employment growth slackens, consumer demand for new housing and business demand for industrial and commercial construction rise and fall accordingly.

Various sources of instability in residential construction were described in some detail in Chapter 6. Since housing starts depend heavily on the availability of mortgage loans, cyclical swings in these loans have been an important source of instability in housing starts of both single-family and multifamily dwellings. Instability in the flow of mortgage funds can be explained to a considerable extent by variations in the margin between the mortgage interest rate and long-term bond yields, reflecting the sluggish response, until recent years at least, of the mortgage market to changes in monetary policy. Changes in personal incomes have also played an important role, along with credit market conditions and monetary policy. Although CMHC loans at times intensified instability in housing starts, their influence on the whole has tended to be countercyclical.

Instability in private nonresidential (industrial and commercial) construction has depended on three principal factors: industry output, industry selling prices, and construction prices. With rising, but unstable, demand for the products, industry output varied and, from time to time, created instability in demand for industrial construction. Had it been possible to stabilize industrial output along its trend of growth, the instability of industrial construction in general, and that of manufacturing in particular, would have been reduced substantially. On the other hand, the stabilization of construction prices would have led to wider variations in industrial construction. Similarly, the stabilization of industry selling prices would have resulted in greater instability of sales and, therefore, of investment in construction.

MAIN FINDINGS ON THE IMPACT OF INSTABILITY

Although the briefs recognized that the effects of cyclical instability in construction are felt in various ways and places, the main impact was said to be on the construction industry and its affiliated industries and services. The main effects on the construction industry were seen to be: inefficiency and higher costs; higher risks and lower profits; and employment swings leading to inadequate manpower planning and conflict in industrial relations.

Our findings tend to confirm most, but not all, of these claims. For example, the construction industry was found to be quite unstable, although, in certain respects such as employment, its instability was exceeded by the fishing, mining, forestry, and utilities industries.

The claim linking instability with higher costs is important. Clearly, when construction demand is below its long-run growth trend, in recession, many workers are unemployed, and much equipment lies idle. Even when demand is at trend levels, considerable spare capacity, of both labour and capital, usually remains because of the need to be able to satisfy demand in those periods when demand is well above trend. Only in booms is the industry's capacity fully employed. Instability in residential construction leads, by a ratchet-like process, to higher building costs.

Wages and prices in construction have risen more rapidly than in manufacturing during the last 25 years. Construction unions point to uncertain employment and impermanent employer/employee relations as major disadvantages, justifying more generous hourly wages and benefits than for equivalent jobs in more stable industries. They have had better success in achieving high wage increases during periods of buoyancy and have been less successful during periods of slack. Construction employers over the past 20 years have shown considerably less resistance to wage demands than manufacturers, as was seen in the dramatic rise, noted in Chapter 3, in the hourly wages of organized tradesmen—from parity with manufacturing wages in 1951 to a level almost 50 per cent higher in 1971. Had construction firms been less adaptable, these gains might have heavily strained the industry. But construction firms responded to the higher wage bill in two ways—by passing on the costs to purchasers, and by accelerating the introduction of labour-saving techniques and materials.

Cyclical instability aggravates the already-fragmented situation in labour relations caused by high seasonality and discontinuous employer/employee relations. Some of the work pressure during boom periods gives rise to longer hours, an extended season, or the hiring of additional

workers from the floating pool of semiskilled or unskilled labour that drifts in and out of the industry. Periods of cyclical slack, however, add to the heavy burden of seasonal and between-job unemployment already borne by tradesmen. In addition to accounting for variations in construction employment that can run to over 20,000 man-years from one year to the next, the ups and downs of the cycle have been major elements shaping the mood of both parties in the collective-bargaining process.

Over the past two decades as a whole, the demand for investment was strong. Investment in structures increased, and the stability of the construction industry improved. This improvement, however, did not eliminate hardships encountered by individual firms. As construction demand increased, so did the number of firms. During the downturn of the late 1950s and early 1960s, sales per incorporated firm declined sharply from levels enjoyed during the previous boom period and, even in 1970, had not reached the magnitudes recorded in the early 1950s.

Over the same two decades, not only was growth in profit insignificant for the average construction corporation, but profits were volatile, being approximately four times as unstable as labour income. In the late 1950s, and again in more recent years when investment demand for construction slumped, profits declined more sharply, and firms were exposed to a competitive squeeze. It is not known how many firms discontinued operations or what monetary losses they encountered. Although bankruptcy figures tell only a small part of the story, it is clear from Chapter 1 that the rate of bankruptcies increased during construction slumps.

Since the various sectors of the economy are interdependent, the instability of one sector is transmitted to the next. The instability of the construction industry is transmitted to the manufacturing sector through variations in demand for construction materials. Changes in manufacturing output affect wages, prices, and profits in manufacturing. As well, the existence of instability inclines manufacturers to adopt a conservative policy towards installing new capacity in order to avoid having facilities that would sit idle during downturns. Consequently, productive capacity is, more often than not, inadequate to meet demand in upturns, as was the case in the latter part of 1973 and early 1974. Buyers are obliged at such times to compete furiously for the limited supplies and to seek imports to meet their requirements, with the result that, to the extent that imports are available, lower overall Canadian content of construction materials as well as inflation ensue from cyclical instability. Ultimately, instability affects consumer incomes and demand, and the rest of the economy. Impact studies, based on CANDIDE simulations of the economy,

show that instability in construction investment is amplified as it passes from the construction sector to the rest of the economy.

In some briefs and staff interviews, we were told that cyclical instability has three other effects linked to productivity. First, the industry is handicapped in its efforts to attract highly qualified manpower, who dislike the insecurity of the work; second, the volatility of demand makes for poor internal planning, raising costs and lowering efficiency; and, third, the introduction of new and improved technology is significantly delayed by the risks of heavy investment in fixed capital. It proved impossible, however, to confirm or disprove these claims by statistical analysis.

COSTS AND BENEFITS OF STABILIZATION

Costs, as well as benefits, would be incurred in stabilizing construction. In this section, we provide, insofar as possible, quantitative estimates of the main benefits and costs involved. Where estimates in dollars cannot be made, indications are given of the nature of the costs or benefits. These estimates and indications form the key elements leading to the conclusion in Chapter 9 that, on balance, the benefits of stabilization would exceed the costs, provided the degree of stability sought is realistic and the stabilizing methods adopted are efficient.

There is one benefit of stabilization and there is one cost that is significantly more important than others. The benefit is the better utilization of labour and capital equipment. The cost is the need to modify the investment flow of construction clients.

The Major Benefit—Better Utilization of Labour and Capital

If demand were always on trend, it would be possible to avoid the recession periods of serious underemployment of construction labour and capital. The extra output produced in what were formerly recession periods would then permit construction demand to be fully satisfied without ever having to produce at the peak rate reached in boom periods. In the long run, this would mean that the total productive capacity, and the stock of both equipment and men employed in the industry, could be maintained at the level needed to meet trend demand. The average rate of capacity utilization would then be higher, and the average unemployment rate in

the industry would be lower, than without stabilization. This would also apply to major suppliers of construction materials, machinery, and services. Longer production runs would become feasible for manufacturer-suppliers, with resultant improvements in efficiency. An even flow of construction, more closely in balance with the capacity of manufacturer-suppliers, would reduce, if not eliminate, the occasional imports otherwise required to meet surges in demand. This would result in higher Canadian content of both construction materials and labour and would encourage the installation of additional productive facilities by manufacturer-suppliers and so increase employment over the longer run.

The benefit of these savings in labour and capital may be measured by estimating the dollar value of what could be produced with the savings. This dollar value naturally depends on the amount of stabilization achieved. For total stabilization—the case where construction grows smoothly along its trend path—the savings would probably lie somewhere between $400 million and $600 million a year at 1972 price levels. This estimate should be augmented to some extent in that a further saving would result from less expenditure by departments of manpower for retraining purposes, and transfers to the industry through UIC benefits would also decrease.

Total stabilization would, however, require a high degree of direction and control over construction investment, akin to that in fully planned economies. The amount of control that can be exercised over construction spending in the interests of stabilization is considerably less than this in Canada. Consequently, the potential savings of labour and capital flowing from a realistic degree of stabilization would be substantially less than the $400–$600 million cited. It must be pointed out also that these benefits will accrue only if aggregate demand, or construction demand, is increased, or increases of its own accord sufficiently to employ the labour and capital freed as a result of the stabilization. Otherwise, the effect would be to increase unemployment.

The Major Cost—Modifying the Timing of Construction Investment

A significant cost of stabilization can arise from the exercise of influence over the timing of construction spending of firms, governments, and households in order to achieve more stability. Successful stabilization requires that some people in these groups be discouraged from constructing during booms and that some be induced to construct during recessions, even though they would have chosen to behave otherwise in the absence of a stabilization policy.

Unfortunately, this cost of stabilization does not lend itself to quantification, partly because it will depend on the means adopted. Generally speaking, the greater the reliance on use of the price mechanism, the less would be the cost of stabilization, as compared with greater dependence on nonprice pressures, regulations, and directives. For example, firms might be requested, directed, or induced by subsidies to undertake plant expansion during construction recessions in excess of what they would otherwise have considered necessary or worthwhile. Alternatively, some firms might be requested, directed, or induced by taxes during booms to desist from expanding their plants as much as they would otherwise have considered necessary. Some provincial and municipal governments might become persuaded, during construction recessions, to build hospitals, roads, schools, and electricity-generating facilities in advance of when they were judged to be needed and at times when their revenues were depressed. Alternatively, during construction booms, some building of hospitals, roads, etc., might have to be postponed despite judgment by the governments concerned that they were needed.

The "cost" of changing decisions about when to invest in construction will be smaller, the less valid those original decisions turn out to be. For example, postponing the construction of a plant or a road will not have been costly if one can see in retrospect that they were not really needed so soon. Similarly, the advance construction of power-generating stations could turn out, after the fact, to have been well worthwhile, quite independent of considerations relating to construction stabilization. In any case, there should be a partial offset to the cost of altering the timing of construction spending, in that interest rates, and hence the cost of financing, can be expected to be lower during slack periods than in booms.

Other Costs and Benefits

Two important questions arise from the fact that wages and prices in construction have risen more rapidly than elsewhere during the last 25 years. First, would inflation in the industry be lessened if cyclical instability were reduced? Based on evidence drawn from Chapters 3, 5, and 6, inflation would indeed be lessened. Second, what would be the benefits of reducing this inflation? There are two possible benefits from a reduction of inflation in construction. To the extent that the inflation is transmitted to other industries, it contributes to inflation in the economy at large, and society would benefit from moderating it. Inflation in the industry also makes construction more expensive for its clients, so they would benefit if the inflation were moderated. In Chapter 5, for example,

it was indicated that residential construction could have been increased by as much as 25 per cent over the past two decades without adding to inflation of consumer prices if construction had been stabilized. This kind of benefit to clients would not necessarily be at the expense of people in the industry, provided less inflation were reflected in lower costs of construction. We conclude that some social benefits connected with less wage-price inflation can be expected as a consequence of greater stability in construction output.

Labour relations in the construction industry have been troubled. While friction between labour and management is mostly a consequence of the irregularity and seasonality of construction operations, cyclical instability does worsen it. There seems little doubt that more secure and stable growth in the industry would help moderate collective-bargaining tensions and help curb disputes that have sometimes resulted in prolonged stoppages affecting more than just the industry itself.

Seasonal unemployment is probably increased more by recession than it is reduced by booms, so some improvement could occur here also. On the other hand, construction seasonality is not entirely bad, in that students gain opportunities for summer employment that would not otherwise exist.

A common industry view is that construction is a risky business, and we have shown profits to be highly volatile and related cyclically to bankruptcies. It was also stated that construction bankruptcy data underestimate total business failures. Greater stability could be expected to reduce bankruptcies and other business failures. The benefit to society might not be great, however—there may be gainers as well as losers from a failure insofar as the projects and equipment are taken over by other companies at bargain prices. The benefit of reduced risk of failure to entrepreneurial incentive might be more significant, but it could not be measured.

Increased stability of residential construction would have one distinct benefit in addition to those already outlined for construction in general. We refer to a partial alleviation of the housing needs of low-income people. It was shown in Chapter 6 that instability in housing construction is a significant factor in the inflation of building costs. By increasing stability, housing would be cheaper than otherwise, and the minimum income needed to rent or buy acceptable accommodation would be less. Fewer people would be below the minimum, and more new households would be able to afford a decent dwelling in the free market. We should add that since low-income people are concentrated in urban centres, cities would be the chief beneficiaries of the stabilization of residential construction.

On the other hand, studies in the United States have shown that the isolation of the housing mortgage market from monetary policy, which is one possible method of stabilizing residential construction, would seriously limit the effectiveness of monetary policy. This is because swings in housing starts, induced by monetary policy, have made an important contribution to their overall stabilization policy. In Canada, also, this might conceivably weaken the effectiveness of monetary policy for the overall stabilization of the economy and so represent a significant social cost. Although the results of our analysis of this were rather reassuring, we prefer a different approach to reducing instability in residential construction for various reasons explained in the following section and in Chapter 9.

VARIOUS APPROACHES TO STABILIZATION

In this section, various approaches to stabilizing construction are examined under three headings. First, we describe several possible methods whereby the growth path of investment in nonresidential construction might be made smoother. Second, several methods that might be adopted in the special case of residential construction are detailed. Third, we inquire into what actions might be taken by the construction industry itself, with a view to alleviating the impact of demand instability.

Two considerations concerning possible ways and means of stabilization apply broadly to most, if not all, areas of construction. The trends around which the components would be stabilized should be compatible with longer-range goals, in the sense that they would combine both feasible and desirable targets. There would be no point in trying to reduce instability around a trend projected mechanically from the past, regardless of whether or not it could be achieved in the future or whether or not it represented a socially desirable goal. For instance, this scale of values implies that if policy, for some good reason, required a temporary shift in priorities and targets, the resulting increase in measured instability around the underlying trend would be both expected and accepted.

The other consideration is the need to recognize that the timing of high and low levels of construction activity often differs significantly from one region of the country to another. Consequently, most stabilization methods would, at times, have to be implemented with appropriate regional variations.

Stabilizing the Nonresidential Sector

A few very large construction projects related to energy production are being, or may be, undertaken during this decade. Much instability in construction, and indeed in the whole economy, would be avoided if expenditures on these projects could be timed so they would not reach a peak in the same two or three years. The projects combined are so large that they would draw upon labour and capital resources well beyond the geographical location of the projects themselves. Through a complex chain of events, the projects would cause a high rate of resource utilization in construction in general within a few years, followed by a sharp slowdown toward the end of the decade. Federal and provincial governments could exercise some influence on the timing of the spending with a view to smoothing out the combined flow of investment in these major projects.

Many of the briefs to us, and the industry representatives interviewed, commented on the tendency for spending by all clients of nonresidential construction to ebb and flow together, creating periods of feast or famine for the industry. Three suggestions were made to avoid this: that governments at all levels and private industry should co-operate in the scheduling of their spending; that governments should plan for their spending to be high when private spending is low, and conversely; and that governments should plan for a smooth rate of growth in their combined construction spending without going so far as to vary it counter to private spending.

A fourth possibility to be considered would be for each government to aim at as smooth a growth as possible in its own construction spending. A fifth possibility, somewhat similar to the third and fourth, would be for governments to smooth their spending on individual categories of construction, such as roads, hydro power facilities, and office buildings. In some cases, this last method could be implemented, in part, by appropriate variations in federal rates of matching grants for construction-related expenditures—for example, highways.

All of these approaches would achieve stability by altering decisions that, on the basis of past experience, have tended to generate instability. The first—joint scheduling of government and private spending, which appears attractive at first glance—is likely to entail unacceptable regimentation.

The other methods involve action by governments to alter their spending patterns in the interest of greater overall construction stability. They are more feasible than joint scheduling, but imply that in booms the lowest-priority projects—the ones that should be cut back—are always government ones, while in recessions the most urgent additional projects,

through which construction activity should be stimulated, are also always government ones. This could lead to a distortion of social priorities. A special problem with the method of having government plan for its construction to vary counter to construction in the private sector is that its success depends on not making errors in forecasting what is going to happen to private construction, and such errors are easy to make.

The market mechanism can also be used for stabilizing construction. One approach would be to provide a financial incentive to construction clients in the private sector to stimulate their purchases during recessions. The incentive could be paid from revenue accumulated by means of a special levy imposed on clients during periods of high construction activity for the purpose of curbing construction at these times. With properly designed rates of levy and incentive, the program could be self-financing in the sense that those clients who insisted on constructing at times when industry capacity was under strain would, in effect, subsidize those clients who were prepared to construct at times when spare capacity was plentiful. A major advantage of this method is that it involves minimal distortion of construction priorities. Its main disadvantage is the difficulty of finding a suitable means of indicating when construction purchases warrant an incentive, a levy, or neither.

Some of the briefs expressed the view that monetary policy has adversely affected the construction industry. While we could find little evidence of this, apart from residential construction, it is certainly true that monetary policy has not been used deliberately to stabilize the industry. This might be done; but the use of monetary policy, or general fiscal policy, for such a purpose could be considered too restrictive of the federal government's freedom of action in economic policy-making. Moreover, monetary and fiscal policies, because of their general application, are insufficiently selective for stabilizing such a diverse and dispersed industry as construction.

Stabilizing Residential Construction

Various factors, in addition to population shifts and changes in incomes, influence the stability of residential construction. For example, the down-payment, relative to the value of the dwelling, and the length of the period to repay mortgages affect buyer decisions and are subject to change. So, too, are the bases for measuring family income to determine eligibility for mortgage loans. The maximum mortgage loan under the National Housing Act is also subject to adjustment.

Changes in NHA and CMHC mortgage policies are not made lightly, and it is unclear how they affect the stability of residential construction. They may alter the mix of single and multiple dwellings or the way in which housing is financed. Loan-to-value ratios and the amortization terms of mortgages are now stretched very liberally, and room for further expansion appears limited. While NHA loan limits could be raised to increase the tempo of residential construction, with respect to loan-to-value ratios and amortization terms, there is less room to manoeuvre for expansion than for contraction purposes. Moreover, it must be remembered that only some 55 per cent of new dwelling starts are financed by NHA or CMHC lending, the balance being accounted for by conventional mortgages and other sources of financing that are not subject to NHA or CMHC policies.

Our analysis of the sources of instability suggests that one way to achieve greater stability in residential construction would be to partially stabilize the inflow of savings into financial intermediaries and the outflow of mortgage loans. Much of the past instability in this area has been attributed to monetary policy and to the built-in inflexibility of mortgage interest rates. The limitations on the application of monetary policy to stabilizing construction have already been dealt with, but there are other measures capable of contributing to increased stability in the flow of savings and of mortgage loans, such as variable-rate mortgages. Since mortgages on NHA single-detached dwellings are renegotiable every five years, and since conventional-loan terms fluctuate freely, there is already something close to a variable-interest mortgage system, and it is not likely that the consumer would readily accept any closer approach to such a system. This is in sharp contrast to the situation that prevailed until a few years ago when the excessive rigidity of the mortgage rate was regarded as a quite significant determinant of instability in residential construction.

Another technique to stabilize mortgage loans might be to use a Mortgage Loan Stabilization Fund (MLSF) similar to the Swedish Investment Fund. During easy-money periods, lenders would be required to contribute to the Fund a given proportion of their assets or loans while, during tight-money periods, they would be required to use their previous contributions for mortgage loans. The contributions to, and the withdrawals from, the Fund would be balanced over the housing cycle. The credits held by the Fund might be invested in short-term securities in order to offset part of the losses incurred by the contributions. The other part of the losses could be offset by subsidies. In this way, the lender's yield position would not be changed over the cycle. Such a scheme warrants further study.

Alternatively, CMHC loans made directly to buyers of new homes could be used for the purpose of counteracting cyclical fluctuations in private mortgage loans. This approach to stabilization by offsetting instability of one component with that of another would contradict a fundamental conclusion of our study and would be particularly unattractive with respect to the broader social objectives of CMHC. A more effective and acceptable way to increase the stability of residential construction might be to stabilize CMHC loans for low-income housing. This would require, however, forward budgeting on the part of CMHC and concerted efforts on the part of the three levels of government. Moreover, one cannot stabilize low-income housing without a stable flow of serviced land. All levels of government, therefore, would need to co-ordinate their efforts to ensure advance acquisition of land to be serviced for this purpose.

Alleviating the Effects of Instability

Several suggestions were made to us in the briefs, and by management in the industry, on how to better cope with instability. Careful consideration of these proposals suggests that some might help to alleviate cyclical instability, and others may be worthy of consideration for other reasons.

Industry representatives expressed the view that better information on prospective investment in construction would be of most assistance to them. This would require improved data on anticipated capital appropriations or contract awards, by type of construction and by region. It was acknowledged that better planning by construction firms, in terms of goals and manpower requirements, would also be beneficial. Another proposal was that entry into the construction industry by any new firm should be controlled by some form of licensing. Other suggestions, aimed less directly at lessening the effect of cyclical instability, included the removal of the sales tax on building materials and the deduction of homeowners' mortgage interest payments from taxable income. Uniform codes and standards were recognized as important factors in construction, but they were not viewed as being related significantly to alleviating the effects of cyclical instability.

Cyclical employment instability, along with seasonality and the short, fragmented relationships between workers and employers, are sources of employee insecurity. In those sectors covered by collective agreement, a variety of institutional checks and balances effectively control entry into the certified trades, and they protect and serve the longer-run interests of both sides. Not so well protected are the workers in the unorganized sector.

Quebec's experiment in recent years with a system of work permits designed to stabilize the income and employment of all construction workers by limiting entry to construction work has not been very successful; indeed, it is running into a series of crippling problems. Two more effective techniques of making labour more able to cope with instability by increasing its mobility might be the rigorous and uniform enforcement of labour standards, and the universal introduction of portable pension schemes.

PROSPECTS

From among the numerous ways in which the future of the Canadian construction industry could be viewed, only two broad and interrelated aspects are considered in this section—the prospects of growth in construction, and the prospects of reducing cyclical instability. The time horizon is mainly the medium term—usually 1980—although some comments relate to several years beyond that.[1]

Among the various alternative time paths of economic growth described in the *Ninth Annual Review*, one implied that investment during the 1970s would be spread fairly evenly over the decade, and another implied a closer bunching of investment. According to the *Tenth Annual Review*, the growth rate indicator for expenditures on residential construction for the period 1973–76 is 1.5 per cent. Recent information on non-residential construction suggests that a bunching of investment may come some time between 1975 and 1980, perhaps peaking in 1977 or 1978.

The strength of the surge in construction, which this investment boom implies for the second half of the 1970s, could resemble more closely the upsurge after the mid-1950s than the more moderate boom of the mid-1960s, and for similar reasons—huge, concurrent resource projects, most prominently the James Bay development and other energy and pipeline projects in various parts of Canada. Other notable construction projects scheduled or probable for these years are the new Montreal and Toronto airports, the Montreal Olympics, and urban rapid transit. These kinds of projects trigger various forms of closely related investment, the total of which is also considerable. Most of the foregoing investment is in addition to the more conventional dimensions of a business-cycle expansion.

[1] For related background, the reader is referred to the last section of Chapter 5 and to the Economic Council of Canada, *Ninth Annual Review: The Years to 1980* and *Tenth Anual Review: Shaping the Expansion* (Ottawa: Information Canada, 1972 and 1973, respectively).

Taking account of both the special and conventional investment prospects, the outlook for construction—especially in the nonresidential sector—for the next four or five years is strongly expansionary. Indeed, experience suggests that it will be too much so to be sustainable. The longer-run rate of growth of construction has been about equal to that of GNP (5 per cent per year), but the path of growth has been two to three times as unstable.

Construction people are likely to become heavily involved during the prospective boom and may not have much time to spare for longer-run matters like stabilizing the cycle. Moreover, they could fairly be expected to press less for restraining the upsurge than for counteracting future slumps.

Nevertheless, from the point of view of public policy, construction upswings have tended towards excesses, which led to, and aggravated, subsequent slumps. Resources have been wasted in the process. To express this in a prospective way, greater construction stability would improve the use of resources, thereby making possible a somewhat higher and more sustainable long-run rate of economic growth in the future.

The level of construction activity is dependent, to a large extent, on the tempo of demand throughout the economy for producer and consumer goods. Because of the durable and lumpy nature of construction, however, the impact of economic conditions may be lagged and then accentuated. As was stated in the Council's *Third Annual Review*,[2] the steadier and more predictable is the upward course of aggregate demand, the steadier is likely to be the growth of construction expenditure.

It is evident that the construction cycle is closely related to regional economic conditions. If more effective policies and measures could be found for stabilizing the economy region by region, a substantial amount of cyclical instability in construction might be resolved.

In spite of the acknowledged responsibility of governments for stabilization of the economy, it has so far proven to be extremely difficult to achieve, and we are not optimistic about the prospects of an early solution. Problems in accurately forecasting economic activity for the economy as a whole and region by region, and in intergovernmental co-ordination for stabilization purposes, remain to be resolved.

Surprisingly long and sometimes unpredictable time lags are involved in economic interactions. The "big levers" of fiscal and monetary policy work slowly and, at times, even perversely. The ebb and flow of investment funds are, to some extent, beyond the influence of domestic economic

[2] Economic Council of Canada, *Third Annual Review: Prices, Productivity and Employment* (Ottawa: Queen's Printer, 1966), p. 173.

policy, for Canada's "open" economy is vulnerable to shifts in world trading conditions. Also, other legitimate objectives of government can override the goal of economic stabilization. These complications can be expected to continue.

Because decision-making is less dispersed in the public than the private sector, and because of government's acknowledged responsibility for economic stabilization in general, the responsibility for leadership in stabilizing construction is likely to continue to be thrust upon government. A sector-by-sector approach may, however, become accepted as more feasible than an all-or-nothing attitude to economic stabilization.

A promising first step toward stabilizing residential construction, and one that may have a good chance of being accepted in spite of the costs involved, would be to stabilize the production of low-income housing. As a step towards stabilizing nonresidential construction, major projects are a prospective target. These have tended to acquire independent lives of their own, each maturing in its own good time and with an irresistible momentum. A key question for the future is whether the timing of such projects can be co-ordinated, at least to the extent of avoiding simultaneous peaking. The need for such co-ordination poses a major challenge for federal-provincial co-operation.

As suggested in the *Ninth Annual Review*,[3] better planning is also a prospective means of moderating the swings in the level of ordinary non-residential construction. In this area, where the cost of credit tends not to be the sole determinant of investment, the need for some form of joint public-private scheduling of construction spending might seem to be indicated. But scheduling would raise serious problems. It presupposes a rather elaborate system of collecting and analysing data on current and proposed construction projects throughout the public and private sectors of the economy. More fundamentally, however, scheduling would require much closer co-ordination between the private and public sectors and among the three levels of government. Closer co-ordination implies enlarged government and considerable interference in investment decision-making. One way to contain the interference would be to apply a responsive program of financial incentives and disincentives. Otherwise, some form of rationing would be needed and, at some point during an upswing, a joint agency would have to decide in favour of proceeding with certain projects in certain places and postponing others. Without incentives, however, the postponed projects might not return in a slacker period.

Even if one stopped short of direct scheduling, one could consider refining the economic indicator framework of the Economic Council,

[3] Economic Council of Canada, *Ninth Annual Review*, pp. 99-100.

supplemented by a systematic collection, analysis, and diffusion of statistical information on construction under way and forthcoming, in both the private and public sectors. This framework and information would indicate the investment directions and rates that should be followed in order to achieve more stable growth in construction spending. Further, the provincial and federal governments might decide to combine the use of this information in their own construction spending, along with stabilization incentives for the private sector.

Within the construction industry, certain measures taken by participating groups to reduce their vulnerability to instability can aggravate the instability. Some degree of success in stabilizing future construction investment, therefore, would also offer hope and scope for improvements on the supply side, both within construction itself and among its main sources of goods and services. A lessening of industrial strife and reduced wage-price pressures are among the prospective benefits to be derived from reducing insecurity caused by instability.

9

Conclusions and Recommendations

In this last chapter, we draw conclusions and make recommendations that we consider to be warranted by the evidence contained in the previous chapters. As explained in the Preface, the evidence was derived from briefs, from interviews, and from research studies. In drawing these conclusions and making the recommendations, we realize that we do not know all there is to know about cyclical instability in construction. The problem is a very difficult one; if this were not so, it would have been solved long ago. Simplistic notions as to causes and cures can safely be discarded. We hope that others will have additional evidence and insights to contribute to the discussion that will follow the publication of our report. We, ourselves, may have occasion to return to this subject in connection with other areas of study at the Economic Council.

The first part of this chapter deals with the goal of construction stabilization and with our basic approach to it. Within this framework, we proceed, in the second part, to draw more specific conclusions, and to make related policy recommendations, concerning ways and means of stabilization. Where appropriate, recommendations for data improvement and analysis, as well as comments concerning various institutions, are included.

FUNDAMENTALS

Two fundamental matters require clarification at this stage. The first relates to the central goal of our report; and the second, to the basic approach to construction stabilization that we adopted.

The broadest issue is whether an attempt should be made to stabilize construction. The fact that construction activity is domestically oriented facilitates finding remedies for instability, and the fact that construction is pervasively important throughout Canada enhances the potential returns from doing so. Stability is not an absolute goal, however, irrespective of costs. Would the advantages outweigh the disadvantages?

Various costs and benefits of stabilizing construction have been pointed out in Chapter 8 and elsewhere in this report. Indeed, the greater the degree of stabilization attempted, the greater would be both the costs and the benefits. Beyond some degree of stabilization, however, the increasing benefits taper off and the costs rise sharply.

Much construction instability stems from swings in general economic activity, and this is particularly true for private nonresidential construction. Because of this, we do not believe it either possible or desirable to stabilize construction completely. Furthermore, and for the same reason, we think that even a high degree of stabilization would prove too costly. The more stable the economy, however, the more feasible it becomes to increase the degree of stabilization in construction.

Although some instability is inevitable in a growing economy, too much inhibits growth and the fair distribution of its rewards. Within the context of this study, stagnation and inefficiency of construction would be too high a price to pay for stabilization. The same may be said for regimentation of construction investment. The challenge, therefore, is to minimize construction instability consistent with maintaining economic growth. The response involves balancing the main benefits and costs that have been identified and, whenever possible, measured earlier in the report.

Our work indicates that these costs can either be avoided or kept within acceptable limits in relation to the potential benefits. Provided economic growth continued to add to overall demand, stabilizing construction would release labour and other resources for more productive uses, either in additional construction or elsewhere in the economy. This could be accomplished without adding significantly to price pressures, provided management and labour took concerted advantage of the opportunity to increase productivity and moderate cost-push pressures. Increased construction stability could also result in longer production runs and improved efficiencies in the manufacture of construction materials, and in a higher degree of Canadian content in the longer run.

The terms of reference of the study and the consensus of the briefs suggest that construction can, and should, be stabilized. Our own conclusion is that a *greater degree* of stability in construction is both desirable and achievable, and that more stable growth should be widely adopted

as an important and urgent objective.[1] It is important because of the extent of construction instability and its impact on the rest of the economy, and it is urgent because another construction boom is in prospect. Accordingly, to further the attainment of more stable growth in construction in Canada becomes the goal of our report, and this is reflected in the title chosen, "Toward More Stable Growth in Construction".

The basic approach that we have adopted to achieve more stable growth in construction also requires explanation. We found substantial differences among the instability patterns of the main components of construction. Our basic proposal is, wherever feasible, to increase the stability of these main components around their own growth paths or trends, with due allowance being made for interregional differences. Within the context of more specific policy proposals for achieving greater construction stability in future years, the growth trend of a component must be understood to comprehend social targets, as well as prospective market demand, and is not necessarily a simple projection of past trends. (The case of residential construction probably illustrates this particular point.) Our findings indicate, as a general rule, that stabilizing particular components would not destabilize the rest.

The basic strategy of increasing construction stability by stabilizing its main components can be further clarified by contrasting it with what we are *not* advocating. In our judgment, the right approach would not be to try to vary the main components of construction "countercyclically" with respect to each other. For example, we would not advocate trying to vary spending on construction by the government sector in such a way as to compensate for swings in construction investment by the private sector. Even if such an offsetting process were feasible, the cost of instability within each component would still exist and, in the aggregate, could be formidable.

In our opinion, countercyclical stabilization of construction components generally has been unsuccessful. Construction activities in the public and private sectors of the economy have a strong tendency to move up and down together. Part of the reason lies in the difficulty of forecasting construction activity. There are sometimes long and unpredictable time lags, and the ebb and flow of investment funds are partly determined externally by international conditions. Another obstacle has been the lack of mobility among construction trades. For example, workers employed in residential construction cannot readily shift to jobs in nonresidential

[1] The Council has, in earlier publications, advocated greater stability in construction—e.g., in its *Third Annual Review* (pp. 104-118 and 172-173); its 1970 report on *Performance and Potential* (pp. 60-61 and 78-79); and its *Ninth Annual Review* (pp. 99-100).

building or engineering construction. The above problems would be less serious if the objective were to stabilize components around their own growth trends.

It should be noted, however, that, in advocating a policy of increasing the stability of the main components of construction around their own trends, we are not advocating abandoning the so-called "automatic stabilizers" that have been built into the economy over the years. For example, at times of slack, progressive income taxation makes for a countercyclical tax reduction, and unemployment insurance compensates in part for involuntary loss of work. Nor are we advocating the discontinuance of the deliberate use of the "big levers" of monetary and fiscal policy for stabilizing the economy in general. There would normally be no conflict between their use and our proposals for stabilizing construction because construction instability usually is cyclical with respect to general economic conditions. If the stability of construction were increased as we advocate, this would also contribute significantly to increased stability in the economy as a whole and thereby reduce to some extent the need for reliance on traditional stabilization measures. It has to be recognized, finally, that economic stabilization is not the only legitimate consideration of governments; there are other collective needs to be met that, from time to time and place to place, take priority over stability.

Although our studies were unable to identify and measure "causes" of construction instability, they did establish quantitative relationships between instability and its main "sources". This evidence has led us to conclude that the main source is on the demand side; that is, it stems chiefly from alternating surges and slumps in the demand of customers for new construction. There are also sources of instability on the supply side, in which we include the industry itself, but these are less influential than, and in many respects result from, the swings in demand.

There is no single policy that could stabilize all construction demand. As we have shown, there are three main demand components of cyclical instability: residential construction; private nonresidential construction; and construction expenditures by the government sector. Although these are roughly equal in size, they are sufficiently distinct in nature and in their decision-making processes to require separate treatment. What we are proposing, therefore, is that the goal of more stable growth be applied to *each* of these main construction demand sectors. The stability of each should be increased around its own growth trend. Trying to vary them in a mutually offsetting way would only add to the diversity of instabilities and would be costly—more costly, in our opinion, than the alternative approach that we are suggesting.

The statistical evidence of construction activity also indicates that both the "mix" of construction and the nature and extent of construction instability vary substantially from region to region across the country. Indeed, its sharpest impact may be felt locally. National remedies for construction instability, if they are to be feasible, effective, and acceptable, need to be tailored to these differences. Although intergovernmental co-operation in such matters has sometimes encountered difficulties in the past, we are convinced that ways must, and can, be found to improve co-operation among the three levels of government. There has been increasingly widespread awareness of this need in recent months.

Recommendation 1

We recommend pursuing the goal of more stable growth in construction by increasing the stability of its main components around their prospective growth trends, taking full account of regional differences.

SPECIFICS

Several possible ways and means of reducing instability in construction were discussed in Chapter 8. The merits of these methods were evaluated, insofar as possible, by taking into account a number of factors including the likely benefits and costs of each method; its sensitivity to lags in implementation; its ability to cope with regional differences in the construction cycle; its ease of administration; and even, as far as we could judge, its political acceptability. No single method was strong on all counts—each of them had good points and bad points. In our view, however, the following policies would be significantly superior to others mentioned in Chapter 8, all things considered.

MAJOR PROJECTS

We have pointed out that a major construction boom occurred in the 1950s mainly because work on both the St. Lawrence Seaway and the Trans-Canada Pipeline peaked in the same two or three years, and that the federal government might have been able to spread out that boom—and, as a result, moderate the subsequent slump—by using the influence it then had over the timing of these projects.

An analogous situation will probably exist in three or four years' time. The peak periods of construction on the James Bay development, and on other energy projects and pipelines in various parts of Canada, are likely to coincide, generating a strong boom that would be followed by a sharp construction recession. A spreading of these peaks, by adjustments in the detailed timing of construction activity in these areas, is needed. Although James Bay is a provincial matter, the federal government does have some authority over resources in the North and over major pipelines. It would be possible for the federal government to consider the plans for James Bay, for nuclear energy, oil and gas developments and pipelines, and for any other major projects likely to peak in the next few years, and work out what feasible changes in plans would contribute to stability. Changes relating to expenditures on major pipelines could be made mandatory, as one condition for granting federal permission to construct at all. Changes relating to other expenditures might be jointly agreed upon after consultation between the federal and provincial governments concerned.

Almost certainly, other major projects—those involving about half a billion dollars of construction or more—will occur from time to time in the future. When the peak periods of construction on more than one such project appear likely to coincide, similar action to that envisaged for the James Bay and energy and pipeline projects would be appropriate. To ensure that action was taken in time, a periodic consideration of the need for it would be necessary, possibly every six months.

The concept of "need" in this context has to be broad enough to include current supply considerations. Some major construction projects might be more "deserving" than others, depending on the relationship between their import content and general business conditions. While priority would normally be given to projects involving a low-import content, if a construction boom involving major projects were to peak during a time of general economic prosperity and supply shortages, projects with high-import content would place less strain on the capacity of domestic suppliers than would those with low-import content. But, if the major projects happened to peak during a time of general economic slack (or if they could be scheduled to do so), projects with low-import content would be preferable.

There are also longer-run considerations related to the potential beneficial impact of major projects on the Canadian economy. If really long-range economic planning were applied, it would become feasible to expand the capacity of domestic suppliers, with prospects of longer production runs and lower unit costs. However, the economic viability of

large-scale suppliers would probably still depend on whether export markets could be found during the typically lengthy periods between major projects.

Long-term planning is important in another respect. If unexpected scheduling changes were imposed to avoid simultaneous peaking of major projects, this could cause them to incur additional costs. But if, instead, careful planning were involved in the avoidance of simultaneous peaking, savings resulting from less cost inflation could accrue to the major projects. This underlines the need for close federal-provincial collaboration if orderly and equitable stabilization of major projects is to be achieved.

Finally, given the many repercussions of federal initiatives in partially changing the timing of major construction projects, it would seem both necessary and appropriate for such decisions to be the responsibility of the federal Cabinet, although they would be implemented by the minister(s) involved and would require advance consultation and periodic review with provincial governments.

Recommendation 2

We recommend that simultaneous peaking of major construction projects be avoided as far as possible. The responsibility for preventing simultaneous peaking should lie mainly with the federal Cabinet, which should undertake a periodic review of the schedules, and the prospective impact on the economy, of all forthcoming major projects in order to decide whether some rescheduling would be both feasible and desirable. In all cases, there should be advance discussion and periodic review with any provincial government concerned. An immediate review of prospective energy and pipeline developments and the James Bay project should be the first step in this ongoing process.

CONSTRUCTION SPENDING BY GOVERNMENT DEPARTMENTS

In Chapter 7, government spending on construction was shown to be both large in amount and cyclical in timing, especially at the federal and provincial levels. While recognizing that, for technical and social as well as political reasons, it is difficult to "fine-tune" capital outlays by governments, we remain convinced that more stable spending on public works is both feasible and desirable. We say this, fully aware of its implications for longer-range planning, possible deficit financing during slumps, and increased intergovernmental collaboration. The direct and indirect linkages between construction spending by the three levels of government

are considerable. We are referring here to construction spending by government departments and not to construction by various Crown corporations and other government enterprises that operate in a revenue-producing way similar to firms in the private sector of the economy.

While direct construction spending by the federal government is a relatively small portion of all construction, its exemplary role is much greater. A determined effort to keep the growth path of federal construction as smooth as possible would be very desirable. One way of doing this might be for the federal Treasury Board, drawing upon the advice of the Department of Public Works, which controls a considerable portion of federal construction, to accept responsibility for co-ordinating construction spending by all federal departments in such a way as to ensure its stable growth. As far as possible, the aim should be for a smooth rate of spending within each major region of Canada.

Similarly, the growth path of construction spending by provincial government departments should be more stable. Total provincial spending in this area greatly exceeds federal expenditures and contributes a substantial proportion of construction instability in Canada as a whole.

Both the federal and provincial governments are involved in the construction spending of governments at other levels and hence influence stability beyond their own particular level. The provinces exercise considerable control over municipal construction and the federal government is participating currently in regional economic expansion and winter works programs with both provincial and municipal governments.

Each government department, at the federal and provincial/municipal levels of government, should determine its target rates of construction growth for several years ahead and then pursue them along as smooth a growth path as possible. Since interest rates are relatively higher in booms than slumps, it could be in the financial interest of each government to pursue a policy of more stable growth in its construction spending. This could be so at the provincial/municipal level even if, in addition to any federal funds currently available for employment stabilization purposes, further resort to deficit financing were needed during slack periods. Five-year budgeting, in accordance with goal-setting and program-planning, should help to achieve smoother growth.

Recommendation 3

We recommend that the federal and provincial/municipal governments determine target rates of growth for their departmental spending on construction, including joint programs, and pursue these targets along paths as stable as possible.

COMMERCIAL AND INDUSTRIAL ENTERPRISES OF GOVERNMENTS

Here we are referring to government enterprises, such as Crown corporations, established by federal, provincial, and municipal governments but operating like commercial or industrial firms in the private sector and following similar investment practices. These government enterprises require different treatment for construction stabilization purposes than either government departments or private firms. Having been set up to operate commercially, with considerable, if not complete, freedom from the political process, their investment decisions should not be subjected to direct government regulation. On the other hand, having been established by governments to conduct business in the public interest, they should not heedlessly or needlessly contribute to construction instability.

We have reached the conclusion that the most effective way for these important constituents of construction investment to achieve more stable growth paths would be for the heads of the larger government enterprises to meet periodically, in private, to discuss their respective construction plans and schedules in relation to investment conditions in their region and elsewhere in the economy, to identify problem areas, and to explore ways and means of achieving more stable growth in their own operations. These meetings should be convened by the federal Minister of Finance in close consultation with the provincial governments.

If the government responsible for a particular enterprise should decide for some reason (such as a need to maintain fair competition with rival firms in the private sector) that such an enterprise should not participate in Recommendation 4, then it should be covered under Recommendation 5 dealing with the private sector.

Recommendation 4

We recommend that the heads of large Crown corporations and other government enterprises be convened periodically by the federal Minister of Finance, in consultation with the provincial governments, to discuss their respective construction investment plans and schedules, with the object of achieving a smoother investment path for each government enterprise.

PRIVATE NONRESIDENTIAL CONSTRUCTION

The search for ways and means of achieving more stable growth in construction in the private sector of the economy proved to be difficult.

There are three main reasons for this. First, the number of construction decision-makers in the private sector is very large, and this poses problems. These problems are ideological as well as administrative, since the free-enterprise tradition would preclude a high degree of regimentation of investment decisions. Second, the ways and means should not retard economic growth. Third, the program should be easily understood and administratively straightforward. With these complexities and constraints in mind, it would be tempting to leave private sector construction alone. But any serious attempt to achieve more stable growth in construction simply cannot ignore this large component.

After considering some alternative ways and means, and having regard for interrelationships with the other recommendations in our policy package, we have concluded that the most promising approach to achieving more stable growth in the private sector would be for the federal government to introduce a construction investment levy and incentive system. The system would involve an investment levy during specified construction booms and an investment incentive during specified slumps. In booms, the levy would deter less urgent construction, and, in slumps, the incentive would make extra construction more attractive. The levy and incentive program would also encourage longer-range investment planning.

The construction investment levy and incentive scheme that we are proposing for the private sector would apply to the buyers of construction and not to the construction industry itself. Not only is this consistent with our basic finding that the main source of construction instability is on the market demand side, but it has two other important advantages. First, it applies to the total amount of construction spending and not just to one input such as building materials. Installed mechanical and electrical facilities would be included, but not movable machinery and equipment or the land on which construction takes place. Second, it would permit, if in the national interest, the temporary exemption of a particular region and the temporary or permanent exemption of a particular sector or form of construction investment. Temporary regional or sectoral exemptions probably should not be attempted until some experience has been gained in operating the stabilization scheme on a national scale.

We consider that residential construction should be permanently exempted from the outset, both for social and administrative reasons. (Our Recommendation 7 deals with stabilizing low-income housing.)

In order to avoid penalizing construction investment commitments made in good faith in advance of the announcement of a specified boom period, and to avoid rewarding commitments made in advance of a speci-

fied slump period, the levy and incentive would be applied only to new construction projects undertaken after the beginning of the specified boom and slump periods, and then only to construction put in place during these periods.

The most effective rate of investment levy and incentive cannot be prejudged with certainty and might be altered experimentally within appropriate limits from cycle to cycle. We think that a rate somewhere between 5 per cent and 10 per cent of the value of construction expenditures would be appropriate, depending to some extent on the prevailing state of inflationary expectations. Although it is difficult to forecast exactly how much private nonresidential construction would be subject to the levy, if it were at the $4-billion level, a 7.5 per cent rate on one year of construction investment would amount to $300 million.

Although the proposed stabilization levy and incentive have some characteristics of a special sales tax and sales subsidy, they apply to the user or investor in construction, both incorporated and unincorporated, and so they should be applied by the federal income tax branch. The levy would add to the cost of construction investment during a specified boom and would be eligible for capital cost allowance. The incentive would reduce the cost of construction investment during a specified slump, with only the net cost being eligible for capital cost allowance.

The levy and incentive rates do not have to be the same, although there should be an approximate equality between the total amount of the levy during a specified boom and the total amount of the incentive paid out in a subsequent specified slump. The incentive should normally apply to whatever categories of new construction were subject to the levy in the preceding boom. There would normally be intervals between specified booms and specified slumps when neither levy nor incentive would be in effect.

Any construction investment project contracted during any neutral period between any specified construction investment boom and slump would never be subject to either a levy or an incentive, regardless of how long the construction lasted. Any construction investment project contracted during a specified boom would only be subject to the levy on construction put in place during the remainder of that particular specified boom and, thereafter, would never be subject to either a levy or an incentive regardless of how long the construction lasted. Any construction investment project contracted during a specified slump would only be eligible for the incentive on construction put in place during the remainder of that particular specified slump and, thereafter, would never be eligible

for either an incentive or a levy regardless of how long the construction lasted.

New policy programs usually require new techniques of implementation, and such is the case with the proposed levy and incentive scheme for stabilizing private nonresidential construction. Two kinds of indicators would be required—the setting of target trends for the main demand components of construction, and shorter-range forecasting of major swings above and below these target trends. After careful consideration, we are convinced that suitable tools of analysis are available, or can be developed, provided there is widespread acceptance of the need to reduce construction instability. As indicated towards the end of this chapter, current private-sector and intergovernmental initiatives, including increasingly specific extension of our Council's indicator framework, could help with the development, through a joint public-private process, of acceptable target trends for the main demand components of construction. These target trends would, of course, require revision from time to time. Increased disaggregation of the construction investment components of existing quarterly economic models, and the regionalization of such models, would be needed for forecasting major departures of the components from their target trends. To facilitate the process of stabilization-planning and decision-making, appropriate data would be required.

Guidelines would need to be included in enabling legislation, and administrative details would have to be worked out. Important among the guidelines would be the criteria for specifying periods of boom and slack. Some composite indicator showing sustained departures of construction investment, output, and employment above or below target trends would be needed. The specified period of boom or slack might initially have a fixed duration of 12 months. This period could be extended, however, for additional six-month periods by Order-in-Council, provided a minimum of two months' advance warning were given. A special council, including members representing the main interest groups in the private sector, should be designated to advise the federal department or agency responsible for administering the proposed program. It should be possible to begin the program by specifying a boom period within the investment surge that is in prospect for the next few years.

Recommendation 5

We recommend that the federal government introduce an investment levy and incentive program for the purpose of achieving more stable growth in construction in the private sector of the economy, excluding housing. The investment levy would apply only in specified construction boom periods, and

the incentive would apply only in specified construction slump periods. The levy and incentive would be paid by, and to, the customer or client of construction on new projects put in place during the specified boom and slump periods.

THE FEDERAL SALES TAX ON BUILDING MATERIALS

Consideration was given to using receipts (about $350 million per year) from the existing 11 per cent federal sales tax on building materials for financing the proposed construction incentive, but we concluded that this would have a serious drawback compared with the stabilization plan proposed above. Use of this tax for stabilization purposes would virtually preclude any temporary or permanent exemptions because of the difficulty of verifying the actual usage of the materials. Another shortcoming is that building materials account for less than half of construction costs. The building-materials tax, however, merits further consideration for other reasons.

Prior to June 14, 1963, building materials and production machinery and equipment were exempt from the federal sales tax. Then they became subject to the tax at gradually increasing rates up to 11 per cent after January 1, 1965. The tax on building materials remained at 11 per cent when the general rate of the federal sales tax was increased to 12 per cent on January 1, 1967. The tax on production machinery and equipment in general (but not on construction equipment) was reduced and then removed in April and June of 1967.

The building-materials tax discriminates against construction investment in favour of production machinery and equipment which generally are not taxed, and it fails to distinguish between investment in intermediate construction for use in the production of other goods and services and direct consumer investment in the form of housing. In the former case, it hinders the growth of construction investment and, in the latter case, it is inequitable in the sense that its burden is disproportionately heavy on low-income people. The Report of the Federal Task Force on Housing and Urban Development urged the removal of all sales taxes on building materials used for residential construction. The Carter Royal Commission on Taxation could find no economic or social justification for the taxation of any building materials and recommended its eventual removal as general revenues permitted.

We are proposing the removal of the federal sales tax on building materials. The timing of implementation of this proposal would need to take account of the prevailing capital investment outlook and the intended

impact of the preceding recommendation for a levy and incentive stabilization plan.

Recommendation 6

We recommend that the federal sales tax on building materials be abolished, and that this be done as soon as construction investment conditions permit and having taken account of the levy and incentive stabilization proposal in Recommendation 5.

RESIDENTIAL CONSTRUCTION

The removal of restrictions on NHA loans in recent years may contribute to more stable growth in residential construction. One should also take into account prospective institutional and policy changes that might have considerable influence on growth and cyclical instability in this sector. Some of these changes are likely to contribute substantially to its stabilization.

The proposed Residential Mortgage Financing Act (Bill C-135) is likely to produce significant changes in the mortgage market. The Act proposes to create two new institutions: the Federal Mortgage Exchange Corporation (FMEC), and mortgage investment companies. The former institution is designed to stimulate the long-run supply of private residential mortgage loans and lower their cost through greater liquidity of mortgages. The latter institution, which operates in a similar way to mutual funds, is primarily designed to encourage small savers to invest in residential mortgages.

Although the proposed Act is not designed for the purpose of stabilizing residential construction, one should not overlook its possible effect in this regard. Improved marketability of mortgages could mean that their relative attractiveness would become somewhat less subject to cyclical variations than in the past. Other things being equal, the flow of private mortgage loans could become smoother. But, even if partial alleviation of this particular source of instability results, it is unlikely that the full impact of the proposed new institutions will be felt before some years. Other sources of instability, such as swings in the total flow of funds in the economy as a whole, would remain.

There has been an important shift of emphasis in CMHC loan policies in favour of low-income housing. In 1960, nearly 2,500 low-income housing units were financed by CMHC, with an investment of about $18 million. In 1972, the number of low-income units financed was about 34,000 for an investment of nearly $450 million.

It appears to be the intention of the federal government to allocate substantial amounts of its housing finances to low-income housing. In a speech made at the Ontario Tri-Level Conference in May 1973, the Minister responsible for housing stated:

> From the federal point of view, the objective is simply to ensure that every Canadian is able to exercise what we regard as his social right—the right to good housing at a reasonable cost in a decent community environment.[2]

In his speech at the Annual Conference of HUDAC (Housing and Urban Development Association of Canada) in January 1973, the Minister pledged four-fifths of CMHC's billion-dollar budget to low-income housing, an amount that would represent about 45,000 units per year. This number may indicate the approximate annual level of units the federal government is planning to finance over the present decade.

What is important for this study, however, is that the federal government intends to insulate low-income housing from monetary policy and the cyclical ups and downs in private mortgage loans. The federal Minister responsible for housing, in his HUDAC speech already referred to, stated:

> The significance of this [capital budget of CMHC], of course, is that despite the ups and downs of the economy—and the mortgage money available from the private sector—that those in society least able to compete in the private market will be protected, and that the programs of social housing will be maintained.[3]

We approve of the increased emphasis on public financing of low-income housing—both new and existing—and believe, both for social and stabilization reasons, that there should be virtually complete stability in the flow of such housing around its prospective trend. In short, there should be a smooth growth path in the provision of social housing—it should not be used as a "valve". Seasonal instability will, of course, remain. Although seasonal instability is highly undesirable, we feel that, for economic reasons, it is not yet feasible to eliminate it.

Stabilizing low-income housing would require additional co-ordination on the part of governments. First, it is desirable that each province create

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[2] "Opening Statement by the Honourable Ron Basford, Minister of State for Urban Affairs, at the Ontario Tri-Level Conference" (Ottawa: Ministry of State for Urban Affairs, May 28, 1973), p. 1.

[3] Remarks by the Honourable Ron Basford at the Annual Conference, Housing and Urban Development Association of Canada, Toronto, Ontario (Ottawa: Ministry of State for Urban Affairs, January 29, 1973), p. 8.

a body, such as a provincial housing council, grouping municipal and provincial housing agencies and the buyers and builders, in order to examine all aspects of housing. These councils should be equipped with competent technical services, including the capability to estimate prospective housing needs in general, as well as the differing needs of various low-income categories. It is encouraging to see that the federal government has decided to allocate $1.5 million for such purposes.[4]

Second, there should be a national mechanism, something like the annual tri-level conferences, through which all levels of government could co-ordinate the allocation of their resources for the purpose of stabilizing low-income housing. Already, some progress has been made in this area. In his HUDAC speech in January 1973, the Minister responsible for housing announced that there had been agreement on a three-year forward budget commitment on the part of federal and provincial governments. Moreover, he announced that provincial housing ministers had agreed to meet each year prior to the formulation of housing budgets in order to co-ordinate new forward commitments, to consider policy, and to consult on future actions.

These are significant developments, but we feel that the success of this national mechanism depends largely on how well each province and major municipality co-ordinates housing and related policies within its own jurisdiction. The effectiveness of the federal government's role depends on its financial share in low-income housing programs. This share in programs is quite substantial, varying from 75 to 100 per cent. The 1973 amendments to the National Housing Act allow CMHC to finance 100 per cent of nonprofit low-income housing and of co-operative housing.

One area of continuing concern is that of building codes and standards. The Science Council, for instance, has found that local by-laws and specification codes frequently delay or inhibit innovation, protect local suppliers at the expense of the consumer, and contribute to higher costs of new dwellings. The Science Council felt that the National Building Code contains adequate safeguards for structural safety and, while urging its continuing evolution to take account of environmental factors, recommended the adoption of the Code by all provinces and major municipalities. We agree with the Science Council on this point, subject only to recognition that in a few cases unique climatic or other factors may warrant special requirements.

The stabilization of low-income housing would also require an ample flow of serviced land. It has been estimated that, in the current decade, for all new residential housing purposes, about 250,000 acres of residential

[4] *Ibid.*, p. 7.

land will be needed, or 25,000 acres per year. What would constitute ample serviced land for low-income housing purposes would depend on the mix of multiple dwellings to semi- and fully detached dwellings. Additional, and perhaps joint, financing by the three levels of government may well be needed to ensure an ample flow of serviced land for both low-income and other housing purposes. Proposals in this direction have recently been announced.

Recommendation 7

We are encouraged by recent initiatives and plans of the different levels of government to provide for an adequate supply of dwelling units for low-income people, and *we recommend that future low-income housing efforts be organized and funded so as to ensure a smooth growth path over a period of years, on a regional basis, independent of any swings in other residential or nonresidential construction.*

CONSTRUCTION MANPOWER AND INDUSTRIAL RELATIONS

It has been shown that construction instability comes primarily from fluctuations in the growth of government, residential, industrial, and commercial demand for construction, and that these fluctuations are particularly severe at the regional and local levels where they have direct impact on both labour and management of individual construction firms. Since the supply side of the construction picture—that is, construction activity in general and the "construction industry" in particular—has not been identified as an important source of cyclical instability, our recommendations pertaining to the industry itself are aimed at helping it to cope with fluctuations in demand that, realistically, are unlikely to be eliminated entirely.

There is need to bring the interests of construction labour, management, government, and the general public closer together. Instabilities in the industry—seasonal as well as cyclical—and insecurity of employment and income have contributed to the creation of self-protecting mechanisms by both labour and management. Employers have generally disclaimed any permanent responsibility for their workers. Most organized firms leave matters of hirings, employment security, pensions, health, and safety to be administered by union locals. Outside Quebec, the separate and nonportable pension and welfare schemes of individual trades locals offer no assured protection for the long-term needs of members. And for workers in the unorganized sectors of the industry, even this degree of protection is lacking. Undoubtedly, union locals have used closed-shop

agreements, hiring halls, and involvement in apprenticeship training restrictively to protect the interests of their members. But employers are party to collective agreements and thus bear equal responsibility. Canada Manpower Centres, in turn, are limited in providing jobs for unemployed construction workers, since most organized employers deal directly with hiring halls or with the provincially run Quebec Manpower Centres. The result is a fragmented system of localized job referrals and placements that works particularly against the nonunion worker.

We have seen how this fragmentation has produced wide disparities in working conditions and wages. In recent periods of relative buoyancy and inflationary expectations, some unions have pressed unusually high wage demands, and some employer groups have given way to these demands, knowing that customers will absorb the extra costs. Increasing wage costs have also encouraged the introduction of more labour-saving materials, equipment, and assembly processes.

There is a need for an in-depth review of apprenticeship training, particularly with respect to duration and content. There is also the matter of the adaptability and upgrading of journeymen to future manpower requirements, having an eye to the inflow and skill qualifications of immigrant workers.

There is also the need to reduce further the burden of seasonality and the costs that it imposes on persons outside, as well as within, the industry. It is true that considerable progress has been made in reducing seasonality and that enriched unemployment insurance benefits have eased much of the financial insecurity of workers confronting extended periods of winter unemployment. However, the involuntary idleness in winter of up to one-quarter of the construction labour force, along with the idleness of construction equipment, represents a waste of resources that could be put to more productive use elsewhere. Both federal and provincial governments in Canada have experimented with special winter construction incentives, but experience has shown that the financial and administrative costs of these programs per *additional* job created are high. Nevertheless, there appears to be room for improved and co-ordinated job-scheduling and new technological efforts that would result in further substantial reductions in the seasonality of construction activity.

Concern for the public interest extends to the application and enforcement of adequate employment and safety standards. This includes measures that discourage abuses of bankruptcy legislation and that protect contractors and workmen from deliberate nonpayment of debts or wages. It also includes measures that help to deter outright corruption or intimidation.

Recommendation 8

Recognizing that these matters go beyond reducing cyclical instability in construction, *we recommend the convening of federal and provincial Ministers of Labour and Manpower, along with other ministers and senior officials, as appropriate, to establish, and to study the findings of, task forces (including representatives of construction labour and management) to be concerned with:*

(a) *more effective communication among union locals, employers, and the Canada and Quebec Manpower Centres, with a view to widening the opportunities for unemployed construction workers and increasing the availability of qualified workers for employers;*

(b) *the incidence, coverage, benefit structure, funding policies, etc., of construction welfare and pension plans, with the general objective of achieving a system of pensions covering all employees and portable from trade to trade and from province to province;*

(c) *the content and relevance of apprenticeship and related trades training, and the sequence of training in relation to the construction cycle, immigration policy, and manpower projections;*

(d) *ways and means to facilitate more orderly, phased construction activity throughout the year and to reduce the costs of idleness and of unforeseeable skill shortages associated with seasonality; and*

(e) *the achievement of greater uniformity of laws and regulations to which the Canadian construction industry is subject, including enforcement in the areas of labour standards and safety.*

CONSTRUCTION MANAGEMENT

We have underlined the importance of improving industrial relations and manpower utilization in helping construction cope with cyclical instability. Another related area needing attention is construction management.

On the one hand, as noted earlier, in an attempt to reduce the effects of cyclical instability, construction firms tend to move into regions farther from home base, into other types of construction, and into new functions such as project management, all of which impose different requirements and new challenges on management personnel. Underlying these developments are the unusual characteristics of the construction industry, where

a firm may be awarded a number of contracts that will run concurrently and require an abrupt increase in management personnel with accompanying delegation of duties and authority. On the other hand, likely at least in part because of cyclical instability, the industry has not attracted the best management recruits, and many management personnel have moved up through engineering or trades ranks where construction management training was limited.

A further challenge facing managements of construction firms is to broaden their understanding of the industry and its problems, and to undertake remedial measures that are proposed. Many of the results of economic studies and research conducted on behalf of the industry will have to be implemented by construction firms in order to be effective, and some firms may, to their advantage, wish to become involved in the actual conduct of R&D studies.

Thus, to cope with instability, to adapt to the normal characteristics of the construction industry, and to improve the operations of the industry, there is a great need for attention to be given to the proper numbers and qualifications of management personnel in construction firms. On the basis of the firms surveyed, however, it was learned that less attention was paid to overall corporate planning than was found in an earlier broader study of management practices. Without a corporate plan, it is difficult, of course, to identify overall requirements of either numbers or types of managers that should be recruited or of training that should be provided. A need has been expressed by construction firms, in a study by the Construction Industry Development Council, for more courses designed for construction management. The latter study revealed a readiness on the part of educational authorities to take steps to meet the needs of the industry.

Recommendation 9

We recommend that construction firms devote more attention to identifying the numbers and qualifications of managers needed for several years ahead, and that governments, construction firms, and educational institutions collaborate to ensure that appropriate education and short-course training are provided to meet these needs.

ECONOMIC INFORMATION

In our survey of construction firms, the greatest need expressed was for more and better information on the prospective demand for new con-

struction. In their view, and also that of some suppliers of construction materials and services, the main impact of cyclical instability on their operations would be removed if they had a fairly reliable indication, reasonably well in advance, of the level of demand they would be called upon to meet.

It was pointed out, too, that the type of information currently available, consisting essentially of proposed expenditures only, did not meet their needs completely. For planning purposes, it is important to have information, as well, on the anticipated timing of contract awards and/or the capital appropriations that precede the actual contracts. They need information also as to the type of construction and its regional distribution.

This same type of information would be of considerable value to prospective buyers of construction in the planning of their projects. While buyers, whether in the private or public sector, have many factors to consider when selecting the timing of their construction activities, there is evidence that they would try to avoid the bunching of construction projects in a region, provided sufficient information were available on other construction being planned. The current study of the Construction Industry Review Panel in Ontario is aimed broadly at the creation of a more stable industry through improved forecasting of construction demand on a regional basis within the province.

Moreover, if the construction investment levy and incentive plan outlined in Recommendation 5 is to prove effective in achieving more stable growth, clients in the private sector will want to do more forward planning of their construction requirements than in the past. This would be facilitated by providing the best possible indication of the present and prospective state of construction activity in the country as a whole and in each region. The same holds true for the government departments and agencies involved in Recommendations 2, 3, and 4.

The operation of the construction investment stabilization plan would require as reliable information as possible on "turning points" in construction activities. This, in turn, would require analysis of construction activity and economic conditions that should serve not only to identify the upturns and downturns in construction activity and the rates of unemployment and inflation, but also the proper timing of the designated boom and slump periods. If the program were to be applied with regional exemptions or other interregional differences, more data on regional economic activity than is presently available and on interregional links in the supply of construction materials would be needed.

Some highly commendable initiatives are under way at Statistics Canada to improve the coverage and usefulness of construction statistics.

Although some of these initiatives have a bearing on the forecasting of construction activity, as do the regular surveys of capital investment intentions conducted by the Department of Industry, Trade and Commerce, more information on the level and nature of prospective demand is needed. Consideration might be given to using information on levels of architectural and engineering work as a leading indicator of construction activity.

Recommendation 10

We recommend that Statistics Canada undertake the gathering and publication of improved information on construction activity and prospective demand from all sectors of the economy, designed for the use of construction clients in the planning of their purchases, of the construction industry in the planning of its operations to meet the demand for construction, and of the federal government department or agency operating the proposed construction investment levy and incentive program aimed at achieving more stable growth in private nonresidential construction. This economic information must be kept current and made available on a regular basis to all such users.

ECONOMIC ANALYSIS

Although we think that we have initiated the groundwork analysis needed for achieving a greater measure of stable growth in construction, continuing effort is needed to provide guidance in reducing instability. Such effort would need to be endorsed by the main interest groups—construction clients, labour, management, related professionals and suppliers, and government. A strong economic research capability would be essential.

In addition to the technology-related matters mentioned in Chapter 2, the National Construction Industry Development Foundation (NCIDF) might appropriately sponsor or conduct economic studies relating specifically to the industry. The NCIDF was established as an autonomous agency in 1971, with the help of a "seed grant" of $50,000 from the Canada Department of Industry, Trade and Commerce. It is now broadly representative of the construction industry. One of the Foundation's several objectives is "to promote economic studies designed to stabilize the growth rate of the construction program".

The NCIDF brief submitted to us proposed a national fund to carry out its research objectives. It conceives of this fund as being, directly or indirectly, the financial responsibility of the industry itself. With federal government co-operation, the fund might be financed by a federal payment

equivalent to part of the overpayments by construction employers to the Canada Pension Plan. Alternatively, the fund might be financed out of supplementary, earmarked contributions by all construction employers to Unemployment Insurance or the Canada Pension Plan. Other possible methods of financing the fund were also discussed in the NCIDF brief.

We support the concept of the National Construction Industry Development Foundation, and we believe that it should receive encouragement and additional financial support from the federal government, with provision being made in the funding arrangements to take account of the special case of Quebec.

The Quebec Construction Industry Commission, described earlier in Chapter 3, would be an eligible agency for conducting a substantial program of economic research on construction in the Province of Quebec. Special emphasis might be given to the areas of planning and utilization of manpower and of industrial relations.

In supporting the research concept of the NCIDF, we recognize the important role played by the Construction Industry Development Council (CIDC), particularly in advising the federal government on policy matters. If our recommendation concerning increased federal support of economic research by the NCIDF is accepted, consideration should also be given to having the latter report to the CIDC.

Recommendation 11

We recommend that the federal government provide additional financial encouragement to the National Construction Industry Development Foundation to enable it to sponsor or conduct economic research on specific construction problems and needs.

As mentioned in connection with Recommendation 5, the Economic Council of Canada itself could play a continuing role in promoting more stable growth in construction. The performance indicator framework introduced in its *Ninth Review* is designed to provide the essential ingredients of policy and improved decision-making. On the substance of policy, the indicators set a target level or rate of change in a given activity that is both desirable and realistic over the next three or four years, and is consistent with likely developments in the rest of the economy.

Two indicators are already provided for housing—one on expenditures, and the other on the number of starts. It is intended to develop more refined housing indicators in future Annual Reviews within the broader context of social indicators. In line with the thrust of the present report, housing indicators should be provided for regions, and others

should be added to reflect the distribution by income class and quality of dwelling.

Construction as a whole is not separately identified at present in the Council's indicator framework, but it would be possible to do so. The indicator for real capital formation could be broken down into construction, and machinery and equipment, and it would then be possible to monitor developments in construction as such. Once this is done, it is clear that future breakdowns into whatever category one is interested in, such as private-versus-public construction expenditures, are not difficult to make for purposes of analysis or decision-making.

Such an indicator framework may be used to review developments annually in a more systematic way than otherwise, but it may also go a long way to meeting the persistent demand of private industry for more precise and relevant information on construction prospects to enable improved planning, management, and manpower utilization.

Two complementary measures have been proposed by the Economic Council that are of direct relevance to the construction industry. The first one is the National Economic Conference to be held annually to assess the current situation and future prospects of major sectors of the economy. One of the sectoral committees set up for this purpose is the Construction Industry Committee, which could become a central instrument and vehicle through which permanent attention could be devoted to finding ways and means of improving stability and related matters of concern to the industry.

A second mechanism was proposed in the *Ninth Review*. It was the use of federal-provincial conferences to improve co-ordination in the public sector. Indeed, an indicator on current public expenditures for all levels of government is already included in our framework, and the *Tenth Review* recommends further that this indicator be broken down by provincial and federal governments so as to establish clearly who should do what. To be effective, the approach calls for substantial technical work before forward commitments can be made by governments. One of the areas to be explored further is that of whether one should have a single indicator for all government activity including current expenditures, investment, and transfer payments, or whether one should have three or more indicators on the major components of these public expenditures. If it were decided to have several, and to have one in particular on investment, then the federal-provincial conferences would become more directly relevant to construction activity proper.

It is hoped that such initiatives by the Economic Council would provide additional mechanisms for the purpose of achieving more stable growth in construction in Canada.

APPENDIXES

APPENDIX A

Prime Minister's Letter

Canada

PRIME MINISTER . PREMIER MINISTRE

Ottawa K1A 0A2
10 January 1972

Dr. André Raynauld,
Chairman,
Economic Council of Canada,
Ottawa.

Dear Dr. Raynauld:

The Minister of Industry, Trade and Commerce, on the advice of his Construction Industry Development Council, has asked me, as the Minister responsible under the terms of the Economic Council Act, to request the Economic Council of Canada to undertake a detailed study on Canadian activity in the field of construction.

The study should examine, in particular, issues relating to the causes and effects of the cyclical instability of construction. To increase the productivity and efficiency of the Canadian economy, the study should focus on:

- the role of the construction industry in the economy, together with the effects that changes in this sector have on the whole economy;
- the consequences of changes in economic activity, particularly cyclical phenomena, on the construction industry, and on the ability of the industry to meet urban needs; and
- the impact of government policies on the stability of the construction industry.

This study should provide the Economic Council of Canada with the data necessary for recommendations it may wish to formulate with a view to reducing instability in the industry.

Pursuant to Section 10 of the Economic Council Act, I therefore request the Economic Council to undertake this study. I look forward with great interest to receiving the Council's views on this matter.

Yours very truly,
(signed)
P. E. Trudeau

(translation of the French original by the Economic Council of Canada)

APPENDIX B

Background Studies and Researchers

Following is a list of the 15 background studies conducted, with the names of the researchers for each. Some of these studies will be published by the Economic Council of Canada.

Study Director: W. E. Haviland

Construction Instability in Canada
—L. Auer, assisted by S. T. Ker and Mrs. P. Dale

Financial Aspects of Construction Instability
—P. T. Laverty

Instability in Residential Construction
—J. H. Chung, assisted by Trinh Minh Anh

Housing Needs
—J. H. Chung, assisted by Trinh Minh Anh

Governments and Construction Instability
—N. M. Swan, assisted by N. A. Nameth

The Industrial Organization Dimensions of Cycles in the Construction Industry
—W. F. Barnicke, assisted by P. C. K. Yao

The Construction Firm and Instability
—B. A. Keys, assisted by D. M. Caskie

The Relationship of Technology to Instability in Canadian Construction
—B. A. Keys, assisted by D. M. Caskie and P. C. K. Yao

Manpower in Construction
—R. A. Jenness, assisted by D. E. Angus

Instability and Industrial Relations in Canadian Construction
—P. Malles

Labour Relations in the Quebec Construction Industry
—Gérard Hébert

Prices, Costs, Output, and Productivity in Construction
—Miss M. R. Prentis

History
—J. T. Saywell

Construction's Place in the Economy
—W. E. Haviland, assisted by Miss R. A. Drummond

Analysis of the Briefs
—W. E. Haviland, assisted by Miss R. A. Drummond

APPENDIX C

Briefs Submitted

Following is a list of the 53 briefs that were submitted to the Economic Council of Canada, at the Council's public invitation, in relation to the study on cyclical instability in construction. The list is arranged alphabetically. Twenty-one briefs were from associations of construction contractors or related professionals; fourteen were submitted by private individuals; twelve were from construction or construction-related firms; five were submitted by labour federations or unions; and one was submitted by a government department. The consensus message of the briefs is included in the Summary.

Adka Industries Ltd., Vancouver, British Columbia
The Advisory Board for the Building and Construction Trades Unions in Canada, Ottawa, Ontario
Anonymous, Toronto, Ontario
Creighton Aquin, Montreal, Quebec
Association of Consulting Engineers of Canada, Ottawa, Ontario
BACM Industries Limited, Winnipeg, Manitoba
The Beaver Group of Companies, Montreal, Quebec
British Columbia Construction Association, Vancouver, British Columbia
Local 18, United Brotherhood of Carpenters and Joiners of America, Hamilton, Ontario
W. G. Brown, Ottawa, Ontario
Canada Department of Public Works, Ottawa, Ontario
The Canadian Chamber of Commerce, Montreal, Quebec
Canadian Construction Association, Ottawa, Ontario
Canadian Home Manufacturers Association, Ottawa, Ontario
Canadian Institute of Steel Construction, Toronto, Ontario
Canadian Johns-Manville Co., Limited, Port Credit, Ontario
Canadian Steel Industries Construction Council, Toronto, Ontario
Jean Chancelet, Joussard, Alberta
Citadel Brick Ltd., Quebec, Quebec
Construction Labour Relations Association of B.C., Burnaby, British Columbia
Construction Safety Association of Ontario, Toronto, Ontario
Richard Costain (Canada) Ltd., Downsview, Ontario
Council of Forest Industries of British Columbia, Vancouver, British Columbia
Guy Desbarats, Université de Montréal, Montreal, Quebec
Domtar Construction Materials Ltd., Montreal, Quebec
Robert Dumont, Saskatoon, Saskatchewan

A. Giesbrecht, Ottawa, Ontario
Mihai Grinblat, Toronto, Ontario
George V. Haythorne, Ottawa, Ontario
Housing & Urban Development Association of Canada, Toronto, Ontario
Laborers' International Union of North America, Ottawa, Ontario
H. Derrick Leach, Toronto, Ontario
M. J. Macalik, Halifax, Nova Scotia
McKinney Laboratories Ltd., Vancouver, British Columbia
Mechanical Contractors Association of Canada, Ottawa, Ontario
Montreal Metropolitan Home Builders' Association, Montreal, Quebec
National Construction Industry Development Foundation Incorporated, Ottawa, Ontario
Newfoundland Design Associates Limited, St. John's, Newfoundland
Omega Investments Limited, Dorval, Quebec
Ontario Association of Architects, Toronto, Ontario
The Ontario Federation of Construction Associations, Rexdale, Ontario
Gil M. Parker, Victoria, British Columbia
Harry Price, Hilborn Insurance Limited, Toronto, Ontario
Provincial Building and Construction Trades Council of Ontario, Don Mills, Ontario
J. K. Quittner, Toronto, Ontario
The Royal Architectural Institute of Canada, Ottawa, Ontario
Saskatchewan Association of Architects, Saskatoon, Saskatchewan
Société des Constructeurs d'Habitations de Sherbrooke et District Inc., Sherbrooke, Quebec
Specification Writers Association of Canada, Toronto, Ontario
Ben Tokunaga, Cranbrook, British Columbia
Welland, Lincoln, and Haldimand Building and Construction Trades Council, St. Catharines, Ontario
Westroc Industries Limited, Mississauga, Ontario
Winnipeg Builders Exchange, Winnipeg, Manitoba

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